

| BWR EXAMINATION OUTLINE   |    |   |    |    |    |                | Form ES-401-1  |     |               |
|---|----|---|----|----|----|----------------|--|-----|---------------|
| GRAND GULF NUCLEAR STATION  |    | EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1 (RO/SRO) |    |    |    |                |  |     |               |
| E/APE #/NAME/SAFETY FUNCTION  | K1 | K2  | K3 | A1 | A2 | G              | TOPIC(S)   | IR  | #             |
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 CFR |    |   |    |    |    | 2.<br>4.<br>4  | Given plant conditions, parameters, and a loss of the recirculation system, determine appropriate actions.   | 4.0 | 1<br>833      |
| 295003 Partial or Complete Loss of AC Power/ 6 CFR                          |    |   | 01 |    |    |                |  | 3.3 | 2<br>464      |
| 295004 Partial or Complete Loss of DC Power / 6 CFR                         |    |   |    | 02 |    |                | Given plant conditions and a loss of DC power, determine the effect to the <b>SDC</b> system.  | 3.8 | 3<br>834      |
| 295005 Main Turbine Generator Trip / 3 CFR                                  | 03 |   |    |    |    |                | Following a reactor scram and subsequent main turbine generator trip, determine the effects of manual bypass valve operation on reactor water level.           | 3.5 | 4<br>835      |
| 295006 SCRAM / 1 CFR  | 02 |   |    |    |    |                | Given plant conditions following a reactor scram, determine if adequate shutdown margin exists.  | 3.4 | 5<br>836      |
| 295016 Control Room Abandonment / 7 CFR                                     |    |   |    | 01 |    |                | Describe the method used to manually scram the reactor after the control room has been abandoned.  | 3.8 | 6<br>837      |
| 295018 Partial or Complete Loss of CCW / 8 CFR                              | 01 |   |    |    |    |                | Given plant conditions and a partial loss of Component Cooling Water, determine the necessary actions to ensure the plant remains/returns to a safe condition. | 3.5 | 7<br>838      |
| 295019 Partial or Complete Loss of Inst. Air / 8 CFR                        |    |   |    |    | 01 |                | Given indications of a partial loss of Instrument Air determine a method to restore Instrument Air system pressure.  | 3.5 | 8<br>548      |
| 295021 Loss of Shutdown Cooling / 4 CFR                                     |    |   | 01 |    |    |                | Given specific plant conditions following a loss of Shutdown Cooling, determine the reason for raising reactor water level.                                    | 3.3 | 9<br>078<br>a |
| 295023 Refueling Accidents / 8 CFR  | 03 |   |    |    |    |                | Determine the correct operator response to inadvertent criticality following a refueling accident.   | 3.7 | 10<br>848     |
| 295024 High Drywell Pressure / 5 CFR  |    |   |    |    |    | 2.<br>1.<br>23 | Given plant conditions and high drywell pressure, determine the method to lower drywell pressure.  | 3.9 | 11<br>849     |
| 295025 High Reactor Pressure / 3 CFR  |    |   | 06 |    |    |                |  | 4.2 | 12<br>690     |
| 295026 Suppression Pool High Water Temp. / 5 CFR                            |    |   | 01 |    |    |                | Given an ATWS condition, describe the EP bases for lowering reactor pressure as Suppression Pool temperature rises.  | 3.8 | 13<br>840     |
| 295027 High Containment Temperature / 5 CFR                                 |    |   |    | 03 |    |                | Given rising Containment temperature, describe the necessary actions to maintain the plant/containment in a safe condition.                                    | 3.5 | 14<br>844     |
| PAGE 1 TOTAL TIER 1 GROUP 1   | 4  | 0   | 4  | 3  | 1  | 2              | PAGE TOTAL # QUESTIONS   | 14  |               |

| BWR EXAMINATION OUTLINE  |    |   |    |    |    |                |  |     |               |
|--|----|---|----|----|----|----------------|--|-----|---------------|
| GRAND GULF NUCLEAR STATION   |    | EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1 (RO/SRO) |    |    |    |                |  |     | Form ES-401-1 |
| E/APE #/NAME/SAFETY FUNCTION   | K1 | K2  | K3 | A1 | A2 | G              | TOPIC(S)   | IMP | #             |
| 295028 High Drywell Temperature / 5 CFR  | 02 |   |    |    |    |                | Given plant conditions and elevated drywell temperature, determine the effects to control room reactor water level indication. | 2.9 | 15845         |
| 295030 Low Suppression Pool Water Level / 5 CFR  |    |   |    |    |    | 2.<br>2.<br>12 | Given a low suppression pool level condition, determine the effects to other plant systems.                                    | 3.0 | 16846         |
| 295031 Reactor Low Water Level / 2 CFR   |    |   |    | 04 |    |                | Given plant conditions, describe the operation of the High Pressure Core Spray system following a LOCA.                        | 4.3 | 17847         |
| 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 CFR |    |   | 06 |    |    |                | Given plant conditions and an ATWS condition, determine the availability of the main condenser as a heat sink.                 | 3.8 | 18850         |
| 295038 High Offsite Release Rate / 9 CFR   |    |   |    |    | 01 |                | Given a radioactive release from the plant, determine when it is considered to be offsite.                                     | 3.3 | 19851         |
| 600000 Plant Fire On Site / 8  |    |   | 04 |    |    |                | Determine the required procedural actions for a fire on the plant site.  | 2.8 | 20852         |
|  |    |   |    |    |    |                |  |     |               |
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|  |    |   |    |    |    |                |  |     |               |
| PAGE 2 TOTAL TIER 1 GROUP 1  | 1  | 0   | 2  | 1  | 1  | 1              | PAGE TOTAL # QUESTIONS   | 6   |               |
| PAGE 1 TOTAL TIER 1 GROUP 1  | 4  | 0   | 4  | 3  | 1  | 2              | PAGE TOTAL # QUESTIONS   | 14  |               |
| TIER 1 GROUP 1 TOTALS  | 5  | 0   | 6  | 4  | 2  | 3              |  | 20  |               |

| GRAND GULF NUCLEAR STATION                          |    | BWR EXAMINATION OUTLINE<br>EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2<br>(RO/SRO) |    |    |    |                |  | Form ES-401-1 |           |
|---|----|---|----|----|----|----------------|--|---------------|-----------|
| E/APE #/NAME/SAFETY FUNCTION                        | K1 | K2  | K3 | A1 | A2 | G              | TOPIC(S)   | IMP           | #         |
| 295002 Loss of Main Condenser Vacuum / 3<br>CFR     |    | 01  |    |    |    |                | Given plant conditions and degrading main condenser vacuum, determine the automatic plant response (RPS actuation).  | 3.5           | 21<br>854 |
| 295007 High Reactor Pressure / 3<br>CFR             |    |   |    |    |    | 2.<br>4.<br>35 | Determine the conditions necessary to require connection of an alternate air source to the SRVs.   | 3.3           | 22<br>855 |
| 295008 High Reactor Water Level / 2                 |    |   |    |    |    |                |  |               |           |
| 295009 Low Reactor Water Level / 2                  |    |   |    |    |    |                |  |               |           |
| 295010 High Drywell Pressure / 5                    |    |   |    |    |    |                |  |               |           |
| 295011 High Containment Temperature / 5             |    |   |    |    |    |                |  |               |           |
| 295012 High Drywell Temperature / 5                 |    |   |    |    |    |                |  |               |           |
| 295013 High Suppression Pool Water Temp. / 5<br>CFR |    |   |    |    | 02 |                | Describe the preferred method to minimize localized suppression pool heating when using the SRVs to control reactor pressure without suppression cooling in service. | 3.2           | 23<br>856 |
| 295014 Inadvertent Reactivity Addition / 1          |    |   |    |    |    |                |  |               |           |
| 295015 Incomplete SCRAM / 1                         |    |   |    |    |    |                |  |               |           |
| 295017 High Offsite Release Rate / 9                |    |   |    |    |    |                |  |               |           |
| 295020 Inadvertent Cont. Isolation / 5 & 7          |    |   |    |    |    |                |  |               |           |
| 295022 Loss of CRD Pumps / 1                        |    |   |    |    |    |                |  |               |           |
| 295029 High Suppression Pool Water Level / 5        |    |   |    |    |    |                |  |               |           |
| PAGE 1 TOTAL TIER 1 GROUP 2                         | 0  | 1   | 0  | 0  | 1  | 1              | PAGE TOTAL # QUESTIONS   | 3             |           |

| <b>GRAND GULF NUCLEAR STATION</b>                               |           | <b>BWR EXAMINATION OUTLINE<br/>EMERGENCY &amp; ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2<br/>(RO/SRO)</b> |           |           |           |          |   | <b>Form ES-401-1</b> |           |
|---|-----------|--|-----------|-----------|-----------|----------|---|----------------------|-----------|
| <b>E/APE #/NAME/SAFETY FUNCTION</b>                             | <b>K1</b> | <b>K2</b>  | <b>K3</b> | <b>A1</b> | <b>A2</b> | <b>G</b> | <b>TOPIC(S)</b>   | <b>IMP</b>           | <b>#</b>  |
| 295032 High Secondary Containment Area Temperature / 5 CFR      |           |  | 02        |           |           |          | Given plant conditions including elevated Auxiliary Building temperatures, describe the conditions that would require a reactor scram.                                  | 3.5                  | 24<br>857 |
| 295033 High Secondary Containment Area Radiation Levels / 9     |           |  |           |           |           |          |   |                      |           |
| 295034 Secondary Containment Ventilation High Radiation / 9 CFR |           | 03   |           |           |           |          | Given plant conditions including elevated Auxiliary Building radiation levels, describe the conditions that would automatically start the Standby Gas Treatment system. | 4.3                  | 25<br>858 |
| 295035 Secondary Containment High Differential Pressure / 5 CFR | 02        |  |           |           |           |          | Given accident conditions and a Standby Gas Treatment system failure, determine the type of release.  |                      | 26<br>859 |
| 295036 Secondary Containment High Sump/Area Water Level / 5 CFR |           |  |           | 01        |           |          | Describe the system logic used by the Auxiliary Building Floor Drain system to contain a significant CCW system rupture.  | 3.2                  | 27<br>860 |
| 500000 High CTMT Hydrogen Conc. / 5                             |           |  |           |           |           |          |   |                      |           |
| PAGE 2 TOTAL TIER 1 GROUP 2                                     | 1         | 1  | 1         | 1         | 0         | 0        | PAGE TOTAL # QUESTIONS  | 4                    |           |
| PAGE 1 TOTAL TIER 1 GROUP 2                                     | 0         | 1  | 0         | 0         | 1         | 1        | PAGE TOTAL # QUESTIONS  | 3                    |           |
| TIER 1 GROUP 2 TOTALS   | 1         | 2  | 1         | 1         | 1         | 1        |   | 7                    |           |

| GRAND GULF<br>NUCLEAR STATION             |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 1 (RO/SRO) |    |    |    |    |    |    |    |    |                    | Form ES-401-1   |     |           |
|---|----|--|----|----|----|----|----|----|----|----|--------------------|---|-----|-----------|
| SYSTEM #/NAME                             | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G                  | TOPIC(S)  | IMP | #         |
| 203000 RHR/LPCI:<br>Injection Mode<br>CFR |    |  |    |    | 02 |    |    |    |    |    |                    | Given plant conditions, describe the design features and limits of the RHR pump manual override feature.                | 3.5 | 28<br>861 |
| 205000 Shutdown<br>Cooling<br>CFR         |    |  |    | 04 |    |    |    |    |    |    |                    | Describe the RHR Shutdown Cooling system NPSH interlocks.   | 2.6 | 29<br>862 |
| 206000 HPCI                               |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS  |     |           |
| 207000 Isolation<br>(Emergency) Condenser |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS  |     |           |
| 209001 LPCS<br>CFR                        |    |  |    |    |    |    |    |    |    | 01 |                    | Given degraded plant conditions during a LOCA, describe LPCS manual operation.  | 3.8 | 30<br>863 |
| 209002 HPCS<br>CFR                        |    |  |    |    |    |    |    |    |    | 09 |                    | Describe available methods to raise/lower suppression pool level using HPCS.  | 3.4 | 31<br>864 |
| 209002 HPCS<br>CFR                        |    |  |    |    |    |    |    |    |    |    | 2.<br>1.<br>2<br>8 | Describe the bases for the HPCS injection valve high reactor water level interlock.                                     | 3.2 | 32<br>865 |
| 211000 SLC<br>CFR                         |    |  |    |    |    |    |    | 02 |    |    |                    | Predict the SLC system indication and response with indication the squib valve failed to actuate and follow up actions. | 3.6 | 33<br>866 |
| 212000 RPS<br>CFR                         |    |  |    |    |    |    |    | 12 |    |    |                    | Given plant conditions including a partial main turbine stop/control valve closure, determine the effect to RPS.        | 4.0 | 34<br>867 |
| 215003 IRM<br>CFR                         |    |  |    |    | 03 |    |    |    |    |    |                    | Describe the reason for the precaution concerning driving IRMs during surveillance activities.                          | 3.0 | 35<br>868 |
| 215004 Source Range<br>Monitor<br>CFR     |    |  |    |    |    |    |    |    |    |    | 2.<br>2.<br>3<br>3 | Describe the SRM precaution warning of a potential control rod block even if the channel is bypassed.                   | 2.5 | 36<br>869 |
| 215005 APRM /<br>LPRM<br>CFR              |    | 02   |    |    |    |    |    |    |    |    |                    | Given a partial loss of plant electrical power, determine the effect to the APRMs.                                      | 2.6 | 37<br>870 |
| 217000 RCIC<br>CFR                        |    |  |    |    |    |    | 02 |    |    |    |                    | Predict how a reactor pressure change will affect RCIC system flow.   | 3.3 | 38<br>871 |
| PAGE 1 TOTAL                              |    |  |    |    |    |    |    |    |    |    |                    | PAGE TOTAL #  |     |           |

|                |   |   |   |   |   |   |   |   |   |   |   |           |    |  |
|----------------|---|---|---|---|---|---|---|---|---|---|---|-----------|----|--|
| TIER 2 GROUP 1 | 0 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 2 | 2 | QUESTIONS | 11 |  |
|----------------|---|---|---|---|---|---|---|---|---|---|---|-----------|----|--|

| GRAND GULF<br>NUCLEAR STATION                        |        | 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                  | TOPIC(S)   | IMP | #              |
| 218000 ADS<br>CFR                                    |        | 01   |        |        |        |        |        |        |        |        |                    | Describe the relationship between ADS Logic power and the operation of the ADS logic.  | 3.1 | 39<br>872      |
| 223002 PCIS / Nuclear<br>Steam Supply Shutoff<br>CFR |        |  |        |        |        |        |        | 03     |        |        |                    | Determine the operator actions required to mitigate a NSSSS logic failure.   | 3.0 | 40<br>873      |
| 239002 SRVs<br>CFR                                   |        |  |        | 09     |        |        |        |        |        |        |                    | Describe the design features available to determine if a SRV is open.  | 3.7 | 41<br>874      |
| 259002 Reactor Water<br>Level Control<br>CFR         |        |  |        |        |        |        |        | 04     |        |        |                    | <i>Describe the operator response to a failure of RFPT speed control with speed rising.</i>                                  | 3.0 | 42<br>875      |
| 259002 Reactor Water<br>Level Control<br>CFR         |        |  |        |        |        |        |        |        |        | 06     |                    | Describe prerequisites for transferring the Feedwater system to 3-element control.   | 3.1 | 43<br>233<br>a |
| 261000 SGTS<br>CFR                                   |        |  |        |        |        |        |        |        | 03     |        |                    | Describe the SGTS damper logic following system initiation.  | 3.0 | 44<br>876      |
| 262001 AC Electrical<br>Distribution<br>CFR          |        |  |        |        |        | 01     |        |        |        |        |                    | Given plant conditions and a partial loss of DC power, determine the affect to the AC distribution system.                   | 3.1 | 45<br>877      |
| 262002 UPS (AC/DC)<br>CFR                            |        |  |        | 01     |        |        |        |        |        |        |                    | Given plant conditions and degraded AC power, determine the status of plant inverters.                                       | 3.1 | 46<br>878      |
| 263000 DC Electrical<br>Distribution<br>CFR          |        |  |        | 01     |        |        |        |        |        |        |                    | Given a loss of AC power to battery chargers, determine the affects to the DC distribution system.                           |     | 47<br>879      |
| 264000 EDGs<br>CFR                                   |        |  |        |        |        |        |        | 10     |        |        |                    | Describe EDG response to a LOCA.   | 3.9 | 48<br>880      |
| 264000 EDGs<br>CFR                                   |        |  |        |        |        |        |        |        |        |        | 2.<br>4.<br>4<br>8 | Determine EDG status from control room alarms and indications and any required operator actions to improve plant conditions. | 3.5 | 49<br>881      |
| 300000 Instrument Air<br>CFR                         |        |  | 01     |        |        |        |        |        |        |        |                    | Determine the effect on the plant given a loss of Instrument Air to the containment.   | 2.7 | 50<br>882      |
| PAGE 2 TOTAL<br>TIER 2 GROUP 1                       | 0      | 1  | 1      | 3      | 0      | 1      | 0      | 3      | 1      | 1      | 1                  | PAGE TOTAL #<br>QUESTIONS  | 12  |                |

| GRAND GULF<br>NUCLEAR STATION            |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 1 (RO/SRO) |    |    |    |    |    |    |    |    |   | Form ES-401-1   |     |           |
|--|----|--|----|----|----|----|----|----|----|----|---|---|-----|-----------|
| SYSTEM #/NAME                            | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC(S)  | IMP | #         |
| 300000 Instrument Air<br>CFR             |    |  |    |    |    | 13 |    |    |    |    |   | Determine the affect of a<br>clogged filter on the<br>Instrument Air system.              | 2.8 | 51<br>883 |
| 400000 Component<br>Cooling Water<br>CFR | 04 |  |    |    |    |    |    |    |    |    |   | Determine the method<br>used to confirm a reactor<br>coolant leak into the CCW<br>system. | 2.9 | 52<br>884 |
| 400000 Component<br>Cooling Water<br>CFR |    |  |    |    |    |    | 02 |    |    |    |   | Determine the affect to the<br>plant if the CCW<br>temperature control fails.             | 2.8 | 53<br>885 |
| PAGE 3 TOTAL<br>TIER 2 GROUP 1           | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0 | PAGE TOTAL #<br>QUESTIONS   | 3   |           |
| PAGE 1 TOTAL<br>TIER 2 GROUP 1           | 0  | 1  | 0  | 1  | 2  | 0  | 1  | 2  | 0  | 2  | 2 | PAGE TOTAL #<br>QUESTIONS   | 11  |           |
| PAGE 2 TOTAL<br>TIER 2 GROUP 1           | 0  | 1  | 1  | 3  | 0  | 1  | 0  | 3  | 1  | 1  | 1 | PAGE TOTAL #<br>QUESTIONS   | 12  |           |
| TIER 2GROUP 1<br>TOTALS                  | 1  | 2  | 1  | 4  | 2  | 2  | 2  | 5  | 1  | 3  | 3 |   | 26  |           |



| GRAND GULF<br>NUCLEAR STATION              |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 2 (RO/SRO) |    |    |    |    |    |    |    |    |                    | Form ES-401-1  |     |           |
|--|----|--|----|----|----|----|----|----|----|----|--------------------|--|-----|-----------|
| SYSTEM #/NAME                              | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G                  | TOPIC(S)   | IMP | #         |
| 201001 CRD Hydraulic CFR                   |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| 201002 RMCS                                |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 201003 Control Rod and Drive Mechanism CFR |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| 201004 RSCS                                |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 201005 RCIS CFR                            |    |  |    |    | 10 |    |    |    |    |    |                    | Describe the purpose for the rod withdrawal limiter.   | 3.2 | 54<br>886 |
| 201006 RWM                                 |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 202001 Recirculation CFR                   |    |  |    |    |    |    |    |    |    |    | 2.<br>4.<br>1<br>1 |  | 3.4 | 55<br>887 |
| 202002 Recirculation Flow Control CFR41.6  | 01 |  |    |    |    |    |    |    |    |    |                    | Given plant conditions, determine any automatic actions associated with the Recirculation System HPUs. | 3.5 | 56<br>888 |
| 204000 RWCUCFR                             |    |  |    | 06 |    |    |    |    |    |    |                    | Determine the correct flow path to use RWCUC as an alternate shutdown cooling.                         | 2.6 | 57<br>889 |
| 214000 RPIS                                |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 215001 Traversing In-Core Probe CFR        |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| 215002 RBM                                 |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
|  |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
|  |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| PAGE 1 TOTAL<br>TIER 2 GROUP 2             | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1                  | PAGE TOTAL #<br>QUESTIONS  | 4   |           |

| GRAND GULF<br>NUCLEAR STATION                      |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 2 (RO/SRO) |    |    |    |    |    |    |    |    |               | Form ES-401-1   |     |           |
|--|----|--|----|----|----|----|----|----|----|----|---------------|---|-----|-----------|
| SYSTEM #/NAME                                      | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G             | TOPIC(S)  | IMP | #         |
| 216000 Nuclear Boiler Instrumentation CFR          |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 219000 RHR /LPCI Suppression Pool Cooling Mode CFR |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 223001 Primary CTMT and Auxiliaries CFR            | 08 |  |    |    |    |    |    |    |    |    |               | Determine the limitations to SRV usage given a reduced suppression pool level.              | 3.6 | 58<br>890 |
| 226001 RHR/LPCI: CTMT Spray Mode CFR               |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 230000 RHR/LPCI: Torus/Pool Spray Mode             |    |  |    |    |    |    |    |    |    |    |               | N/A GGNS  |     |           |
| 233000 Fuel Pool Cooling and Cleanup CFR           |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 234000 Fuel Handling Equipment CFR                 |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 239001 Main and Reheat Steam CFR                   |    |  | 04 |    |    |    |    |    |    |    |               | Given plant conditions including a MSIV closure, determine the affect to the Offgas system. | 2.8 | 59<br>891 |
| 239003 MSIV Leakage Control CFR                    | 02 |  |    |    |    |    |    |    |    |    |               | Explain the relationship between the MSIV Leakage Control system and SGTS.                  | 2.9 | 60<br>892 |
| 241000 Reactor/Turbine Pressure Regulator CFR      |    |  |    |    |    |    |    |    |    |    | 2.<br>4.<br>6 | Describe the bases for each of the Scram ONEP immediate actions.                            | 3.1 | 61<br>893 |
| PAGE 2 TOTAL<br>TIER 2 GROUP 2                     | 2  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0             | PAGE TOTAL #<br>QUESTIONS   | 4   |           |

| GRAND GULF<br>NUCLEAR STATION             |        | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 2 (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 | TOPIC(S)   | IMP | #         |
| 245000 Main Turbine<br>Gen./Aux.<br>CFR   |        |  |        |        |        |        |        |        | 02     |        |   | Determine main turbine<br>critical speeds as it is<br>rolled to rated speed.   | 2.8 | 62<br>894 |
| 256000 Reactor<br>Condensate<br>CFR       |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| 259001 Reactor Feedwater<br>CFR           |        |  |        |        |        |        |        | 03     |        |        |   | Determine necessary<br>actions and priorities<br>immediately after a single<br>condensate pump trips<br>with the plant at rated<br>conditions. | 3.6 | 63<br>895 |
| 268000 Radwaste<br>CFR                    | 04     |  |        |        |        |        |        |        |        |        |   | Determine the Drywell<br>Floor Drains indications<br>available to detect drywell<br>general area leakage.                                      | 2.7 | 64<br>896 |
| 271000 Offgas<br>CFR                      |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| 272000 Radiation<br>Monitoring<br>CFR     |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| 286000 Fire Protection<br>CFR             |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| 288000 Plant Ventilation<br>CFR           |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| 290001 Secondary CTMT<br>CFR              |        |  |        | 03     |        |        |        |        |        |        |   | Determine inputs to the<br>Fuel Pool leak detection<br>standpipe.  | 2.8 | 65<br>897 |
| 290003 Control Room<br>HVAC<br>CFR        |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| 290002 Reactor Vessel<br>Internals<br>CFR |        |  |        |        |        |        |        |        |        |        |   |  |     |           |
| PAGE 3 TOTAL<br>TIER 2 GROUP 2            | 1      | 0  | 0      | 1      | 0      | 0      | 0      | 1      | 1      | 0      | 0 | PAGE TOTAL #<br>QUESTIONS  | 4   |           |
| PAGE 1 TOTAL<br>TIER 2 GROUP 2            | 1      | 0  | 0      | 1      | 1      | 0      | 0      | 0      | 0      | 0      | 1 | PAGE TOTAL #<br>QUESTIONS  | 4   |           |
| PAGE 2 TOTAL<br>TIER 2 GROUP 2            | 2      | 0  | 1      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 1 | PAGE TOTAL #<br>QUESTIONS  | 4   |           |
| TIER 2 GROUP 2<br>TOTALS                  | 4      | 0  | 1      | 2      | 1      | 0      | 0      | 1      | 1      | 0      | 2 |  | 12  |           |

| Facility: <b>Grand Gulf Nuclear Station</b> Date of Exam: <b>12 August 2005</b> |          |  |     |            |          |   |
|---|----------|--|-----|------------|----------|---|
| Category  | K/ A#    | Topic  | RO  |            | SRO-Only |   |
|   |          |  | IR  | #          | IR       | # |
| 1.<br>Conduct<br>Of Operations  | 2.1.19   | Given plant conditions and the PDS computer, determine necessary actions based on PBDS counts.   | 3.0 | 66<br>898  |          |   |
|   | 2.1.25   | Given plant conditions and EOP-3 graphs, determine the correct mitigation strategy.  | 2.8 | 67<br>899  |          |   |
|   | 2.1.29   | Determine the correct locking device color coding for locked components.   | 3.4 | 68<br>237a |          |   |
|   | 2.1      |  |     |            |          |   |
|   | 2.1      |  |     |            |          |   |
|   | 2.1      |  |     |            |          |   |
|   | Subtotal |  |     | 3          |          |   |
| 2.<br>Equipment<br>Control  | 2.2.1    | Given plant conditions, determine proper operation of the IRMs.  | 3.7 | 69<br>900  |          |   |
|   | 2.2.30   | Discuss the duties of the operator assigned to communicate with the refueling floor SRO during core alterations.                               | 3.5 | 70<br>901  |          |   |
|   | 2.2      |  |     |            |          |   |
|   | 2.2      |  |     |            |          |   |
|   | 2.2      |  |     |            |          |   |
|   | 2.2      |  |     |            |          |   |
|   | Subtotal |  |     | 2          |          |   |
| 3.<br>Radiation<br>Control  | 2.3.1    | Given the need to enter a high radiation area, determine the allowed time in the area to prevent exceeding the administrative exposure limits. | 2.6 | 71<br>902  |          |   |
|   | 2.3.4    | Given plant conditions and applicable Emergency Planning Procedures, determine the radiation exposure limits that are in effect.               | 2.5 | 72<br>903  |          |   |
|   | 2.3      |  |     |            |          |   |
|   | 2.3      |  |     |            |          |   |
|   | 2.3      |  |     |            |          |   |
|   | 2.3      |  |     |            |          |   |
|   | Subtotal |  |     | 2          |          |   |
| 4.<br>Emergency<br>Procedures /<br>Plan   | 2.4.20   | Given plant conditions, determine the bases for any applicable EOP cautions.   | 3.3 | 73<br>904  |          |   |
|   | 2.4.25   | Given plant conditions including a fire, determine the proper response.  | 2.9 | 74<br>905  |          |   |
|   | 2.4.43   | Given plant conditions and Emergency Plan Procedures, determine the available emergency communications systems.                                | 2.8 | 75<br>906  |          |   |
|   | 2.4      |  |     |            |          |   |
|   | 2.4      |  |     |            |          |   |
|   | 2.4      |  |     |            |          |   |
|   | Subtotal |  |     | 3          |          |   |
| Tier 3 Point Total  |          |  |     | 10         |          | 7 |

| <div style="display: flex; justify-content: space-between;"> <div> <b>GRAND GULF NUCLEAR STATION</b> </div> <div> <b>BWR EXAMINATION OUTLINE</b><br/> <b>EMERGENCY &amp; ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1</b><br/> <b>(RO/SRO)</b> </div> <div> <b>Form ES-401-1</b> </div> </div> |    |    |    |    |    |                |  |     |               |
|--|----|----|----|----|----|----------------|--|-----|---------------|
| E/APE #/NAME/SAFETY FUNCTION   | K1 | K2 | K3 | A1 | A2 | G              | TOPIC(S)   | IR  | #             |
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 CFR  |    |    |    |    |    | 2.<br>4.<br>4  | Given plant conditions, parameters, and a loss of the recirculation system, determine appropriate actions.   | 4.3 | 1<br>833      |
| 295003 Partial or Complete Loss of AC Power/ 6 CFR   |    |    | 01 |    |    |                |  | 3.5 | 2<br>464      |
| 295004 Partial or Complete Loss of DC Power / 6 CFR  |    |    |    | 02 |    |                | Given plant conditions and a loss of DC power, determine the effect to the <b>SDC</b> system.  | 4.1 | 3<br>834      |
| 295005 Main Turbine Generator Trip / 3 CFR   | 03 |    |    |    |    |                | Following a reactor scram and subsequent main turbine generator trip, determine the effects of manual bypass valve operation on reactor water level.           | 3.7 | 4<br>835      |
| 295006 SCRAM / 1 CFR   | 02 |    |    |    |    |                | Given plant conditions following a reactor scram, determine if adequate shutdown margin exists.  | 3.7 | 5<br>836      |
| 295016 Control Room Abandonment / 7 CFR  |    |    |    | 01 |    |                | Describe the method used to manually scram the reactor after the control room has been abandoned.  | 3.9 | 6<br>837      |
| 295018 Partial or Complete Loss of CCW / 8 CFR   | 01 |    |    |    |    |                | Given plant conditions and a partial loss of Component Cooling Water, determine the necessary actions to ensure the plant remains/returns to a safe condition. | 3.6 | 7<br>838      |
| 295019 Partial or Complete Loss of Inst. Air / 8 CFR   |    |    |    |    | 01 |                | Given indications of a partial loss of Instrument Air determine a method to restore Instrument Air system pressure.  | 3.6 | 8<br>548      |
| 295021 Loss of Shutdown Cooling / 4 CFR  |    |    | 01 |    |    |                | Given specific plant conditions following a loss of Shutdown Cooling, determine the reason for raising reactor water level.                                    | 3.4 | 9<br>078<br>a |
| 295023 Refueling Accidents / 8 CFR   | 03 |    |    |    |    |                | Determine the correct operator response to inadvertent criticality following a refueling accident.   | 4.0 | 10<br>848     |
| 295024 High Drywell Pressure / 5 CFR   |    |    |    |    |    | 2.<br>1.<br>23 | Given plant conditions and high drywell pressure, determine the method to lower drywell pressure.  | 4.0 | 11<br>849     |
| 295025 High Reactor Pressure / 3 CFR   |    |    | 06 |    |    |                |  | 4.4 | 12<br>690     |
| 295026 Suppression Pool High Water Temp. / 5 CFR   |    |    | 01 |    |    |                | Given an ATWS condition, describe the EP bases for lowering reactor pressure as Suppression Pool temperature rises.  | 4.1 | 13<br>840     |
| 295027 High Containment Temperature / 5 CFR  |    |    |    | 03 |    |                | Given rising Containment temperature, describe the necessary actions to maintain the plant/containment in a safe condition.                                    | 3.8 | 14<br>844     |
| PAGE 1 TOTAL TIER 1 GROUP 1  | 4  | 0  | 4  | 3  | 1  | 2              | PAGE TOTAL # QUESTIONS   | 14  |               |

| BWR EXAMINATION OUTLINE  |   |    |    |    |    |          | Form ES-401-1  |      |        |
|--|---|----|----|----|----|----------|--|------|--------|
| GRAND GULF NUCLEAR STATION   | EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 1 (RO/SRO) |    |    |    |    |          |  |      |        |
| E/APE #/NAME/SAFETY FUNCTION   | K1  | K2 | K3 | A1 | A2 | G        | TOPIC(S)   | IMP  | #      |
| 295028 High Drywell Temperature / 5 CFR  | 02  |    |    |    |    |          | Given plant conditions and elevated drywell temperature, determine the effects to control room reactor water level indication.   | 3.1  | 15 845 |
| 295030 Low Suppression Pool Water Level / 5 CFR  |   |    |    |    |    | 2. 2. 12 | Given a low suppression pool level condition, determine the effects to other plant systems.  | 3.4  | 16 846 |
| 295031 Reactor Low Water Level / 2 CFR   |   |    |    | 04 |    |          | Given plant conditions, describe the operation of the High Pressure Core Spray system following a LOCA.  | 4.2  | 17 847 |
| 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 CFR |   |    | 06 |    |    |          | Given plant conditions and an ATWS condition, determine the availability of the main condenser as a heat sink.   | 4.1  | 18 850 |
| 295038 High Offsite Release Rate / 9 CFR   |   |    |    |    | 01 |          | Given a radioactive release from the plant, determine when it is considered to be offsite.   | 4.3  | 19 851 |
| 600000 Plant Fire On Site / 8  |   |    | 04 |    |    |          | Determine the required procedural actions for a fire on the plant site.  | 3.4  | 20 852 |
| 295004 Partial or Complete Loss of DC Power / 6 CFR                                      |   |    |    |    | 02 |          | Given a loss of Division 1 DC logic power, determine the affect to the Division 1 ECCS.  | 3.9* | 76 908 |
| 295005 Main Turbine Generator Trip / 3 CFR   |   |    |    |    |    | 2. 3. 5  | Given plant data including current area dose rates, determine the required personnel monitoring equipment needed to enter the main turbine/generator area to investigate the cause for a trip. | 2.5* | 77 909 |
| 295026 Suppression Pool High Water Temp. / 5 CFR   |   |    |    |    | 03 |          | Given plant conditions including rising Suppression Pool temperature, interpret HCTL and determine appropriate actions.  | 4.0* | 78 910 |
| 295027 High Containment Temperature / 5 CFR  |   |    |    |    |    | 2. 2. 22 | Explain the bases for the Technical Specification Containment average air temperature limit.   | 4.1* | 79 911 |
| 295030 Low Suppression Pool Water Level / 5 CFR  |   |    |    |    | 02 |          | Given low suppression pool water level, determine if suppression pool temperature can/cannot be measured and why.  | 3.9* | 80 912 |
| 295038 High Offsite Release Rate / 9 CFR   |   |    |    |    |    | 2. 2. 28 | Given a severe case fuel handling accident, explain the processes designed to prevent high offsite release rates.  | 3.5* | 81 913 |
| 600000 Plant Fire On Site / 8  |   |    |    |    | 16 |          | Describe the basis for separating vital equipment from the Main Control Room during a fire in the Main Control Room.   | 3.5* | 82 914 |
|  |   |    |    |    |    |          | * SRO Only Questions   |      |        |
| PAGE 2 TOTAL TIER 1 GROUP 1  | 1   | 0  | 2  | 1  | 5  | 4        | PAGE TOTAL # QUESTIONS   | 13   |        |
| PAGE 1 TOTAL TIER 1 GROUP 1  | 4   | 0  | 4  | 3  | 1  | 2        | PAGE TOTAL # QUESTIONS   | 14   |        |
| TIER 1 GROUP 1 TOTALS  | 5   | 0  | 6  | 4  | 6  | 6        |  | 27   |        |

| GRAND GULF NUCLEAR STATION                          |    | BWR EXAMINATION OUTLINE<br>EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2<br>(RO/SRO) |    |    |    |                |  | Form ES-401-1 |           |
|---|----|---|----|----|----|----------------|--|---------------|-----------|
| E/APE #/NAME/SAFETY FUNCTION                        | K1 | K2  | K3 | A1 | A2 | G              | TOPIC(S)   | IMP           | #         |
| 295002 Loss of Main Condenser Vacuum / 3<br>CFR     |    | 01  |    |    |    |                | Given plant conditions and degrading main condenser vacuum, determine the automatic plant response (RPS actuation).  | 3.5           | 21<br>854 |
| 295007 High Reactor Pressure / 3<br>CFR             |    |   |    |    |    | 2.<br>4.<br>35 | Determine the conditions necessary to require connection of an alternate air source to the SRVs.   | 3.5           | 22<br>855 |
| 295008 High Reactor Water Level / 2                 |    |   |    |    |    |                |  |               |           |
| 295009 Low Reactor Water Level / 2                  |    |   |    |    |    |                |  |               |           |
| 295010 High Drywell Pressure / 5                    |    |   |    |    |    |                |  |               |           |
| 295011 High Containment Temperature / 5             |    |   |    |    |    |                |  |               |           |
| 295012 High Drywell Temperature / 5                 |    |   |    |    |    |                |  |               |           |
| 295013 High Suppression Pool Water Temp. / 5<br>CFR |    |   |    |    | 02 |                | Describe the preferred method to minimize localized suppression pool heating when using the SRVs to control reactor pressure without suppression cooling in service. | 3.5           | 23<br>856 |
| 295014 Inadvertent Reactivity Addition / 1          |    |   |    |    |    |                |  |               |           |
| 295015 Incomplete SCRAM / 1                         |    |   |    |    |    |                |  |               |           |
| 295017 High Offsite Release Rate / 9                |    |   |    |    |    |                |  |               |           |
| 295020 Inadvertent Cont. Isolation / 5 & 7          |    |   |    |    |    |                |  |               |           |
| 295022 Loss of CRD Pumps / 1                        |    |   |    |    |    |                |  |               |           |
| 295029 High Suppression Pool Water Level / 5        |    |   |    |    |    |                |  |               |           |
| PAGE 1 TOTAL TIER 1 GROUP 2                         | 0  | 1   | 0  | 0  | 1  | 1              | PAGE TOTAL # QUESTIONS   | 3             |           |

| GRAND GULF NUCLEAR STATION                                      |    | BWR EXAMINATION OUTLINE<br>EMERGENCY & ABNORMAL PLANT EVOLUTIONS - TIER 1 GROUP 2<br>(RO/SRO) |    |    |    |                |   | Form ES-401-1 |           |
|---|----|---|----|----|----|----------------|---|---------------|-----------|
| E/APE #/NAME/SAFETY FUNCTION                                    | K1 | K2  | K3 | A1 | A2 | G              | TOPIC(S)  | IMP           | #         |
| 295032 High Secondary Containment Area Temperature / 5 CFR      |    |   | 02 |    |    |                | Given plant conditions including elevated Auxiliary Building temperatures, describe the conditions that would require a reactor scram.                                  | 3.8           | 24<br>857 |
| 295033 High Secondary Containment Area Radiation Levels / 9     |    |   |    |    |    |                |   |               |           |
| 295034 Secondary Containment Ventilation High Radiation / 9 CFR |    | 03  |    |    |    |                | Given plant conditions including elevated Auxiliary Building radiation levels, describe the conditions that would automatically start the Standby Gas Treatment system. | 4.5           | 25<br>858 |
| 295035 Secondary Containment High Differential Pressure / 5 CFR | 02 |   |    |    |    |                | Given accident conditions and a Standby Gas Treatment system failure, determine the type of release.  | 4.2           | 26<br>859 |
| 295036 Secondary Containment High Sump/Area Water Level / 5 CFR |    |   |    | 01 |    |                | Describe the system logic used by the Auxiliary Building Floor Drain system to contain a significant CCW system rupture.  | 3.3           | 27<br>860 |
| 500000 High CTMT Hydrogen Conc. / 5                             |    |   |    |    |    |                |   |               |           |
| 295011 High Containment Temperature / 5 CFR                     |    |   |    |    | 01 |                | Given LOCA conditions, determine when containment spray should be initiated.  | 3.9*          | 83<br>915 |
| 295014 Inadvertent Reactivity Addition / 1 CFR                  |    |   |    |    |    | 2.<br>1.<br>14 | Given a control rod drifting out with the plant at power, determine any necessary notifications.  | 3.3*          | 84<br>916 |
| 295020 Inadvertent Cont. Isolation / 5 & 7 CFR                  |    |   |    |    | 03 |                | Given a partial MSIV closure, determine the affect on reactor power.  | 3.7*          | 85<br>917 |
|   |    |   |    |    |    |                | * SRO Only Questions  |               |           |
| PAGE 2 TOTAL TIER 1 GROUP 2                                     | 1  | 1   | 1  | 1  | 2  | 1              | PAGE TOTAL # QUESTIONS  | 7             |           |
| PAGE 1 TOTAL TIER 1 GROUP 2                                     | 0  | 1   | 0  | 0  | 1  | 1              | PAGE TOTAL # QUESTIONS  | 3             |           |
| TIER 1 GROUP 2 TOTALS   | 1  | 2   | 1  | 1  | 3  | 2              |   | 10            |           |



| GRAND GULF<br>NUCLEAR STATION             |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 1 (RO/SRO) |    |    |    |    |    |    |    |    |                    | Form ES-401-1   |     |           |
|---|----|--|----|----|----|----|----|----|----|----|--------------------|---|-----|-----------|
| SYSTEM #/NAME                             | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G                  | TOPIC(S)  | IMP | #         |
| 203000 RHR/LPCI:<br>Injection Mode<br>CFR |    |  |    |    | 02 |    |    |    |    |    |                    | Given plant conditions, describe the design features and limits of the RHR pump manual override feature.                | 3.7 | 28<br>861 |
| 205000 Shutdown<br>Cooling<br>CFR         |    |  |    | 04 |    |    |    |    |    |    |                    | Describe the RHR Shutdown Cooling system NPSH interlocks.   | 2.6 | 29<br>862 |
| 206000 HPCI                               |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS  |     |           |
| 207000 Isolation<br>(Emergency) Condenser |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS  |     |           |
| 209001 LPCS<br>CFR                        |    |  |    |    |    |    |    |    |    | 01 |                    | Given degraded plant conditions during a LOCA, describe LPCS manual operation.  | 3.6 | 30<br>863 |
| 209002 HPCS<br>CFR                        |    |  |    |    |    |    |    |    |    | 09 |                    | Describe available methods to raise/lower suppression pool level using HPCS.  | 3.5 | 31<br>864 |
| 209002 HPCS<br>CFR                        |    |  |    |    |    |    |    |    |    |    | 2.<br>1.<br>2<br>8 | Describe the bases for the HPCS injection valve high reactor water level interlock.                                     | 3.3 | 32<br>865 |
| 211000 SLC<br>CFR                         |    |  |    |    |    |    |    | 02 |    |    |                    | Predict the SLC system indication and response with indication the squib valve failed to actuate and follow up actions. | 3.9 | 33<br>866 |
| 212000 RPS<br>CFR                         |    |  |    |    |    |    |    | 12 |    |    |                    | Given plant conditions including a partial main turbine stop/control valve closure, determine the effect to RPS.        | 4.1 | 34<br>867 |
| 215003 IRM<br>CFR                         |    |  |    |    | 03 |    |    |    |    |    |                    | Describe the reason for the precaution concerning driving IRMs during surveillance activities.                          | 3.1 | 35<br>868 |
| 215004 Source Range<br>Monitor<br>CFR     |    |  |    |    |    |    |    |    |    |    | 2.<br>2.<br>3<br>3 | Describe the SRM precaution warning of a potential control rod block even if the channel is bypassed.                   | 2.9 | 36<br>869 |
| 215005 APRM /<br>LPRM<br>CFR              |    | 02   |    |    |    |    |    |    |    |    |                    | Given a partial loss of plant electrical power, determine the effect to the APRMs.                                      | 2.8 | 37<br>870 |
| 217000 RCIC<br>CFR                        |    |  |    |    |    |    | 02 |    |    |    |                    | Predict how a reactor pressure change will affect RCIC system flow.   | 3.3 | 38<br>871 |
| PAGE 1 TOTAL<br>TIER 2 GROUP 1            | 0  | 1  | 0  | 1  | 2  | 0  | 1  | 2  | 0  | 2  | 2                  | PAGE TOTAL #<br>QUESTIONS   | 11  |           |



| GRAND GULF<br>NUCLEAR STATION                        |    |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 1 (RO/SRO) |    |    |    |    |    |    |    |                    |  | Form ES-401-1 |    |      |
|--|----|----|--|----|----|----|----|----|----|----|--------------------|--|---------------|----|------|
| SYSTEM #/NAME  | K1 | K2 | K3   | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G                  | TOPIC(S)   | IMP           | #  |      |
| 218000 ADS<br>CFR                                    |    | 01 |  |    |    |    |    |    |    |    |                    | Describe the relationship between ADS Logic power and the operation of the ADS logic.  | 3.3           | 39 | 872  |
| 223002 PCIS / Nuclear<br>Steam Supply Shutoff<br>CFR |    |    |  |    |    |    |    | 03 |    |    |                    | Determine the operator actions required to mitigate a NSSSS logic failure.   | 3.3           | 40 | 873  |
| 239002 SRVs<br>CFR                                   |    |    |  | 09 |    |    |    |    |    |    |                    | <i>Describe the design features available to determine if a SRV is open.</i>   | 3.6           | 41 | 874  |
| 259002 Reactor Water<br>Level Control<br>CFR         |    |    |  |    |    |    |    | 04 |    |    |                    | Describe the operator response to a failure of RFPT speed control with speed rising.   | 3.1           | 42 | 875  |
| 259002 Reactor Water<br>Level Control<br>CFR         |    |    |  |    |    |    |    |    |    | 06 |                    | Describe prerequisites for transferring the Feedwater system to 3-element control.   | 3.2           | 43 | 233a |
| 261000 SGTS<br>CFR                                   |    |    |  |    |    |    |    |    | 03 |    |                    | Describe the SGTS damper logic following system initiation.  | 2.9           | 44 | 876  |
| 262001 AC Electrical<br>Distribution<br>CFR          |    |    |  |    |    | 01 |    |    |    |    |                    | Given plant conditions and a partial loss of DC power, determine the affect to the AC distribution system.                   | 3.4           | 45 | 877  |
| 262002 UPS (AC/DC)<br>CFR                            |    |    |  | 01 |    |    |    |    |    |    |                    | Given plant conditions and degraded AC power, determine the status of plant inverters.                                       |               | 46 | 878  |
| 263000 DC Electrical<br>Distribution<br>CFR          |    |    |  | 01 |    |    |    |    |    |    |                    | Given a loss of AC power to battery chargers, determine the affects to the DC distribution system.                           | 3.4           | 47 | 879  |
| 264000 EDGs<br>CFR                                   |    |    |  |    |    |    |    | 10 |    |    |                    | Describe EDG response to a LOCA.   | 4.2           | 48 | 880  |
| 264000 EDGs<br>CFR                                   |    |    |  |    |    |    |    |    |    |    | 2.<br>4.<br>4<br>8 | Determine EDG status from control room alarms and indications and any required operator actions to improve plant conditions. | 3.8           | 49 | 881  |
| 300000 Instrument Air<br>CFR                         |    |    | 01   |    |    |    |    |    |    |    |                    | Determine the effect on the plant given a loss of Instrument Air to the containment.   | 2.9           | 50 | 882  |
| PAGE 2 TOTAL<br>TIER 2 GROUP 1                       | 0  | 1  | 1  | 3  | 0  | 1  | 0  | 3  | 1  | 1  | 1                  | PAGE TOTAL #<br>QUESTIONS  | 12            |    |      |

| GRAND GULF<br>NUCLEAR STATION             |    |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 1 (RO/SRO) |    |    |    |    |    |    |    |                    |   | Form ES-401-1 |           |
|---|----|----|--|----|----|----|----|----|----|----|--------------------|---|---------------|-----------|
| SYSTEM #/NAME                             | K1 | K2 | K3   | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G                  | TOPIC(S)  | IMP           | #         |
| 300000 Instrument Air<br>CFR              |    |    |  |    |    | 13 |    |    |    |    |                    | Determine the affect of a<br>clogged filter on the<br>Instrument Air system.  | 2.3           | 51<br>883 |
| 400000 Component<br>Cooling Water<br>CFR  | 04 |    |  |    |    |    |    |    |    |    |                    | Determine the method used<br>to confirm a reactor<br>coolant leak into the CCW<br>system.   | 3.1           | 52<br>884 |
| 400000 Component<br>Cooling Water<br>CFR  |    |    |  |    |    |    | 02 |    |    |    |                    | Determine the affect to the<br>plant if the CCW<br>temperature control fails.   | 2.8           | 53<br>885 |
| 203000 RHR/LPCI:<br>Injection Mode<br>CFR |    |    |  |    |    |    |    |    |    |    | 2.<br>3.<br>1<br>1 | Given LOCA conditions,<br>determine how LPCI works<br>in conjunction with the<br>other ECCS to control<br>radiation releases.   | 3.2<br>*      | 86<br>918 |
| 209001 LPCS<br>CFR                        |    |    |  |    |    |    |    |    |    |    | 2.<br>1.<br>1<br>5 | Given a short-term<br>problem associated with<br>LPCS that does not affect<br>operability, determine the<br>most effective method to<br>provide the information to<br>operations personnel. | 3.0<br>*      | 87<br>919 |
| 215003 IRM<br>CFR                         |    |    |  |    |    |    |    |    |    |    | 2.<br>4.<br>1<br>6 | Given plant conditions<br>requiring entry into the<br>EOPs and the need to<br>insert the IRMs, determine<br>the correct procedure<br>hierarchy to accomplish the<br>task.                   | 4.0<br>*      | 88<br>920 |
| 215004 Source Range<br>Monitor<br>CFR     |    |    |  |    |    |    |    |    |    |    | 2.<br>2.<br>2<br>1 | Given the applicable Tech<br>Specs and a repaired SRM<br>detector, determine the<br>surveillance requirements<br>to ensure operability.   | 3.5<br>*      | 89<br>921 |
| 217000 RCIC<br>CFR                        |    |    |  |    |    |    |    |    |    |    | 2.<br>1.<br>1<br>0 |   | 3.9<br>*      | 90<br>922 |
|   |    |    |  |    |    |    |    |    |    |    |                    | * SRO Only Questions  |               |           |
| PAGE 3 TOTAL<br>TIER 2 GROUP 1            | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 5                  | PAGE TOTAL #<br>QUESTIONS   | 8             |           |
| PAGE 1 TOTAL<br>TIER 2 GROUP 1            | 0  | 1  | 0  | 1  | 2  | 0  | 1  | 2  | 0  | 2  | 2                  | PAGE TOTAL #<br>QUESTIONS   | 11            |           |
| PAGE 2 TOTAL<br>TIER 2 GROUP 1            | 0  | 1  | 1  | 3  | 0  | 1  | 0  | 3  | 1  | 1  | 1                  | PAGE TOTAL #<br>QUESTIONS   | 12            |           |
| TIER 2 GROUP 1<br>TOTALS                  | 1  | 2  | 1  | 4  | 2  | 2  | 2  | 5  | 1  | 3  | 8                  |   | 31            |           |

| GRAND GULF<br>NUCLEAR STATION              |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 2 (RO/SRO) |    |    |    |    |    |    |    |    |                    | Form ES-401-1  |     |           |
|--|----|--|----|----|----|----|----|----|----|----|--------------------|--|-----|-----------|
| SYSTEM #/NAME                              | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G                  | TOPIC(S)   | IMP | #         |
| 201001 CRD Hydraulic CFR                   |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| 201002 RMCS                                |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 201003 Control Rod and Drive Mechanism CFR |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| 201004 RSCS                                |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 201005 RCIS CFR                            |    |  |    |    | 10 |    |    |    |    |    |                    | Describe the purpose for the rod withdrawal limiter.   | 3.3 | 54<br>886 |
| 201006 RWM                                 |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 202001 Recirculation CFR                   |    |  |    |    |    |    |    |    |    |    | 2.<br>4.<br>1<br>1 |  | 3.6 | 55<br>887 |
| 202002 Recirculation Flow Control CFR41.6  | 01 |  |    |    |    |    |    |    |    |    |                    | Given plant conditions, determine any automatic actions associated with the Recirculation System HPUs. | 3.6 | 56<br>888 |
| 204000 RWCU CFR                            |    |  |    | 06 |    |    |    |    |    |    |                    | Determine the correct flow path to use RWCU as an alternate shutdown cooling.                          | 2.8 | 57<br>889 |
| 214000 RPIS                                |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
| 215001 Traversing In-Core Probe CFR        |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| 215002 RBM                                 |    |  |    |    |    |    |    |    |    |    |                    | N/A GGNS   |     |           |
|  |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
|  |    |  |    |    |    |    |    |    |    |    |                    |  |     |           |
| PAGE 1 TOTAL<br>TIER 2 GROUP 2             | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1                  | PAGE TOTAL #<br>QUESTIONS  | 4   |           |

| GRAND GULF<br>NUCLEAR STATION                      |    | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 2 (RO/SRO) |    |    |    |    |    |    |    |    |               | Form ES-401-1   |     |           |
|--|----|--|----|----|----|----|----|----|----|----|---------------|---|-----|-----------|
| SYSTEM #/NAME                                      | K1 | K2   | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G             | TOPIC(S)  | IMP | #         |
| 216000 Nuclear Boiler Instrumentation CFR          |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 219000 RHR /LPCI Suppression Pool Cooling Mode CFR |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 223001 Primary CTMT and Auxiliaries CFR            | 08 |  |    |    |    |    |    |    |    |    |               | Determine the limitations to SRV usage given a reduced suppression pool level.              | 3.8 | 58<br>890 |
| 226001 RHR/LPCI: CTMT Spray Mode CFR               |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 230000 RHR/LPCI: Torus/Pool Spray Mode             |    |  |    |    |    |    |    |    |    |    |               | N/A GGNS  |     |           |
| 233000 Fuel Pool Cooling and Cleanup CFR           |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 234000 Fuel Handling Equipment CFR                 |    |  |    |    |    |    |    |    |    |    |               |   |     |           |
| 239001 Main and Reheat Steam CFR                   |    |  | 04 |    |    |    |    |    |    |    |               | Given plant conditions including a MSIV closure, determine the affect to the Offgas system. | 2.8 | 59<br>891 |
| 239003 MSIV Leakage Control CFR                    | 02 |  |    |    |    |    |    |    |    |    |               | Explain the relationship between the MSIV Leakage Control system and SGTS.                  | 3.0 | 60<br>892 |
| 241000 Reactor/Turbine Pressure Regulator CFR      |    |  |    |    |    |    |    |    |    |    | 2.<br>4.<br>6 | Describe the bases for each of the Scram ONEP immediate actions.                            | 4.0 | 61<br>893 |
| PAGE 2 TOTAL<br>TIER 2 GROUP 2                     | 2  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1             | PAGE TOTAL #<br>QUESTIONS   | 4   |           |

| GRAND GULF<br>NUCLEAR STATION              |        |        | BWR EXAMINATION OUTLINE<br>PLANT SYSTEMS - TIER 2 GROUP 2 (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                  | TOPIC(S)  | IMP           | #  |     |
| 245000 Main Turbine<br>Gen./Aux.<br>CFR    |        |        |  |        |        |        |        |        | 02     |        |                    | Determine main turbine<br>critical speeds as it is rolled<br>to rated speed.  | 2.8           | 62 | 894 |
| 256000 Reactor<br>Condensate<br>CFR        |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |
| 259001 Reactor<br>Feedwater<br>CFR         |        |        |  |        |        |        |        | 03     |        |        |                    | Determine necessary actions<br>and priorities immediately<br>after a single condensate<br>pump trips with the plant at<br>rated conditions. | 3.6           | 63 | 895 |
| 268000 Radwaste<br>CFR                     | 04     |        |  |        |        |        |        |        |        |        |                    | Determine the Drywell Floor<br>Drains indications available<br>to detect drywell general area<br>leakage.                                   | 2.9           | 64 | 896 |
| 271000 Offgas<br>CFR                       |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |
| 272000 Radiation<br>Monitoring<br>CFR      |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |
| 286000 Fire Protection<br>CFR              |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |
| 288000 Plant Ventilation<br>CFR            |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |
| 290001 Secondary CTMT<br>CFR               |        |        |  | 03     |        |        |        |        |        |        |                    | Determine inputs to the Fuel<br>Pool leak detection<br>standpipe.   | 2.8           | 65 | 897 |
| 290003 Control Room<br>HVAC<br>CFR         |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |
| 290002 Reactor Vessel<br>Internals<br>CFR  |        |        |  |        |        |        |        |        |        |        | 2.<br>4.<br>1<br>4 | Given a severe accident<br>condition, describe the bases<br>for why the transition is<br>made from the EOPs to the<br>SAPs.                 | 3.9<br>*      | 91 | 923 |
| 226001 RHR/LPCI:<br>CTMT Spray Mode<br>CFR |        |        |  |        |        |        |        | 13     |        |        |                    | Determine the affects to the<br>Containment Spray mode of<br>RHR given a valve interlock<br>failure.  | 2.9<br>*      | 92 | 924 |
| 234000 Fuel Handling<br>Equipment<br>CFR   |        |        |  |        |        |        |        | 01     |        |        |                    | Determine the affects to fuel<br>handling operations given a<br>Refueling Bridge interlock<br>failure.                                      | 3.7<br>*      | 93 | 925 |
|  |        |        |  |        |        |        |        |        |        |        |                    | * SRO Only Questions  |               |    |     |
| PAGE 3 TOTAL<br>TIER 2 GROUP 2             | 1      | 0      | 0  | 1      | 0      | 0      | 0      | 3      | 1      | 0      | 1                  | PAGE TOTAL #<br>QUESTIONS   | 7             |    |     |
| PAGE 1 TOTAL<br>TIER 2 GROUP 2             | 1      | 0      | 0  | 1      | 1      | 0      | 0      | 0      | 0      | 0      | 1                  | PAGE TOTAL #<br>QUESTIONS   | 4             |    |     |
| PAGE 2 TOTAL<br>TIER 2 GROUP 2             | 2      | 0      | 1  | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 1                  | PAGE TOTAL #<br>QUESTIONS   | 4             |    |     |
| TIER 2 GROUP 2                             |        |        |  |        |        |        |        |        |        |        |                    |   |               |    |     |

|        |   |   |   |   |   |   |   |   |   |   |   |  |    |  |
|--------|---|---|---|---|---|---|---|---|---|---|---|--|----|--|
| TOTALS | 4 | 0 | 1 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 2 |  | 15 |  |
|--------|---|---|---|---|---|---|---|---|---|---|---|--|----|--|



| Facility: <b>Grand Gulf Nuclear Station</b> Date of Exam: <b>12 August 2005</b> |          |   |     |            |          |            |
|---|----------|---|-----|------------|----------|------------|
| Category  | K/ A#    | Topic   | SRO |            | SRO-Only |            |
|   |          |   | IR  | #          | IR       | #          |
| 1.<br>Conduct<br>Of Operations  | 2.1.19   | Given plant conditions and the PDS computer, determine necessary actions based on PBDS counts.  | 3.0 | 66<br>898  |          |            |
|   | 2.1.25   | Given plant conditions and EP3 graphs, determine the correct mitigation strategy.   | 3.1 | 67<br>899  |          |            |
|   | 2.1.29   | Determine the correct locking device color coding for locked components.  | 3.3 | 68<br>237a |          |            |
|   | 2.1.2    | Given conditions, determine when an act of sabotage or tampering should be suspected.   |     |            | 4.0      | 94<br>926  |
|   | 2.1.12   |   |     |            | 4.0      | 95<br>927  |
|   | Subtotal |   |     | 3          |          | 2          |
| 2.<br>Equipment<br>Control  | 2.2.1    | Given plant conditions, determine proper operation of the IRMs.   | 3.6 | 69<br>900  |          |            |
|   | 2.2.30   | Discuss the duties of the operator assigned to communicate with the refueling floor SRO during core alterations.                                    | 3.3 | 70<br>901  |          |            |
|   | 2.2.19   | Describe the process for generating a maintenance work request.   |     |            | 3.1      | 96<br>928  |
|   | 2.2.16   | Determine who is responsible for reviewing the installation and removal of temporary alterations.   |     |            | 2.6      | 97<br>929  |
|   | Subtotal |   |     | 2          |          | 2          |
| 3.<br>Radiation<br>Control  | 2.3.1    | Given the need to enter a high radiation area, determine the allowed time in the area to prevent exceeding the administrative exposure limits.      | 3.0 | 71<br>902  |          |            |
|   | 2.3.4    | Given plant conditions and applicable Emergency Planning Procedures, determine the radiation exposure limits that are in effect.                    | 3.1 | 72<br>903  |          |            |
|   | 2.3.6    | Given liquid radwaste batch release data, determine which does not require Operations approval or a discharge permit.                               |     |            | 3.1      | 98<br>930  |
|   | Subtotal |   |     | 2          |          | 1          |
| 4.<br>Emergency<br>Procedures /<br>Plan   | 2.4.20   | Given plant conditions, determine the bases for any applicable EOP cautions.  | 4.0 | 73<br>904  |          |            |
|   | 2.4.25   | Given plant conditions including a fire, determine the proper response.   | 3.4 | 74<br>905  |          |            |
|   | 2.4.43   | Given plant conditions and Emergency Planning Procedures, determine the available emergency communications systems.                                 | 3.5 | 75<br>906  |          |            |
|   | 2.4.47   | Given plant conditions and indications from the recirculation pump shaft seals, analyze the condition and determine the probable failure mechanism. |     |            | 3.7      | 99<br>931  |
|   | 2.4.44   | Given plant conditions that warrant a General Emergency, determine the correct protective action recommendations.                                   |     |            | 4.0      | 100<br>932 |
|   | Subtotal |   |     | 3          |          | 2          |
| Tier 3 Point Total  |          |   |     | 10         |          | 7          |

| <b>Tier/<br/>Group</b> | <b>Randomly<br/>Selected K/A</b> | <b>Reason for Rejection</b>   |
|------------------------|----------------------------------|---|
| 2/1                    | 206000                           | High Pressure Core Injection (HPCI) – GGNS does not have a HPCI System for water inventory control.   |
| 2/1                    | 207000                           | Isolation (Emergency) Condenser – GGNS does not have an Isolation Condenser for pressure suppression.   |
| 2/2                    | 201002                           | Reactor Manual Control System (RMCS) – GGNS utilizes the BWR 6 Rod Control and Information System.  |
| 2/2                    | 201004                           | Reactor Sequence Control System (RSCS) – GGNS utilizes the BWR 6 Rod Control and Information System.  |
| 2/2                    | 201006                           | Rod Worth Minimizer (RWM) – GGNS utilizes the BWR 6 Rod Control and Information System.   |
| 2/2                    | 214000                           | Rod Position Information System (RPIS) – GGNS utilizes the BWR 6 Rod Control and Information System.  |
| 2/2                    | 215002                           | Rod Block Monitor (RBM) – GGNS utilizes the BWR 6 Rod Control and Information System.   |
| 2/2                    | 230000                           | RHR/LPCI: Torus/Pool Spray Mode – GGNS does not have a Torus/Pool Spray mode of the RHR System.   |
| 1/1                    | 600000                           | Plant Fire On Site – AK3 was selected for the Random Selection topic. This topic has 4 statements of which only AK3.04 has an importance of > 2.5 for a RO.   |
| 2/1                    | 203000                           | RHR/LPCI: Injection Mode – K5.01 was eliminated due to the testable check valves for RHR are being disabled via plant change per an ER, thus the selection resulted in the only other K/A K5.02.  |
| 2/1                    | 300000                           | Instrument Air – K6.04 has an importance of > 2.5, however GGNS does not have a Service Air Refusal Valve.  |
| 2/2                    | 215001                           | Traversing In-Core Probe – At GGNS TIPS is only operated by Reactor Engineers. The only operations involvement with the system is protective tagging.   |
| 1/1                    | 295027<br>295038                 | High Containment Temperature<br>High Offsite Release Rate – Random selection for Generics was 2.2.34 Knowledge of the process for determining the internal and external effects on core reactivity. This K/A does not apply to these two Emergency/Abnormal Plant Evolutions. Random selection was redrawn. |
| 3                      | Generics                         | Random selection of 2.2.31 Knowledge of procedures and limitations involved in initial core loading is not applicable to GGNS.  |

|            |        |   |
|------------|--------|---|
| 1/1        | 295027 | High Containment Temperature – Generics was selected for the topical area. 2.2.18 Knowledge of the process for managing maintenance activities during shutdown operations and 2.2.1 Ability to perform pre-startup procedures for the facility/including operating those controls associated with plant equipment that could affect reactivity, do not apply to high containment temperature in the realm of emergency level. There is not sufficient energy to raise Containment Temperature to the emergency level.   |
| 1/1        | 295001 | Partial or Complete Loss of Forced Core Flow Circulation<br>The initial random selection selected 2.3.2 Alara considerations. Section 2.3 of the Generics have limited applicability for this evolution. Attachment 2 section 1 sentence 4 allows elimination of these K/As without justification. The K/As listed in sentence 1 were numbered 1 – 16 and randomly selected to apply K/A 2.4.4.   |
| 1/1        | 600000 | <i>Initial topic called for AA2.16 Ability to determine and interpret as applied to a plant fire on site – vital equipment and control systems to be maintained and operated during a fire. The original outline identified the Main Transformers. The Main Transformers are only vital to Main Generator output. K/A mismatch was felt to be the case and changed the topic to basis for separating vital equipment from the Main Control Room during a fire in the Main Control Room to better fit the K/A based on 10CFR 50 Appendix R considerations.</i> |
| 1/1        | 295025 | <i>Initial K/A was K3.05, this is similar to K/A for 217000 A1.02. Reselected to 295025 K3.06</i>   |
| 2/2        | 202001 | <i>Initial K/A was Generic 2.2.25 Tech Spec Bases. Not considered RO level knowledge. Reselected to Generic 2.4.11.</i>   |
| 3 SRO      | 2.1.24 | <i>Protective Tagging is considered an RO function for written examinations. Reselected to 2.1.12 for SRO Only question.</i>  |
| 2/1<br>SRO | 217000 | <i>Initial K/A was 2.1.25 which is RO level knowledge. Reselected to 2.1.10 Knowledge of facility License and conditions which is SRO level knowledge.</i>  |

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **1** Op-Test No.: **Day 1**

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Objectives:** To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Start RCIC for testing per *EPI* CST to CST.
2. Respond to a failure of 1C34-LI-R606C RPV Narrow Range Level 'C' downscale.
3. Take actions in response to a Low Pressure Feedwater Heater 3C Tube leak and Failure of the Heater String to Isolate. Complete actions of the Loss of Feedwater Heating ONEP and Reduction in Recirculation System Flowrate ONEP.
4. Respond to a trip of RCIC.
5. Respond to a loss of RPS normal power supply.
6. Take actions for a double Recirculation Pump downshift to manually scram the reactor.
7. Take actions per the EOPs in response to an ATWS and mitigate the consequences of the ATWS with Main Steam Bypass Valves.
8. Respond to a failure of Division II ECCS to manually initiate via the Manual Initiation pushbutton.

**Initial Conditions:** Reactor Power is at 100 %.

**INOPERABLE Equipment**

SRMs 'E' & 'F' are INOP

APRM 'H' is INOP due to a failed *FCTR* card.

LPCS Pump is tagged out of service for motor oil replacement.

ESF Transformer 12 is tagged out of service Entergy – Mississippi maintenance.

Appropriate clearances and LCOs are written.

**Turnover:** The plant is operating at 100% power. Operate RCIC CST to CST at rated flow per a controlled startup in the *EPI* to allow taking of engineering data with RCIC operating 800 gpm at 1000 psig Standby Service Water 'A' is operating. *Containment Ventilation is operating in High Volume Purge*. There are scattered thundershowers reported in the Tensas Parish area.

| Event No. | Malf. No. | Event Type* | Event Description  |
|-----------|-----------|-------------|--|
| 1         |           | N (BOP)     | Start RCIC and operate CST to CST per <i>EPI</i> . ( <i>EPI</i> 04-1-03-E51-2) |

## Scenario 1 Day 1 (Continued)

| Event No.  | Malf. No.                  | Event Type*     | Event Description  |
|--|----------------------------|-----------------|--|
| 2  | 1 fw126c @ 0               | TS (SS)         | Respond to RPV Narrow Range Level 'C' instrument failure downscale. Complete <b>Technical Specification</b> determination.   |
| 3  | 2 fw232i @ 50% ramp to 80% | R (RO)          | Respond to a tube failure in LP FW Heater 3C. Perform actions per ONEP 05-1-02-V-5 and ONEP 05-1-02-III-3. Lower Reactor power with Recirc flow.   |
|  |                            | C (BOP)         | With a failure to isolate the Condensate System. Perform actions per ARI 04-1-02-1H13-P870 6A-B3 to isolate LP Feedwater Heater String 'C'.  |
| 4  | 3 e51047                   | C (BOP) TS (SS) | RCIC Turbine Trip. Complete <b>Technical Specification</b> determination.  |
| 5  | 4 c71077b                  | C (RO/BOP)      | Respond to a RPS 'B' Motor Generator EPA Breaker Trip per the ONEP 05-1-02-III-2.  |
| 6  | 5 fw201; c71076            | C (RO)          | Respond to a double Reactor Recirculation Pump down shift, Automatic RPS actuation fails requiring insertion of a manual Reactor Scram.  |
| 7  | 6 c11164 @ 0.2%            | M (ALL)         | Upon Reactor Scram recognize the failure of all control rods to fully insert and take actions per EOPs for ATWS with Main Steam Bypass Valves.   |
|  | 7 di_1e12 m617 @ NORM      | I (BOP)         | Upon orders to initiate and override Low Pressure ECCS, recognize the failure of Division II to initiate via Manual Initiation pushbutton. Take actions upon automatic initiation to override Division II Low Pressure ECCS. |
| * (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor |                            |                 |  |

### **Critical Tasks**

- Terminate and prevent injection from Feedwater and ECCS as required.
- Commence injection into the reactor using Feedwater or RHR 'A' or 'B' through Shutdown Cooling to restore and maintain level > -192 inches.
- Insert Control Rods in response to ATWS conditions.

Facility: **GRAND GULF NUCLEAR STATION** Scenario No.: **2** Op-Test No.: **Day 1**

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Objectives:** To evaluate the candidates' ability to operate the facility in response to the following evolutions:

1. Start SSW 'A' in support of chemical addition.
2. Raise Reactor Power by withdrawing control rods. Respond to single control rod drift per ONEP 05-1-02-IV-1.
3. Respond to ESF Transformer 21 trouble and subsequent trip with a failure of DG 12 to start.
4. *Respond to Main Generator TVR failure.*
5. Take actions to mitigate a large break failure of Feedwater piping in the Drywell per EOPs. (LOCA is NOT severe enough to result in depressurization of RPV.)
6. Respond to a failure of Division 1 ECCS to automatically initiate on High Drywell Pressure.
7. Respond to a failure of High Pressure Core Spray to inject. (LOCA with degraded high pressure sources.)

**Initial Conditions:** Reactor Power is at 45 %. Plant startup is in progress following an outage. Reactor Recirculation pumps in Fast Speed; a single Reactor Feed Pump in Three element Master Level Control; both Heater Drain Pumps are pumping forward.

**INOPERABLE Equipment**

SRMs 'E' & 'F' are INOP and bypassed.

APRM 'H' is INOP due to a failed *FCTR* card.

LPCS Pump is tagged out of service for pump seal replacement.

ESF 12 Transformer is tagged out of service for maintenance.

Appropriate clearances and LCOs are written.

**Turnover:** Chemistry requires SSW 'A' in operation to support a chemical addition. Continue plant startup per IOI-2. There are scattered thunder showers reported in the Tensas Parish area.

| Event No. | Malf. No.              | Event Type*          | Event Description   |
|-----------|------------------------|----------------------|---|
| 1         |                        | N (BOP)              | Place Standby Service Water 'A' in service for chemical addition. (EPI 04-1-03-P41-1)   |
| 2         |                        | R (RO)               | Raise Reactor power using control rods to 49%. (Control Rod Pull Sheet)   |
| 3         | 1<br>z161161_24<br>_17 | C (RO)<br>TS<br>(SS) | Respond to single control rod drift taking actions to insert the control rod. (ONEP 05-1-02-IV-1)<br>Disarm Control Rod. Complete <b>Technical Specification</b> determination. |

## Scenario 2 Day 1 (Continued)

| Event No. | Malf. No.   | Event Type*              | Event Description   |
|-----------|---|--------------------------|---|
| 4         | <b>2</b><br>p807_4a_f_2<br>ON<br>r21180<br>n41140b        | C<br>(BOP)<br>TS<br>(SS) | Respond to trouble and trip of ESF Transformer 21 with a failure of DG 12 to Start. Complete <b>Technical Specification</b> determination. (ONEP 05-1-01-I-4) |
| 5         | <b>3</b> n41102   | C<br>(RO)                | <i>Respond to a failure of the Main Generator Voltage Regulator. (ARI 04-1-02-1H13-P680 9A-C15 and SOI 04-1-01-N40-1)</i>                                     |
| 6         | <b>4</b> fw0171b<br>@ 70%<br>rr063b @<br>1% ramp to<br>4% | M<br>(ALL)               | Respond to indications of large break LOCA on Feedwater Line 'B' per EOPs. (B21-F065B will close if attempted.)   |
|           | <b>5</b> rr040e@ 0<br>rr041e @<br>83%                     | I<br>(BOP)               | Respond to a failure of Division 1 ECCS to automatically initiate on High Drywell Pressure.   |
|           | <b>6</b><br>e22159a@0                                     | C<br>(BOP)               | Respond to a failure of High Pressure Core Spray to inject.   |

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

**Critical Tasks**

- Recognize failure of Division 1 to initiate and manually initiate Division 1.
- Isolate the failed Feedwater line and re-establish Condensate/Feedwater or when RPV level reaches -160 inches wide range, Emergency Depressurizes the RPV to allow injection from Low Pressure systems (if level cannot be restored and maintained above -192 inches).