

| Facility: Grand Gulf Nuclear Station | | | | | | | | | | | | | | Date of Exam: February 2020 | | | | | | | | |
|---|-------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|-------|------------------------------------|---|----|---|-------|----|---|--|---|
| 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. Emergency & Abnormal Plant Evolutions | 1 | 4 | 4 | 3 | N/A | | | | 3 | 3 | N/A | | 3 | 20 | 4 | | 3 | | 7 | | | |
| | 2 | 1 | 1 | 1 | | | | | 1 | 1 | | | 2 | 7 | 1 | | 2 | | 3 | | | |
| | Tier Totals | 5 | 5 | 4 | | | | | 4 | 4 | | | 5 | 27 | 5 | | 5 | | 10 | | | |
| 2. Plant Systems | 1 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 26 | 3 | | 2 | | 5 | | | | |
| | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 | 2 | | 1 | | 3 | | | | |
| | Tier Totals | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 38 | 5 | | 3 | | 8 | | | |
| 3. Generic Knowledge and Abilities Categories | | | | | 1 | | 2 | | 3 | | 4 | | 10 | 1 | | 2 | | 3 | | 4 | | 7 |
| | | | | | 2 | | 3 | | 2 | | 3 | | | 2 | | 1 | | 2 | | 2 | | |

- Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outline sections (i.e., except for one category in Tier 3 of the SRO-only section, the "Tier Totals" in each K/A category shall not be less than two). (One Tier 3 radiation control K/A is allowed if it is replaced by a K/A from another Tier 3 category.)
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points, and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the outline. Systems or evolutions that do not apply at the facility should be deleted with justification. Operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 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. 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. Refer to Section D.1.b of ES-401 for the applicable K/As.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' 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 a category 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.

G* Generic K/As

- * These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.
- ** These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan.

| ES-401 | | BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO) | | | | | | Form ES-401-1 | |
|--|----|---|----|----|----|----|--|---------------|----|
| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G* | K/A Topic(s) | IR | # |
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 | | | | | | ✓ | 2.2.22 Knowledge of limiting conditions for operations and safety limits. | 4.0 | 1 |
| 295003 Partial or Complete Loss of AC / 6 | | | ✓ | | | | AK3.05 Knowledge of the reasons for the following responses or actions as they apply to partial or complete loss of AC power: AK3.05 Reactor SCRAM | 3.7 | 2 |
| 295004 Partial or Total Loss of DC Pwr / 6 | | | | ✓ | | | AA1.03 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : A.C. electrical distribution | 3.4 | 3 |
| 295005 Main Turbine Generator Trip / 3 | | | | | ✓ | | AA2.04 Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP : Reactor Pressure | 3.7 | 4 |
| 295006 SCRAM / 1 | ✓ | | | | | | AK1.02 Knowledge of the operational implications of the following concepts as they apply to SCRAM : Shutdown Margin | 3.4 | 5 |
| 295016 Control Room Abandonment / 7 | | ✓ | | | | | AK2.02 Knowledge of the interrelations between CONTROL ROOM ABANDONMENT and the following: Local control stations | 4.0 | 6 |
| 295018 Partial or Total Loss of CCW / 8 | | | | | ✓ | | AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Cooling Water Temperatures | 3.1 | 7 |
| 295019 Partial or Total Loss of Inst. Air / 8 | | ✓ | | | | | AK2.09 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Containment | 3.3 | 8 |
| 295021 Loss of Shutdown Cooling / 4 | | | ✓ | | | | AK3.01 Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING : Raising reactor water level | 3.3 | 9 |
| 295023 Refueling Acc / 8 | | | | | | ✓ | 2.4.41 Knowledge of the emergency action level thresholds and classifications | 2.9 | 10 |
| 295024 High Drywell Pressure / 5 | | | | ✓ | | | EA1.05 Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: RPS | 3.9 | 11 |
| 295025 High Reactor Pressure / 3 | ✓ | | | | | | EK1.03 Knowledge of the operational implications of the following concepts as they apply to HIGH REACTOR PRESSURE : Safety/relief valve tailpipe Temperature/pressure relationships | 3.6 | 12 |
| 295026 Suppression Pool High Water Temp. / 5 | | | ✓ | | | | EK3.04 Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: SBLC injection | 3.7 | 13 |
| 295027 High Containment Temperature / 5 | ✓ | | | | | | EK1.03 Knowledge of the operational implications of the following concepts as they apply to HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY) : Containment integrity: Mark-III | 3.8 | 14 |
| 295028 High Drywell Temperature / 5 | | | | ✓ | | | EK3.04 Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE : Increased drywell cooling | 3.6 | 15 |
| 295030 Low Suppression Pool Wtr Lvl / 5 | | ✓ | | | | | EK2.08 Knowledge of the interrelations between LOW SUPPRESSION POOL WATER LEVEL and the following: SRV discharge submergence | 3.5 | 16 |
| 295031 Reactor Low Water Level / 2 | | | | | | ✓ | 2.4.3 Ability to identify post-accident instrumentation | 3.7 | 17 |
| 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | | ✓ | | EA2.03 Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : SBLC tank level | 4.3 | 18 |

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|---|----------|---|----------|----------|----------|----------|---|---------------|-----------|
| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G* | K/A Topic(s) | IR | # |
| 295038 High Off-site Release Rate / 9 | | ✓ | | | | | EK2.10 Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following: Condenser air removal system | 3.2 | 19 |
| 600000 Plant Fire On Site / 8 | | | | | | | | | |
| 700000 Generator Voltage and Electric Grid Disturbances / 6 | ✓ | | | | | | AK1.01 Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Definition of terms: volts, watts, amps, VARs, power factor | 3.3 | 20 |
| K/A Category Totals: | 4 | 4 | 3 | 3 | 3 | 3 | Group Point Total: | | 20 |

| ES-401 | | BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO) | | | | | | Form ES-401-1 | |
|---|----------|---|----------|----------|----------|----------|--|---------------|----------|
| E/APE # / Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G* | K/A Topic(s) | IR | # |
| 295002 Loss of Main Condenser Vac / 3 | | | | | | | | | |
| 295007 High Reactor Pressure / 3 | | | | | | | | | |
| 295008 High Reactor Water Level / 2 | | | | ✓ | | | AA1.06 Ability to operate and/or monitor the following as they apply to HIGH REACTOR WATER LEVEL : HPCS | 2.8 | 21 |
| 295009 Low Reactor Water Level / 2 | | | | | | | | | |
| 295010 High Drywell Pressure / 5 | ✓ | | | | | | AK1.03 Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : Temperature Increases | 3.2 | 22 |
| 295011 High Containment Temp / 5 | | | | | | | | | |
| 295012 High Drywell Temperature / 5 | | | | | | | | | |
| 295013 High Suppression Pool Temp. / 5 | | | | | | | | | |
| 295014 Inadvertent Reactivity Addition / 1 | | | | | | | | | |
| 295015 Incomplete SCRAM / 1 | | | | | | | | | |
| 295017 High Off-site Release Rate / 9 | | | | | | | | | |
| 295020 Inadvertent Cont. Isolation / 5 & 7 | | | ✓ | | | | AK3.03 Knowledge of the reasons for the following responses as they apply to INADVERTENT CONTAINMENT ISOLATION: Drywell/containment temperature response | 3.2 | 23 |
| 295022 Loss of CRD Pumps / 1 | | | | | | | | | |
| 295029 High Suppression Pool Wtr Lvl / 5 | | | | | ✓ | | EA2.03 Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: Drywell/containment water level | 3.4 | 24 |
| 295032 High Secondary Containment Area Temperature / 5 | | | | | | ✓ | 2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. | 4.2 | 25 |
| 295033 High Secondary Containment Area Radiation Levels / 9 | | | | | | | | | |
| 295034 Secondary Containment Ventilation High Radiation / 9 | | | | | | | | | |
| 295035 Secondary Containment High Differential Pressure / 5 | | ✓ | | | | | EK2.01 Knowledge of the interrelations between SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE and the following: Secondary containment ventilation | 3.6 | 26 |
| 295036 Secondary Containment High Sump/Area Water Level / 5 | | | | | | ✓ | 2.1.30 Ability to locate and operate components, including local controls. | 4.4 | 27 |
| 500000 High CTMT Hydrogen Conc. / 5 | | | | | | | | | |
| K/A Category Point Totals: | 1 | 1 | 1 | 1 | 1 | 2 | Group Point Total: | | 7 |

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|---------------------------------|-----|---|-----|-----|-----|-----|-----|----|-----|-----|----|--|-----|----|
| System # / Name | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A2 | A 3 | A 4 | G* | K/A Topic(s) | IR | # |
| 203000 RHR/LPCI: Injection Mode | | | | | | | | ✓ | | | | A2.03 Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: valve Closures | 3.2 | 28 |
| 205000 Shutdown Cooling | | | ✓ | | | ✓ | | | | | | K3.01 Knowledge of the effect that a loss or malfunction of the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) will have on following: Reactor Pressure | 3.3 | 29 |
| | | | | | | | | | | | | K6.08 Knowledge of the effect that a loss or malfunction of the following will have on the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) : RHR Service Water | 3.5 | 30 |
| 206000 HPCI | | | | | | | | | | | | | | |
| 20700 Isol Condenser | | | | | | | | | | | | | | |
| 209001 LPCS | | | | | ✓ | | | | | | ✓ | K5.05Knowledge of the operational implications of the following concepts as they apply to LOW PRESSURE CORE SPRAY SYSTEM : System Venting | 2.5 | 31 |
| | | | | | | | | | | | | 2.2.40 Ability to apply Technical Specifications for a system. | 3.4 | 32 |
| 209002 HPCS | ✓ | | | | ✓ | | | | | | | K5.04 Knowledge of the operational implications of the following concepts as they apply to HIGH PRESSURE CORE SPRAY SYSTEM (HPCS): Adequate core cooling | 3.8 | 33 |
| | | | | | | | | | | | | K1.02 Knowledge of the physical connections and/or cause effect relationships between HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) and the following: Suppression Pool: BWR-5,6 | 3.5 | 53 |
| 211000 SLC | | | | | | | ✓ | | | | | A1.06 Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: Flow Indication | 3.8 | 34 |
| 212000 RPS | | | ✓ | | | | | | | | ✓ | K3.02 Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on following: Primary containment isolation system/nuclear steam supply shut-off: Plant-Specific | 3.7 | 35 |
| | | | | | | | | | | | | A4.08 Ability to manually operate and/or monitor in thecontrol room: Individual system relay status | 3.4 | 36 |
| 215003 IRM | | ✓ | | | | | | | | | | K2.01 Knowledge of electrical power supplies to the following: IRM channels/detectors | 2.5 | 37 |
| 215004 Source Range Monitor | | | | ✓ | | | | | | | | K4.04 Knowledge of SOURCE RANGE MONITOR (SRM) SYSTEM design feature(s) and/or interlocks which provide for the following: Changing detector position | 2.8 | 38 |

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|--|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|----|--|---------------|----|
| 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 | # |
| 215005 APRM / LPRM | | ✓ | | | | | | | | | ✓ | K2.02 Knowledge of electrical power supplies to the following: APRM Channels | 2.6 | 39 |
| | | | | | | | | | | | | A4.04 Ability to manually operate and/or monitor in the control room: LPRM back panel switches, meters and indicating lights | 3.2 | 40 |
| 217000 RCIC | | | | | | | | | | | ✓ | 2.4.34 Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. | 4.2 | 41 |
| 218000 ADS | | | | | | | ✓ | | | | | A1.01 Ability to predict and/or monitor changes in parameters associated with operating the AUTOMATIC DEPRESSURIZATION SYSTEM controls including: ADS valve tail pipe temperatures | 3.4 | 42 |
| 223002 PCIS/Nuclear Steam Supply Shutoff | ✓ | | | | | | | | | | | K1.14 Knowledge of the physical connections and/or causeeffect relationships between PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF and the following: Containment drainage system | 2.8 | 43 |
| 239002 SRVs | | | | ✓ | | | | | | | | K4.02 Knowledge of RELIEF/SAFETY VALVES design feature(s) and/or interlocks which provide for the following: Minimizes containment fatigue duty cycles resulting from relief valve cycling during decay-heat-dominant period late in an isolation transient (LLS logic) | 3.4 | 44 |
| 259002 Reactor Water Level Control | | | | | | | | | ✓ | | | A3.04 Ability to monitor automatic operations of the REACTOR WATER LEVEL CONTROL SYSTEM including: Changes in reactor feedwater flow | 3.2 | 45 |
| 261000 SGTS | ✓ | | | | | | | | | | | K1.08 Knowledge of the physical connections and/or cause effect relationships between STANDBY GAS TREATMENT SYSTEM and the following: Process radiation monitoring system | 2.8 | 46 |
| 262001 AC Electrical Distribution | | | | | | | | | | | ✓ | 2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. | 4.0 | 47 |
| 262002 UPS (AC/DC) | | | | | | ✓ | | | | | | K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): Static inverter | 2.7 | 48 |
| 263000 DC Electrical Distribution | | ✓ | | | | | | | | | | K2.01 Knowledge of electrical power supplies to the following: Major D.C. loads | 3.1 | 49 |
| 264000 EDGs | | | | | | | | ✓ | | | | A2.01 Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Parallel operation of emergency generator | 3.5 | 50 |

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|--|----------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|---|-----|-----------|
| System # / Name | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A2 | A 3 | A 4 | G* | K/A Topic(s) | IR | # |
| 300000 Instrument Air | | | | | | | | | | ✓ | | A4.01 Ability to manually operate and / or monitor in the control room: Pressure Gauges | 2.6 | 51 |
| 400000 Component Cooling Water | | | | | | | | | ✓ | | | A3.01 Ability to monitor automatic operations of the CCWS including: Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS | 3.0 | 52 |
| 510000 (SF4 SWS*) Service Water (Normal and Emergency) | | | | | | | | | | | | | | |
| K/A Category Point Totals: | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | Group Point Total: | | 26 |

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|---|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|----|--|---------------|----|
| 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 | | | | ✓ | | | | | | | | K4.08 Knowledge of CONTROL ROD DRIVE HYDRAULIC SYSTEM design feature(s) and/or interlocks which provide for the following: Controlling control rod drive header pressure | 3.1 | 54 |
| 201002 RMCS | | | | | | | | | | | | | | |
| 201003 Control Rod and Drive Mechanism | | | | | | | | | | | | | | |
| 201004 RSCS | | | | | | | | | | | | | | |
| 201005 RCIS | | | ✓ | | | | | | | | | K3.01 Knowledge of the effect that a loss or malfunction of the ROD CONTROL AND INFORMATION SYSTEM (RCIS) will have on following: Control rod drive system: BWR-6 | 3.3 | 57 |
| 201006 RWM | | | | | | | | | | | | | | |
| 202001 Recirculation | ✓ | | | | | | | | | | | K1.15 Knowledge of the physical connections and/or cause effect relationships between RECIRCULATION SYSTEM and the following: Nuclear boiler instrumentation (reactor water level/pressure) | 3.2 | 55 |
| 202002 Recirculation Flow Control | | | | | | ✓ | | | | | | K6.06 Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION FLOW CONTROL SYSTEM : Reactor water level | 3.1 | 56 |
| 204000 RWCU | | | | | | | | | | | | | | |
| 214000 RPIS | | | | | | | | | | | | | | |
| 215001 Traversing In-Core Probe | | | | | | | | | | | | | | |
| 215002 RBM | | | | | | | | | | | | | | |
| 216000 Nuclear Boiler Inst. | | | | | | | ✓ | | | | | A1.02 Ability to predict and/or monitor changes in parameters associated with operating the NUCLEAR BOILER INSTRUMENTATION controls including: Removing or returning a sensor (transmitter) to service | 2.9 | 58 |
| 219000 RHR/LPCI: Torus/Pool Cooling Mode | | | | | | | | | | | ✓ | 2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. | 4.6 | 65 |
| 223001 Primary CTMT and Aux. | | | | | | | | | | | | | | |
| 226001 RHR/LPCI: CTMT Spray Mode | | ✓ | | | | | | | | | | K2.02 Knowledge of electrical power supplies to the following: Pumps | 2.9 | 59 |
| 230000 RHR/LPCI: Torus/Pool Spray Mode | | | | | | | | | | | | | | |
| 233000 Fuel Pool Cooling/Cleanup | | | | | | | | | | | | | | |
| 234000 Fuel Handling Equipment | | | | | | | | | | | | | | |
| 239001 Main and Reheat Steam | | | | | | | | | | | | | | |
| 239003 MSIV Leakage Control | | | | | | | | | | | | | | |
| 241000 Reactor/Turbine Pressure Regulator | | | | | | | | | | | | | | |

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|------------------------------------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|----|--|---------------|----|
| 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 | # |
| 245000 Main Turbine Gen. / Aux. | | | | | | | | | | ✓ | | A4.01 Ability to manually operate and/or monitor in the control room: Turbine Lube Oil Pumps | 2.7 | 60 |
| 256000 Reactor Condensate | | | | ✓ | | | | | | | | K4.08 Knowledge of REACTOR CONDENSATE SYSTEM design feature(s) and/or interlocks which provide for the following: Dedicated ECCS water supply | 3.6 | 61 |
| 259001 Reactor Feedwater | | | | | ✓ | | | | | | | K5.03 Knowledge of the operational implications of the following concepts as they apply to REACTOR FEEDWATER SYSTEM : Turbine operation: TDRFP's-Only | 2.8 | 62 |
| 268000 Radwaste | | | | | | | | | | | | | | |
| 271000 Offgas | | | | | | | | | | | | | | |
| 272000 Radiation Monitoring | | | | | | | | | ✓ | | | A3.06 Ability to monitor automatic operations of the RADIATION MONITORING SYSTEM including: Ventilation system isolation indications | 3.4 | 63 |
| 286000 Fire Protection | | | | | | | | | | | | | | |
| 288000 Plant Ventilation | | | | | | | | | | | | | | |
| 290001 Secondary CTMT | | | | | | | | | | | | | | |
| 290003 Control Room HVAC | | | | | | | | | | | | | | |
| 290002 Reactor Vessel Internals | | | | | | | | ✓ | | | | A2.03 Ability to (a) predict the impacts of the following on the REACTOR VESSEL INTERNALS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Control rod drop accident | 3.6 | 64 |
| 51001 (SF8 CWS*) Circulating Water | | | | | | | | | | | | | | |
| K/A Category Point Totals: | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | Group Point Total: | | 12 |

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|---|----------|--|------------------------------------|----|----------|---|
| Category | K/A # | Topic | RO | | SRO-Only | |
| | | | IR | # | IR | # |
| 1. Conduct of Operations | 2.1.8 | Ability to coordinate personnel activities outside the control room. | 3.4 | 66 | | |
| | 2.1.19 | Ability to use plant computers to evaluate system or component status. | 3.9 | 67 | | |
| | | | | | | |
| | | | | | | |
| | Subtotal | | | 2 | | |
| 2. Equipment Control | 2.2.40 | Ability to apply Technical Specifications for a system. | 3.4 | 68 | | |
| | 2.2.43 | Knowledge of the process used to track inoperable alarms. | 3.0 | 69 | | |
| | 2.2.44 | 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. | 4.2 | 70 | | |
| | | | | | | |
| | Subtotal | | | 3 | | |
| 3. Radiation Control | 2.3.11 | Ability to control radiation releases. | 3.8 | 71 | | |
| | 2.3.14 | Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. | 3.4 | 72 | | |
| | | | | | | |
| | | | | | | |
| | Subtotal | | | 2 | | |
| 4. Emergency Procedures / Plan | 2.4.2 | Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions. | 4.5 | 73 | | |
| | 2.4.29 | Knowledge of the emergency plan. | 3.1 | 74 | | |
| | 2.4.45 | Ability to prioritize and interpret the significance of each annunciator or alarm. | 4.1 | 75 | | |
| | | | | | | |
| | Subtotal | | | 3 | | |
| Tier 3 Point Total | | | | 10 | | |

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|---|-------------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-------|------------------------------------|----|-------|---|---|
| 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. Emergency & Abnormal Plant Evolutions | 1 | | | | | | | | | | | | | 4 | 3 | 7 | | |
| | 2 | | | | | | | | | | | | | 1 | 2 | 3 | | |
| | Tier Totals | | | | | | | | | | | | | 5 | 5 | 10 | | |
| 2. Plant Systems | 1 | | | | | | | | | | | | | 3 | 2 | 5 | | |
| | 2 | | | | | | | | | | | | | 2 | 1 | 3 | | |
| | Tier Totals | | | | | | | | | | | | | 5 | 3 | 8 | | |
| 3. Generic Knowledge and Abilities Categories | | 1 | | 2 | | 3 | | 4 | | | | | | 1 | 2 | 3 | 4 | 7 |
| | | | | | | | | | | | | | | 2 | 1 | 2 | 2 | |

- Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outline sections (i.e., except for one category in Tier 3 of the SRO-only section, the "Tier Totals" in each K/A category shall not be less than two). (One Tier 3 radiation control K/A is allowed if it is replaced by a K/A from another Tier 3 category.)
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points, and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the outline. Systems or evolutions that do not apply at the facility should be deleted with justification. Operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 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. 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. Refer to Section D.1.b of ES-401 for the applicable K/As.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' 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 a category 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.

G* Generic K/As

- * These systems/evolutions must be included as part of the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan. They are not required to be included when using earlier revisions of the K/A catalog.

** These systems/evolutions may be eliminated from the sample (as applicable to the facility) when Revision 3 of the K/A catalog is used to develop the sample plan.

| ES-401 | | BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (SRO) | | | | | | Form ES-401-1 | |
|--|----------|--|----------|----------|----------|----------|--|---------------|----------|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G* | K/A Topic(s) | IR | # |
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 | | | | | | | | | |
| 295003 Partial or Complete Loss of AC / 6 | | | | | ✓ | | AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Reactor power / pressure / and level | 4.3 | 76 |
| 295004 Partial or Total Loss of DC Pwr / 6 | | | | | | | | | |
| 295005 Main Turbine Generator Trip / 3 | | | | | | | | | |
| 295006 SCRAM / 1 | | | | | ✓ | | AA2.03 Ability to determine and/or interpret the following as they apply to SCRAM : Reactor Water Level | 4.2 | 77 |
| 295016 Control Room Abandonment / 7 | | | | | | | | | |
| 295018 Partial or Total Loss of CCW / 8 | | | | | | | | | |
| 295019 Partial or Total Loss of Inst. Air / 8 | | | | | | | | | |
| 295021 Loss of Shutdown Cooling / 4 | | | | | | | | | |
| 295023 Refueling Acc / 8 | | | | | | | | | |
| 295024 High Drywell Pressure / 5 | | | | | | | | | |
| 295025 High Reactor Pressure / 3 | | | | | ✓ | | EA2.02 Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE: Reactor Power | 4.2 | 78 |
| 295026 Suppression Pool High Water Temp. / 5 | | | | | | | | | |
| 295027 High Containment Temperature / 5 | | | | | | ✓ | 2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. | 4.2 | 79 |
| 295028 High Drywell Temperature / 5 | | | | | | | | | |
| 295030 Low Suppression Pool Wtr Lvl / 5 | | | | | | | | | |
| 295031 Reactor Low Water Level / 2 | | | | | ✓ | | EA2.03 Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : Reactor Pressure | 4.2 | 80 |
| 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | | | | | | |
| 295038 High Off-site Release Rate / 9 | | | | | | ✓ | 2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. | 4.7 | 81 |
| 600000 Plant Fire On Site / 8 | | | | | | ✓ | 2.4.34 Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. | 4.1 | 82 |
| 700000 Generator Voltage and Electric Grid Disturbances / 6 | | | | | | | | | |
| K/A Category Totals: | 0 | 0 | 0 | 0 | 4 | 3 | Group Point Total: | | 7 |

| ES-401 | | BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (SRO) | | | | | | Form ES-401-1 | |
|---|--------|--|--------|--------|--------|----|---|---------------|----|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 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 | | | | | | | | | |
| 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 | | | | | | | | | |
| 295015 Incomplete SCRAM / 1 | | | | | ✓ | | AA2.01 Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM: Reactor power | 4.3 | 83 |
| 295017 High Off-site Release Rate / 9 | | | | | | | | | |
| 295020 Inadvertent Cont. Isolation / 5 & 7 | | | | | | | | | |
| 295022 Loss of CRD Pumps / 1 | | | | | | | | | |
| 295029 High Suppression Pool Wtr Lvl / 5 | | | | | | | | | |
| 295032 High Secondary Containment Area Temperature / 5 | | | | | | | | | |
| 295033 High Secondary Containment Area Radiation Levels / 9 | | | | | | ✓ | 2.2.12 Knowledge of surveillance procedures. | 4.1 | 84 |
| 295034 Secondary Containment Ventilation High Radiation / 9 | | | | | | | | | |
| 295035 Secondary Containment High Differential Pressure / 5 | | | | | | | | | |
| 295036 Secondary Containment High Sump/Area Water Level / 5 | | | | | | | | | |
| 500000 High CTMT Hydrogen Conc. / 5 | | | | | | ✓ | 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. | 4.2 | 85 |
| K/A Category Point Totals: | 0 | 0 | 0 | 0 | 1 | 2 | Group Point Total: | | 3 |

| ES-401 | | BWR Examination Outline Plant Systems - Tier 2/Group 1 (SRO) | | | | | | | | | | | Form ES-401-1 | |
|--|--------|--|--------|--------|--------|--------|--------|----|--------|--------|----|--|---------------|----|
| System # / Name | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A2 | A 3 | A 4 | G* | K/A Topic(s) | IR | # |
| 203000 RHR/LPCI: Injection Mode | | | | | | | | | | | | | | |
| 205000 Shutdown Cooling | | | | | | | | | | | | | | |
| 206000 HPCI | | | | | | | | | | | | | | |
| 20700 Isol Condenser | | | | | | | | | | | | | | |
| 209001 LPCS | | | | | | | | | | | | | | |
| 209002 HPCS | | | | | | | | | | | | | | |
| 211000 SLC | | | | | | | | ✓ | | | | A2.03 Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A.C. power failures | 3.4 | 86 |
| 212000 RPS | | | | | | | | | | | | | | |
| 215003 IRM | | | | | | | | | | | | | | |
| 215004 Source Range Monitor | | | | | | | | | | | | | | |
| 215005 APRM / LPRM | | | | | | | | | | | | | | |
| 217000 RCIC | | | | | | | | ✓ | | | | A2.01 Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: System Initiation Signal | 3.7 | 87 |
| 218000 ADS | | | | | | | | | | | | | | |
| 223002 PCIS/Nuclear Steam Supply Shutoff | | | | | | | | | | | | | | |
| 239002 SRVs | | | | | | | | ✓ | | | | A2.03 Ability to (a) predict the impacts of the following on the RELIEF/SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Stuck open SRV. | 4.2 | 88 |
| 259002 Reactor Water Level Control | | | | | | | | | | | ✓ | 2.4.50 Ability to verify system alarm setpoints and operate controls identified in the alarm response manual. | 4.0 | 89 |
| 261000 SGTS | | | | | | | | | | | | | | |
| 262001 AC Electrical Distribution | | | | | | | | | | | ✓ | 2.4.41 Knowledge of the emergency action level thresholds and classifications. | 4.6 | 90 |
| 262002 UPS (AC/DC) | | | | | | | | | | | | | | |
| 263000 DC Electrical Distribution | | | | | | | | | | | | | | |
| 264000 EDGs | | | | | | | | | | | | | | |
| 300000 Instrument Air | | | | | | | | | | | | | | |
| 400000 Component Cooling Water | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|---------------------------------|---|---|---|---|---|---|---|---|---|---|---|--------------------|--|--|--|---|
| 510000 (SF4 SWS*) Service Water | | | | | | | | | | | | | | | | |
| K/A Category Point Totals: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | Group Point Total: | | | | 5 |

| ES-401 | | BWR Examination Outline Plant Systems - Tier 2/Group 2 (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 | | | | | | | | ✓ | | | | A2.08 Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadequate system flow | 2.8 | 91 |
| 201002 RMCS | | | | | | | | | | | | | | |
| 201003 Control Rod and Drive Mechanism | | | | | | | | | | | | | | |
| 201004 RSCS | | | | | | | | | | | | | | |
| 201005 RCIS | | | | | | | | | | | | | | |
| 201006 RWM | | | | | | | | | | | | | | |
| 202001 Recirculation | | | | | | | | | | | | | | |
| 202002 Recirculation Flow Control | | | | | | | | | | | | | | |
| 204000 RWCU | | | | | | | | | | | | | | |
| 214000 RPIS | | | | | | | | | | | | | | |
| 215001 Traversing In-Core Probe | | | | | | | | | | | | | | |
| 215002 RBM | | | | | | | | | | | | | | |
| 216000 Nuclear Boiler Inst. | | | | | | | | | | | | | | |
| 219000 RHR/LPCI: Torus/Pool Cooling Mode | | | | | | | | | | | | | | |
| 223001 Primary CTMT and Aux. | | | | | | | | | | | ✓ | 2.4.35 Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects. | 4.0 | 92 |
| 226001 RHR/LPCI: CTMT Spray Mode | | | | | | | | | | | | | | |
| 230000 RHR/LPCI: Torus/Pool Spray Mode | | | | | | | | | | | | | | |
| 233000 Fuel Pool Cooling/Cleanup | | | | | | | | | | | | | | |
| 234000 Fuel Handling Equipment | | | | | | | | | | | | | | |
| 239001 Main and Reheat Steam | | | | | | | | | | | | | | |
| 239003 MSIV Leakage Control | | | | | | | | | | | | | | |
| 241000 Reactor/Turbine Pressure Regulator | | | | | | | | | | | | | | |
| 245000 Main Turbine Gen. / Aux. | | | | | | | | | | | | | | |
| 256000 Reactor Condensate | | | | | | | | | | | | | | |
| 259001 Reactor Feedwater | | | | | | | | ✓ | | | | A2.03 Ability to (a) predict the impacts of the following on the REACTOR FEEDWATER SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: | 3.6 | 93 |
| 268000 Radwaste | | | | | | | | | | | | | | |
| 271000 Offgas | | | | | | | | | | | | | | |
| 272000 Radiation Monitoring | | | | | | | | | | | | | | |
| 286000 Fire Protection | | | | | | | | | | | | | | |
| 288000 Plant Ventilation | | | | | | | | | | | | | | |
| 290001 Secondary CTMT | | | | | | | | | | | | | | |
| 290003 Control Room HVAC | | | | | | | | | | | | | | |
| 290002 Reactor Vessel Internals | | | | | | | | | | | | | | |
| 204000 RWCU | | | | | | | | | | | | | | |
| K/A Category Point Totals: | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | Group Point Total: | | 3 |

| Facility: Grand Gulf Nuclear Station | | | Date of Exam: February 2020 | | | |
|---|-----------------|--|------------------------------------|---|----------|----------|
| Category | K/A # | Topic | RO | | SRO-Only | |
| | | | IR | # | IR | # |
| 1. Conduct of Operations | 2.1.2 | Knowledge of operator responsibilities during all modes of plant operation. | | | 4.4 | 94 |
| | 2.1.37 | Knowledge of procedures, guidelines, or limitations associated with reactivity management. | | | 4.6 | 95 |
| | | | | | | |
| | | | | | | |
| | Subtotal | | | | | 2 |
| 2. Equipment Control | 2.2.7 | Knowledge of the process for conducting special or infrequent tests. | | | 3.6 | 96 |
| | 2.2.21 | Knowledge of pre- and post-maintenance operability requirements. | | | 4.1 | 97 |
| | | | | | | |
| | | | | | | |
| | Subtotal | | | | | 2 |
| 3. Radiation Control | 2.3.4 | Knowledge of radiation exposure limits under normal or emergency conditions. | | | 3.7 | 98 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | Subtotal | | | | | 1 |
| 4. Emergency Procedures / Plan | 2.4.29 | Knowledge of the emergency plan. | | | 4.4 | 99 |
| | 2.4.42 | Knowledge of emergency response facilities. | | | 3.8 | 100 |
| | | | | | | |
| | | | | | | |
| | Subtotal | | | | | 2 |
| Tier 3 Point Total | | | | | | 7 |

| Tier/Group (Original) | Randomly Selected K/A (New) | Reason for Rejection |
|--|-----------------------------------|---|
| RO T1 – G1 295003 AK3.04 Q# 2 | 295003 AK3.07 | <p>Original KA: AK3.04 Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Ground isolation</p> <p>At GGNS, if a ground occurred on an A.C. Powered bus the electrical department would perform the check and isolation of the ground. Operations does not perform a ground isolation.</p> <p>Randomly selected New K/A: AK3.05, Reactor SCRAM</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T1 – G1 295021 AK3.04 Q# 9 | 295021 AK3.01 | <p>Original KA: AK3.04 Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING : Increasing drywell cooling</p> <p>At GGNS, there is no procedural requirement to increase drywell cooling on a loss of Shutdown Cooling. The Off Normal Event Procedure for Inadequate Decay Heat Removal does not mention increasing drywell cooling to mitigate this loss.</p> <p>Randomly selected New K/A: AK3.01, AK3.01 Raising reactor water level</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T1 – G1 295037 EA2.03 Q# 18 | A2 listed but K2 words are used. | <p>This KA was placed in error and replaced, NO swap required, revised ES-401-1, K/A Topic for 295037 to include the following:</p> <p>Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : EA2.03 SBLC tank level</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T1 – G1 700000 AK1.02 Q# 20 | 700000 AK1.01 | <p>Original KA: AK1.02 Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Over-excitation</p> <p>Even though the ONEP states a band to maintain MVARs during an Over-excited state, procedures conflict with the limits. To prevent and confusion request change of KA.</p> <p>Randomly selected AK1.01, Definition of terms: volts, watts, amps, VARs, power factor</p> |

| | | |
|---|-----------------|---|
| RO T2 – G1 261000 K1.11 Q# 46 | 261000 K1.08 | <p>This KA was placed in error from a different K/A system and replaced.</p> <p>Randomly selected New K/A: K1.08. Knowledge of the physical connections and/or cause effect relationships between STANDBY GAS TREATMENT SYSTEM and the following: Process radiation monitoring system.</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T2 – G1 510000 K1.02 Q# 53 | 209002 K1.02 | <p>This KA was placed in error from Rev. 3 NUREG 1123 and replaced.</p> <p>Randomly Selected new K/A 209002: K1.02 Knowledge of the physical connections and/or cause effect relationships between HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) and the following: Suppression Pool: BWR-5,6</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T2 – G2 202001 K1.14 Q# 55 | 202001 K1.15 | <p>Original KA: K1.14 Knowledge of the physical connections and/or cause effect relationships between RECIRCULATION SYSTEM and the following: Rod block monitor</p> <p>At GGNS a Rod Block Monitor system is not used. The RC&IS system provides the Control Rod Block feature.</p> <p>Randomly selected New K/A: K1.15 Raising reactor water level</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T2 – G2 202002 K6.06 Q# 56 | 202002 K6.05 | <p>Original KA: K6.06 Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION FLOW CONTROL SYSTEM : Reactor/turbine pressure regulating system</p> <p>At GGNS, the Reactor/turbine pressure regulating system no longer provides any input into the Recirculation Flow Control system anymore. GGNS controls the flow control system in MANUAL valve control, NO auto feedback from the Reactor/turbine pressure regulating system.</p> <p>Randomly selected New K/A: K6.05, Reactor water level</p> <p>Page 1 point totals not affected by this change.</p> |

| | | |
|---|-----------------|---|
| RO T2 – G2 214000 K3.03 Q# 57 | 201005 K3.01 | <p>Original KA: 214000, K3.03 Knowledge of the effect that a loss or malfunction of the ROD POSITION INFORMATION SYSTEM will have on following: RMCS: Plant-Specific</p> <p>At GGNS, Rod position and information is a part of the RCIS system (K/A 201005). RPIS is not a stand alone system.</p> <p>Randomly selected New K/A: 201005 RCIS K3.01, Knowledge of the effect that a loss or malfunction of the ROD CONTROL AND INFORMATION SYSTEM (RCIS) will have on following: Control rod drive system: BWR-6</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T2 G2 245000 A4.05 Q# 60 | 245000 A4.01 | <p>Original KA: 245000, A4.05 Ability to manually operate and/or monitor in the control room. Generator megawatt output.</p> <p>Due to the limited response of the megawatt output does not lend a question with plausible distractors.</p> <p>Randomly selected New K/A: A4.01, Turbine Lube Oil pumps.</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T2 – G2 259001 K5.02 Q# 62 | 259001 K5.03 | <p>Original KA: 259001, K5.02 Knowledge of the operational implications of the following concepts as they apply to REACTOR FEEDWATER SYSTEM : Water hammer</p> <p>At GGNS, Water hammer is a generic concern and not a specific one in the feedwater procedures.</p> <p>Randomly selected New K/A: K5.03, Turbine operation: TDRFP's-Only</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T2 – G2 272000 A3.05 Q# 63 | 272000 A3.06 | <p>Original KA: 272000 Radiation Monitoring, A3.05 Ability to monitor automatic operations of the RADIATION MONITORING SYSTEM including: Refuel floor overhead crane operation interrupt</p> <p>At GGNS, there is NO refuel floor overhead crane operation interrupt action with the Radiation Monitoring system.</p> <p>Randomly selected New K/A: A3.06, Ventilation system isolation indications</p> <p>Page 1 point totals not affected by this change.</p> |

| | | |
|---|------------------|---|
| RO T2 – G2 51001 2.4.49 Q# 65 | 219000 2.4.49 | <p>This KA was placed in error from Rev. 3 NUREG 1123 and replaced.</p> <p>Randomly Selected new K/A 219000</p> <p>K/A Topic, 2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls, remains the same.</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T3 2.1.6 Q# 66 | 2.1.8 | <p>Original KA: Ability to manage the control room crew during plant transients.</p> <p>The ability to manage is inherent a SRO / Supervisor task.</p> <p>Randomly Selected new K/A 2.1.36</p> <p>K/A Topic, 2.1.36 Knowledge of procedures and limitations involved in core alterations.</p> <p>Page 1 point totals not affected by this change.</p> |
| RO T3 2.4.21 Q# 74 | 2.4.29 | <p>Original KA: Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.</p> <p>Assessing status is inherently an SRO function.</p> <p>Randomly selected new K/A 2.4.29 Knowledge of the emergency plan.</p> <p>Page 1 point totals not affected by this change.</p> |

| | | |
|---|------------------|---|
| SRO T1-G1 295027 2.2.39 Q# 79 | 295027 2.2.25 | <p>Original KA: 2.2.39 Knowledge of less than or equal to one hour Technical Specification action statements for systems.</p> <p>This K/A does not meet the knowledge requirements for a SRO, <1 hour Tech Specs action statements are RO knowledge level.</p> <p>Randomly selected New K/A: 2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.</p> <p>Page 1 point totals not affected by this change.</p> |
| SRO T1-G1 510000 2.4.41 Q# 90 | 262001 2.4.41 | <p>This KA was placed in error from Rev. 3 NUREG 1123 and replaced.</p> <p>Randomly Selected new K/A 262001.</p> <p>2.4.41 Knowledge of the emergency action level thresholds and classifications, remained the same.</p> <p>Page 1 point totals not affected by this change.</p> |

| | | |
|--|--|---|
| Facility: <u>Grand Gulf Nuclear Station</u> | | Date of Examination: <u>2/3/2020</u> |
| Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/> | | Operating Test Number: <u>GGNS 2/2020</u> |

| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
|---------------------------------|------------|---|
| Conduct of Operations | R, N | Determine Core Flow , given plant parameters, system status or events determine actual Reactor Core Flow. GJPM-OPS-2/2020-AR1 2.1.7 (4.4) |
| Conduct of Operations | R, D | Reactor Water Level Determination , The operator will evaluate plant conditions at the Remote Shutdown Panel to determine Narrow Range reactor water level and the status of injection sources. GJPM-OPS-2/2020-AR2 2.1.25 (3.9) |
| | | |
| Radiation Control | R, D | Emergency Exposure Limits , The operator will evaluate a condition involving abnormally high radiological conditions and determine actions required to administratively control the dose received by determining who authorizes dose extensions in various situations. GJPM-OPS-2/2020-AR3 2.3.4 (3.2) |
| Emergency Plan | R, N | Loss of Shutdown Cooling, Time to 200°F , given plant status and parameters determine the time to 200 on a loss of Shutdown Cooling. GJPM-OPS-2/2020-AR4 2.4.11 (3.4/3.6) |

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes and Criteria:

| | |
|---|-----|
| (C)ontrol room, (S)imulator, or Class(R)oom | |
| (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes) | (2) |
| (N)ew or (M)odified from bank (≥ 1) | (2) |
| (P)revious 2 exams (≤ 1, randomly selected) | (0) |

| | | |
|--|---|---|
| Facility: <u>Grand Gulf Nuclear Station</u> | | Date of Examination: <u>2/3/2020</u> |
| Examination Level: RO <input type="checkbox"/> | SRO <input checked="" type="checkbox"/> | Operating Test Number: <u>GGNS 2/2020</u> |

| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
|---------------------------------|------------|--|
| Conduct of Operations | R, D | Determine Reportability , This task is to use corporate procedures and given plant conditions to determine the reportability and complete applicable notification form GJPM-OPS-2/2020-AS1 2.1.20 (4.6) |
| Conduct of Operations | R, D | Determine Penetration Isolation Requirements , given failure of penetration isolation valve failure, determine Tech Spec action and requirements for isolating. GJPM-OPS-2/2020-AS2 2.1.7 (4.7) |
| Equipment Control | R, D | Tagout Removal Approval , given a protective tagging removal, verify restored positions and information. GJPM-OPS-2/2020-AS3 2.2.15 (4.3) – 2.2.15 (4.3) – 2.2.41 (3.9) |
| Radiation Control | R, N | Authorize Emergency Exposure , given plant status and events in progress, determine appropriate radiation exposure limits. GJPM-OPS-2/2020-AS4 2.3.4 (3.7) |
| Emergency Plan | R, N | PAR Determination , given plant status and events in progress, determine correct PAR recommendations. GJPM-OPS-2/2020-AS5 2.4.44 (4.4) |

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes and Criteria:

| | |
|--|-----|
| (C)ontrol room, (S)imulator, or Class(R)oom | |
| (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes) | (3) |
| (N)ew or (M)odified from bank (≥ 1) | (2) |
| (P)revious 2 exams (≤ 1 , randomly selected) | (0) |

| | | |
|---|--|--|
| Facility: Grand Gulf Nuclear Station | | Date of Examination: 2/03/2020 |
| Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | | Operating Test No.: GGNS 2-2020 |

| Control Room Systems* (8 for RO) ; (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF) | | |
|--|---------------------------------|--|
| System / JPM Title | Type Code* | Safety Function |
| S1 – Transfer Recirculation Pumps to Slow Speed (GJPM-OPS-2-2020S1) 202001 A2.04 & A4.01 (3.7) | A-D-S | 1 |
| S2 – Retest MSIV Slow Closure (GJPM-OPS-2-2020S2) 239001 A2.11 (4.1) | A-D-P-S | 3 |
| S3 – Performing HPCS Quarterly Functional Test (GJPM-OPS-2-2020S3) 209002: A1.01 (3.6); A4.01 (3.7) | A-D-S-EN | 4 |
| S4 – Secure Containment Spray and Align for RPV Injection (GJPM-OPS-2-2020S4) 226001 A2.20 (3.7) & A4.07 (3.5) | L-M-S-EN | 5 |
| S5 – Rotate CCW Pumps (GJPM-OPS-2-2020S5) 400000 A2.01 (3.3) & A4.01 (3.1) | A-D-S | 8 |
| S6 – Place Standby Gas Treatment System in STANDBY Mode (GJPM-OPS-2-2020S6) 261000 A2.13 (3.4) & A4.03 (3.0) | L-N-S-EN | 9 |
| C1 – Defeat Feed Pump Level 9 Trips (GJPM-OPS-2-2020CR1) 259001 A3.10 (3.4) | D-C-L | 2 |
| S7 – Transfer RPS B to Normal Power Source and RPS A to Alternate Power Source (RO ONLY) (GJPM-OPS-2-2020S7) 212000 A2.19 (3.8) & A4.14 (3.8) | D-S | 7 |
| In-Plant Systems* (3 for RO) ; (3 for SRO-I); (3 or 2 for SRO-U) | | |
| P1 – RPS Motor Generator Startup (GJPM-OPS-2-2020P1) 212000 A2.01 (3.7) & A1.01 (2.8) | D | 7 |
| P2 – Align Fire Water to RHR 'C' per EP Attachment 26 (GJPM-OPS-2-2020P2) 286000 A1.05 (3.2) | D-E-L-R | 8 |
| P3 – HPCS Diesel Generator Emergency Shutdown (GJPM-OPS-2-2020P3) 264000 A4.04 (3.7) | A-E-N | 6 |
| <p>* 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.</p> | | |
| * Type Codes | Criteria for RO / SRO-I / SRO-U | |
| (A) lternate path | A | 4-6 / 4-6 / 2-3 (5) |
| (C) ontrol room | C | ----- (1) |
| (D) irect from bank | D | ≤ 9 / ≤ 8 / ≤ 4 (8) |
| (E) mergency or abnormal in-plant | E | ≥ 1 / ≥ 1 / ≥ 1 (2) |
| (EN) gineered safety feature | EN | ≥ 1 / ≥ 1 / ≥ 1 (control room sys) (3) |
| (L) ow-Power / Shutdown | L | ≥ 1 / ≥ 1 / ≥ 1 (3) |
| (N) ew or (M) odified from bank including 1 (A) | N-M | ≥ 2 / ≥ 2 / ≥ 1 (3) |
| (P) revious 2 exams | P | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) (1) |
| (R) CA | R | ≥ 1 / ≥ 1 / ≥ 1 (1) |
| (S) imulator | S | (7) |

JPM Description:

S1 – Transfer Recirculation Pumps to Slow Speed (GJPM-OPS-2-2020S1) 202001 A2.04 & A4.01 (3.7)

- This task is to transfer Reactor Recirculation Pumps to slow speed per IOI - 2, 03-1-01-2, Power Operations Attachment IV section 8.8.6 and 8.8.7. Upon transfer to slow speed and reopening of both Recirculation Flow Control Valves to 50%, both Reactor Recirculation Pumps will trip to OFF. With the Reactor Mode Switch in RUN at power and no Reactor Recirculation Pumps operating, entry into the Reduction in Recirculation Flow ONEP 05-1-02-III-3, Immediate Operator Actions step 2.1.2 will be required to insert a Manual Reactor Scram.
- Placing the Reactor Mode Switch to Shutdown will NOT insert Control Rods requiring alternate actions to insert the Control Rods by either arming and depressing the Manual Scram pushbuttons OR Initiating ATWS ARI/RPT which will depressurize the Scram Air Header.

S2 – Retest MSIV Slow Closure (GJPM-OPS-2-2020S2) 239001 A2.11 (4.1)

- This task is to perform a slow closure on MSIV B21-F028A.
- Following the closure of the MSIV, recognize High - High temperature in Main Steam Tunnel without Group 1 MSIV isolation. Applicant should manually close all remaining MSIVs (7) using handswitches on P601 panel to isolate the steam leak.
- At initial power level Main Steam Line Drains should be closed with the exception of B21-F019, INBD MSL DR OTBD DR VLV which has another valve in the line already closed B21-F016, INBD MSL DR INBD DR VLV.

S3 – Performing HPCS Quarterly Functional Test (GJPM-OPS-2-2020S3) 209002: A1.01 (3.6); A4.01 (3.7)

- This task requires the ability to manually start the only ECCS-qualified high pressure injection system.
- This task demonstrates the ability to operate HPCS in the "test return" mode, which puts HPCS flow in a loop from and to the Suppression Pool, one of its two suction sources. HPCS is operated in this mode for surveillance and post-maintenance testing.
- As HPCS is placed in the test return mode the system will experience a failure to initiate and a failure to inject once manually initiated. This will require to arm and depress the initiation pushbutton and then manually open the E22-F004.

S4 – Secure Containment Spray and Align for RPV Injection
(GJPM-OPS-2-2020S4) 226001 A2.20 (3.7) & A4.07 (3.5)

- This task is to secure RHR systems from Containment Spray and align them for injection into the RPV during a LOCA. During the performance one RHR system will not provide sufficient flow to raise RPV water level and the second RHR system will have a failure of E12-F042 LPCI injection valve to open requiring the use of an alternate injection path through E12-F053. Realignment of RHR from Containment Spray to LPCI mode is directed from the Emergency Procedures when there is not Adequate Core Cooling. Use of Shutdown Cooling lines for injection to the RPV from RHR is allowed per the Emergency Procedures and attachments are provided to facilitate this evolution.

S5 – Rotate CCW Pumps
(GJPM-OPS-2-2020S5) 400000 A2.01 (3.3) & A4.01 (3.1)

- This task is to rotate CCW Pumps per SOI. During the evolution, a trip will occur on one of the operating CCW pumps requiring the restart of the non-operating CCW pump per the Loss of CCW ONEP.

S6 – Place Standby Gas Treatment System in STANDBY Mode
(GJPM-OPS-2-2020S6) 261000 A2.13 (3.4) & A4.03 (3.0)

- This task is to place one Standby Gas Treatment System in STANDBY Mode after an automatic initiation signal on Radiation that is still present.

C1 – Defeat Feed Pump Level 9 Trips
(GJPM-OPS-2-2020CR1) 259001 A3.10 3.4/3.4

- This task defeats the High Reactor Water Level trip of the Reactor Feed Pumps, which under certain conditions is directed by the EOPs to maintain adequate core cooling.

S7 – Transfer RPS B to Normal Power Source and RPS A to Alternate Power Source **(RO ONLY)**
(GJPM-OPS-2-2020S7) 212000 A2.19 (3.8) & A4.14 (3.8)

- This task is to align RPS B power to be supplied from its Normal source, the Motor Generator Set, and to align RPS A power to be supplied from its Alternate source, 480V ESF breaker 52-154204.

P1 – RPS Motor Generator Startup
(GJPM-OPS-2-2020P1) 212000 A2.01 (3.7) & A1.01 (2.8)

- This task is to perform a startup of the RPS Motor Generator and align the RPS Bus to the Normal Supply per the SOI.

P2 – Align Fire Water to RHR 'C' per EP Attachment 26
(GJPM-OPS-2-2020P2) 286000 A1.05 (3.2)

- This task simulates routing and connecting fire hoses from hose stations to test connections on ECCS injection piping in the Auxiliary Building.

P3 – HPCS Diesel Generator Emergency Shutdown
(GJPM-OPS-2-2020P3) 264000 A4.04 (3.7)

- This task simulates an auto start of HPCS Diesel Generator with a subsequent oil system failure requiring the operator to EMERGENCY STOP (trip) the HPCS D/G. The Control Room switch and local Emergency Stop switch will not work, the operator must use other means to stop the EDG. Per P81 SOI the lay shaft handle on each diesel engine must be manipulated to stop the EDG.

| | | |
|---|--|--|
| Facility: Grand Gulf Nuclear Station | | Date of Examination: 2/03/2020 |
| Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> | | Operating Test No.: GGNS 2-2020 |

| Control Room Systems* (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF) | | |
|--|---------------------------------|---|
| System / JPM Title | Type Code* | Safety Function |
| S1 – Transfer Recirculation Pumps to Slow Speed (GJPM-OPS-2-2020S1) 202001 A2.04 & A4.01 (3.7) | A-D-S | 1 |
| S2 – Retest MSIV Slow Closure (GJPM-OPS-2-2020S2) 239001 A2.11 (4.1) | A-D-P-S | 3 |
| S3 – Performing HPCS Quarterly Functional Test (GJPM-OPS-2-2020S3) 209002: A1.01 (3.6); A4.01 (3.7) | A-D-S-EN | 4 |
| S4 – Secure Containment Spray and Align for RPV Injection (GJPM-OPS-2-2019S4) 226001 A2.20 (3.7) & A4.07 (3.5) | L-M-S-EN | 5 |
| S5 – Rotate CCW Pumps (GJPM-OPS-2-2020S5) 400000 A2.01 (3.3) & A4.01 (3.1) | A-D-S | 8 |
| S6 – Place Standby Gas Treatment System in STANDBY Mode (GJPM-OPS-2-2020S6) 261000 A2.13 (3.4) & A4.03 (3.0) | L-N-S-EN | 9 |
| C1 – Defeat Feed Pump Level 9 Trips (GJPM-OPS-2-2020CR1) 259001 A3.10 (3.4) | D-C-L | 2 |
| | | |
| In-Plant Systems* (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U) | | |
| P1 – RPS Motor Generator Startup (GJPM-OPS-2-2020P1) 212000 A2.01 (3.7) & A1.01 (2.8) | D | 7 |
| P2 – Align Fire Water to RHR 'C' per EP Attachment 26 (GJPM-OPS-2-2020P2) 286000 A1.05 (3.2) | D-E-L-R | 8 |
| P3 – HPCS Diesel Generator Emergency Shutdown (GJPM-OPS-2-2020P3) 264000 A4.04 (3.7) | A-E-N | 6 |
| <p>* 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.</p> | | |
| * Type Codes | Criteria for RO / SRO-I / SRO-U | |
| (A) lternate path | A | 4-6 / 4-6 / 2-3 (5) |
| (C) ontrol room | C | ----- (1) |
| (D) irect from bank | D | ≤ 9 / ≤ 8 / ≤ 4 (7) |
| (E) mergency or abnormal in-plant | E | ≥ 1 / ≥ 1 / ≥ 1 (2) |
| (EN) gineered safety feature | EN | ≥ 1 / ≥ 1 / ≥ 1 (control room sys) (3) |
| (L) ow-Power / Shutdown | L | ≥ 1 / ≥ 1 / ≥ 1 (3) |
| (N) ew or (M) odified from bank including 1 (A) | N-M | ≥ 2 / ≥ 2 / ≥ 1 (3) |
| (P) revious 2 exams | P | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) (1) |
| (R) CA | R | ≥ 1 / ≥ 1 / ≥ 1 (1) |
| (S) imulator | S | (6) |

JPM Description:

S1 – Transfer Recirculation Pumps to Slow Speed (GJPM-OPS-2-2020S1) 202001 A2.04 & A4.01 (3.7)

- This task is to transfer Reactor Recirculation Pumps to slow speed per IOI - 2, 03-1-01-2, Power Operations Attachment IV section 8.8.6 and 8.8.7. Upon transfer to slow speed and reopening of both Recirculation Flow Control Valves to 50%, both Reactor Recirculation Pumps will trip to OFF. With the Reactor Mode Switch in RUN at power and no Reactor Recirculation Pumps operating, entry into the Reduction in Recirculation Flow ONEP 05-1-02-III-3, Immediate Operator Actions step 2.1.2 will be required to insert a Manual Reactor Scram.
- Placing the Reactor Mode Switch to Shutdown will NOT insert Control Rods requiring alternate actions to insert the Control Rods by either arming and depressing the Manual Scram pushbuttons OR Initiating ATWS ARI/RPT which will depressurize the Scram Air Header.

S2 – Retest MSIV Slow Closure (GJPM-OPS-2-2020S2) 239001 A2.11 (4.1)

- This task is to perform a slow closure on MSIV B21-F028A.
- Following the closure of the MSIV, recognize High - High temperature in Main Steam Tunnel without Group 1 MSIV isolation. Applicant should manually close all remaining MSIVs (7) using handswitches on P601 panel to isolate the steam leak.
- At initial power level Main Steam Line Drains should be closed with the exception of B21-F019, INBD MSL DR OTBD DR VLV which has another valve in the line already closed B21-F016, INBD MSL DR INBD DR VLV.

S3 – Performing HPCS Quarterly Functional Test (GJPM-OPS-2-2020S3) 209002: A1.01 (3.6); A4.01 (3.7)

- This task requires the ability to manually start the only ECCS-qualified high pressure injection system.
- This task demonstrates the ability to operate HPCS in the "test return" mode, which puts HPCS flow in a loop from and to the Suppression Pool, one of its two suction sources. HPCS is operated in this mode for surveillance and post-maintenance testing.
- As HPCS is placed in the test return mode the system will experience a failure to initiate and a failure to inject once manually initiated. This will require to arm and depress the initiation pushbutton and then manually open the E22-F004.

S4 – Secure Containment Spray and Align for RPV Injection
(GJPM-OPS-2-2020S4) 226001 A2.20 (3.7) & A4.07 (3.5)

- This task is to secure RHR systems from Containment Spray and align them for injection into the RPV during a LOCA. During the performance one RHR system will not provide sufficient flow to raise RPV water level and the second RHR system will have a failure of E12-F042 LPCI injection valve to open requiring the use of an alternate injection path through E12-F053. Realignment of RHR from Containment Spray to LPCI mode is directed from the Emergency Procedures when there is not Adequate Core Cooling. Use of Shutdown Cooling lines for injection to the RPV from RHR is allowed per the Emergency Procedures and attachments are provided to facilitate this evolution.

S5 – Rotate CCW Pumps
(GJPM-OPS-2-2020S5) 400000 A2.01 (3.3) & A4.01 (3.1)

- This task is to rotate CCW Pumps per SOI. During the evolution, a trip will occur on one of the operating CCW pumps requiring the restart of the non-operating CCW pump per the Loss of CCW ONEP.

S6 – Place Standby Gas Treatment System in STANDBY Mode
(GJPM-OPS-2-2020S6) 261000 A2.13 (3.4) & A4.03 (3.0)

- This task is to place one Standby Gas Treatment System in STANDBY Mode after an automatic initiation signal on Radiation that is still present.

C1 – Defeat Feed Pump Level 9 Trips
(GJPM-OPS-2-2020CR1) 259001 A3.10 3.4/3.4

- This task defeats the High Reactor Water Level trip of the Reactor Feed Pumps, which under certain conditions is directed by the EOPs to maintain adequate core cooling.

P1 – RPS Motor Generator Startup
(GJPM-OPS-2-2020P1) 212000 A2.01 (3.7) & A1.01 (2.8)

- This task is to perform a startup of the RPS Motor Generator and align the RPS Bus to the Normal Supply per the SOI.

P2 – Align Fire Water to RHR 'C' per EP Attachment 26
(GJPM-OPS-2-2020P2) 286000 A1.05 (3.2)

- This task simulates routing and connecting fire hoses from hose stations to test connections on ECCS injection piping in the Auxiliary Building.

P3 – HPCS Diesel Generator Emergency Shutdown
(GJPM-OPS-2-2020P3) 264000 A4.04 (3.7)

- This task simulates an auto start of HPCS Diesel Generator with a subsequent oil system failure requiring the operator to EMERGENCY STOP (trip) the HPCS D/G. The Control Room switch and local Emergency Stop switch will not work, the operator must use other means to stop the EDG. Per P81 SOI the lay shaft handle on each diesel engine must be manipulated to stop the EDG.

GGNS 2-2020 NRC Scenario 2

Facility: Grand Gulf Nuclear Station Scenario No.: 2 Op-Test No.: GGNS 2-2020-2

Examiners: _____ Operators: _____

Initial Conditions: 100% power, MOC.

Inoperable equipment: None

Turnover: Div 1 work week. Place SSW A in recirculation mode for chemistry sample

| Event No. | Mal. No. | Event Type [†] | Event Description |
|-----------|---|--------------------------------------|---|
| 1 | p41f005a_i | C (BOP, CRS) TS (CRS) | Place SSW A in Recirc for chemistry sample. P41-F005A trip on stroke. LCO 3.7.1, Cond D, 3.8.1, Cond B, 3.6.3.3. Cond A |
| 2 | ftb33n014b_e | C (ATC, CRS) | Recirc suction flow transmitter loses power. PLCO 3.3.1.1 Cond. A and PLCO TR 3.3.2.1 |
| 3 | p43152a | C (BOP, CRS) A (Crew) | TBCW pump trip and standby pump fails to auto start |
| 4 | z025025_60_37 z025025_56_37 z025025_52_37 | C (ATC, CRS) A (Crew) TS (CRS) | 3 control rods scram in due to air leak LCO 3.1.3, Cond C |
| 5 | tc093 | M (CREW) | Spurious Main Turbine Trip |
| 6 | c11164 | M (CREW) | ATWS > 5% power (CT-1) terminates injection to lower Rx level (CT-2) inserts control rods |
| 7 | RF Att. 11 | C (ATC, CRS) | Defeat RWCU isolation on SLC initiation |
| 8 | r21180 | C (BOP, CRS) | ESF 21 lockout |

[†] (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

GGNS 2-2020 NRC Scenario 4

Facility: Grand Gulf Nuclear Station Scenario No.: 4 Op-Test No.: GGNS 2-2020-4

Examiners: _____ Operators: _____

Initial Conditions: 79% power, MOC.

Inoperable equipment: Div 1 diesel generator, E30-F001A

- Div 1 DG is inop due to an oil leak. Div 1 DG will not be restored until next shift.
 - LCO 3.8.1, Condition B
 - SR 3.8.1.1 is next due in 3 hours.
- Suppression Pool Makeup Valve E30-F001A failed its stroke time last shift and is tagged out for troubleshooting.
 - LCO 3.6.2.4, Condition C

Turnover: Sequence exchange completed last shift. Reactor Engineering is verifying rod pattern and thermal limits prior to raising core flow.

| Event No. | Malf. No. | Event Type † | Event Description |
|-----------|--|-------------------------------------|--|
| 1 | c41f004b_a | TS (CRS) | SLC B squib valve failure LCO 3.1.7, Cond D With Div 1 DG inop, LCO 3.1.7, Cond E in 4 hours |
| 2 | n34098 | C (ATC, CRS) A (ALL) | Turbine lube oil temp controller failure |
| 3 | e51188 | I (BOP, CRS) A (ALL) TS (CRS) | Spurious RCIC initiation (TS) LCO 3.5.3, Cond A |
| 4 | r21139d | C (BOP, ATC, CRS) A (ALL) | 28AG lockout |
| 5 | fw203 rr190b | M (CREW) | Recirc pumps downshift / LFMG trip / THI |
| 6 | rr063a | M (CREW) | LOCA |
| 7 | fw171a b21f065a_i | M (CREW) | Feedwater line break in DW, F065A isolation valve trips on stroke. |
| 8 | ct218e ct219b O/Rs e30f002b stem/disc separation | C (ATC, CRS) | HPCS supp pool leak / Door failure / SPMU failure / emergency depressurization. (CT-1) (CT-2) |

† (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal (TS) Tech Spec

SCENARIOS 1 & 3
OMITTED AS THEY WERE
UNUSED SPARE
SCENARIOS AND WERE
PLACED IN THE
LICENSEE'S EXAM BANK