| Facility: <u>Clinton</u> | | Date of Examination: <u>08/22/2011</u> |
|---|---|---|
| Examination Level: RO ⊠   SRO ☐ | | Operating Test Number: <u>2011-301</u> |

| Administrative Topic (See Note) | Type Code* | Describe activity to be performed |
|---|---|---|
| Conduct of Operations | R,D | Complete an SRV Actuation Report<br><br>JPM 407<br><br>2.1.18/3.6 |
| Conduct of Operations | S,D | Perform Offsite Source Power Verification<br><br>JPM 441<br><br>2.1.31/4.6 |
| Equipment Control | S,N | Print Reading - Tagout Verification<br><br>JPM 442<br><br>2.2.41/3.5 |
| Radiation Control | R,D,P | Read Survey Map<br><br>JPM 410<br><br>2.3.7/3.5 |
| Emergency Procedures/Plan | | |

NOTE:   All items (5 total) are required for SROs.  RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

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

Facility: <u>Clinton</u>                                              Date of Examination: <u>08/22/2011</u>

Examination Level: RO ☐  SRO ☒                 Operating Test Number: <u>2011-301</u>

| Administrative Topic (See Note) | Type Code* | Describe activity to be performed |
|---|---|---|
| Conduct of Operations | R,N | Review of H2 Igniter Temperature Test<br><br>JPM 443<br><br>2.1.07/4.7 |
| Conduct of Operations | R,D | Review a Completed SRV Actuation Report<br><br>JPM 444<br><br>2.1.32/4.0 |
| Equipment Control | S,N | Print Reading - Tagout Verification<br><br>JPM  445<br><br>2.2.41/3.9 |
| Radiation Control | R,D,P | Redirect Worker in a High Radiation Area<br><br>JPM 115<br><br>2.3.12/3.7 |
| Emergency Procedures/Plan | R,D | ERO Activation<br><br>JPM 446<br><br>2.4.38/4.4 |

NOTE:   All items (5 total) are required for SROs.  RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

* Type Codes & Criteria:          (C)ontrol room, (S)imulator, or Class(R)oom
                                             (D)irect from bank ($\leq$ 3 for ROs; $\leq$ 4 for SROs & RO retakes)
                                             (N)ew or (M)odified from bank ($\geq$ 1)
                                             (P)revious 2 exams ($\leq$ 1; randomly selected)

Facility: <u>Clinton</u>                    Date of Examination: <u>8/22/2011</u>

Exam Level:  RO ☒  SRO-I ☐  SRO-U ☐              Operating Test Number: <u>2011-301</u>

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 |
|---|---|---|
| a. 202001 A4.01 3.7 / JPM 448 Transfer RR Fast to Slow | M,S | 1 |
| b. 217000 A4.04 3.6 / JPM 204 Manually Startup RCIC System | A,D,EN,L,S | 2 |
| c. 239001 A4.01 4.2 / JPM 447 RPS MSIV Channel Functional | D,S | 3 |
| d. 203000 A4.02 4.1 / JPM 440 Inject with SX through RHR B | A,N,S,L | 4 |
| e. 226001 A4.03 3.5 / JPM 207 Place RHR Loop B in Containment Spray Mode | A,D,EN,L,P,S | 5 |
| f. 264000 A4.04 3.7 / JPM 414 Parallel a Diesel | A,D,P,S | 6 |
| g. 212000 A4.14 3.8 / JPM 449 Reset a SCRAM | D,L,S | 7 |
| h. 261000 A2.05 3.0 / JPM 206 Standby Gas Treatment (VG) Startup | A,D,S | 9 |

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

| | | |
|---|---|---|
| i. 209001 2.4.34 4.2 / JPM 210 Manually Open the LPCS Injection Valve | D,E,L,R | 2 |
| j. 262002 2.1.30 4.4 / JPM 026 Manual Transfer of Distribution Panel Loads (NSPS Solenoid/RPS) from ALTERNATE POWER to INVERTER | D,R | 6 |
| k. 400000 A1.04 2.8 / JPM 031 Makeup of CCW Expansion Tank | D,R | 7 |

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

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

Facility: <u>Clinton</u>            Date of Examination: <u>8/22/2011</u>

Exam Level: RO ☐   SRO-I ☒   SRO-U ☐      Operating Test Number: <u>2011-301</u>

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 |
|---|---|---|
| a. 202001 A4.01 3.7 / JPM 448 Transfer RR Fast to Slow | M,S | 1 |
| b. 217000 A4.04 3.6 / JPM 204 Manually Startup RCIC System | A,D,EN,L,S | 2 |
| c. 239001 A4.01 4.0 / JPM 447 RPS MSIV Channel Functional | D,S | 3 |
| d. 203000 A4.02 4.1 / JPM 440 Inject with SX through RHR B | A,N,S,L | 4 |
| e. 226001 A4.03 3.4 / JPM 207 Place RHR Loop B in Containment Spray Mode | A,D,EN,L,P,S | 5 |
| f. 264000 A4.04 3.7 / JPM 414 Parallel a Diesel | A,D,P,S | 6 |
| g. | | |
| h. 261000 A2.05 3.1 / JPM 206 Standby Gas Treatment (VG) Startup | A,D,S | 9 |

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

| | | |
|---|---|---|
| i. 209001 2.4.34 4.1 / JPM 210 Manually Open the LPCS Injection Valve | D,E,L,R | 2 |
| j. 262002 2.1.30 4.0 / JPM 026 Manual Transfer of Distribution Panel Loads (NSPS Solenoid/RPS) from ALTERNATE POWER to INVERTER | D,R | 6 |
| k. 400000 A1.04 2.8 / JPM 031 Makeup of CCW Expansion Tank | D,R | 7 |

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

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

| Facility: <u>Clinton</u> | Date of Examination: <u>8/22/2011</u> |
|---|---|
| Exam Level: RO ☐ SRO-I ☐ SRO-U ☒ | Operating Test Number: <u>2011-301</u> |

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 |
|---|---|---|
| a. | | |
| b. | | |
| c. | | |
| d. 203000 A4.02 4.1 / JPM 440 Inject with SX through RHR B | A,N,S,L | 4 |
| e. 226001 A4.03 3.4 / JPM 207 Place RHR Loop B in Containment Spray Mode | A,D,EN,L,P,S | 5 |
| f. | | |
| g. | | |
| h. 261000 A2.05 3.1 / JPM 206 Standby Gas Treatment (VG) Startup | A,D,S | 9 |

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

| System / JPM Title | Type Code* | Safety Function |
|---|---|---|
| i. 209001 2.4.34 4.1 / JPM 210 Manually Open the LPCS Injection Valve | D,E,L,R | 2 |
| j. 262002 2.1.30 4.0 / JPM 026 Manual Transfer of Distribution Panel Loads (NSPS Solenoid/RPS) from ALTERNATE POWER to INVERTER | D,R | 6 |
| k. | | |

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

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

# ES-301 Transient and Event Checklist Form ES-301-5

Facility: Clinton  Date of Exam: 08/22/2011  Operating Test Number: 2011-301

| Applicant | Event Type | Scenario 1 SRO | Scenario 1 ATC | Scenario 1 BOP | Scenario 2 SRO | Scenario 2 ATC | Scenario 2 BOP | Scenario 3 SRO | Scenario 3 ATC | Scenario 3 BOP | Scenario 4 SRO | Scenario 4 ATC | Scenario 4 BOP | Total | R | I | U | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RO ☐ SRO-I ☒ SRO-U ☐ | RX | 2 | | | | | | 2 | | | | | | 2 | 1 | 1 | 0 | |
| | NOR | 1 | | | | | 1 | | | | | | | 2 | 1 | 1 | 1 | |
| | I/C | 3,4,5,7 | | | | | 3,5 | 4,8 | | | | | | 8 | 4 | 4 | 2 | **I₁** |
| | MAJ | 8,9,10 | | | | | 7,8,9,10 | 9,10,11 | | | | | | 10 | 2 | 2 | 1 | |
| | TS | 4,6 | | | | | | | | | | | | 2 | 0 | 2 | 2 | |
| RO ☐ SRO-I ☒ SRO-U ☐ | RX | | 2 | | 2 | | | | | | | | | 2 | 1 | 1 | 0 | |
| | NOR | | | | 1 | | | | | 1 | | | | 2 | 1 | 1 | 1 | |
| | I/C | | 3,5 | | 3,4,5,6 | | | | | 5,7 | | | | 8 | 4 | 4 | 2 | **I₂** |
| | MAJ | | 8,9,10 | | 7,8,9,10 | | | | | 9,10,11 | | | | 10 | 2 | 2 | 1 | |
| | TS | | | | 5,6 | | | | | | | | | 2 | 0 | 2 | 2 | |
| RO ☐ SRO-I ☒ SRO-U ☐ | RX | | | | | 2 | | 2 | | | | | | 2 | 1 | 1 | 0 | |
| | NOR | | 1 | | | | | 1 | | | | | | 2 | 1 | 1 | 1 | |
| | I/C | | | 4,7 | | 4,6 | | 4,5,7,8 | | | | | | 8 | 4 | 4 | 2 | **I₃** |
| | MAJ | | | 8,9,10 | | 7,8,9,10 | | 9,10,11 | | | | | | 10 | 2 | 2 | 1 | |
| | TS | | | | | | | 3,6 | | | | | | 2 | 0 | 2 | 2 | |
| RO ☐ SRO-I ☐ SRO-U ☐ | RX | | | | | | | | | | | | | | 1 | 1 | 0 | |
| | NOR | | | | | | | | | | | | | | 1 | 1 | 1 | |
| | I/C | | | | | | | | | | | | | | 4 | 4 | 2 | |
| | MAJ | | | | | | | | | | | | | | 2 | 2 | 1 | |
| | TS | | | | | | | | | | | | | | 0 | 2 | 2 | |

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions. Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D.  (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

# ES-301 Transient and Event Checklist Form ES-301-5

Facility: Clinton  Date of Exam: 08/22/2011  Operating Test Number: 2011-301

| APPLICANT | EVENT TYPE | Scenario 1 SRO | Scenario 1 ATC | Scenario 1 BOP | Scenario 2 SRO | Scenario 2 ATC | Scenario 2 BOP | Scenario 3 SRO | Scenario 3 ATC | Scenario 3 BOP | Scenario 4 SRO | Scenario 4 ATC | Scenario 4 BOP | TOTAL | MIN R | MIN I | MIN U |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RO □ SRO-I □ SRO-U ☒ | RX | | | | | | | 2 | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | | | 1 | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | | | | | | 4,5,7,8 | | | | | | 4 | 4 | 4 | 2 |
| | MAJ | | | | | | | 9,10,11 | | | | | | 3 | 2 | 2 | 1 |
| | TS | | | | | | | 3,6 | | | | | | 2 | 0 | 2 | 2 |
| RO □ SRO-I ☒ SRO-U □ | RX | 2 | | | | 2 | | | | | | | | 2 | 1 | 1 | 0 |
| | NOR | 1 | | | | | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | 3,4,5,7 | | | | 4,6 | | | | | | | | 6 | 4 | 4 | 2 |
| | MAJ | 8,9,10 | | | | 7,8,9,10 | | | | | | | | 7 | 2 | 2 | 1 |
| | TS | 4,6 | | | | | | | | | | | | 2 | 0 | 2 | 2 |
| RO □ SRO-I ☒ SRO-U □ | RX | | | | 2 | | | | 2 | | | | | 2 | 1 | 1 | 0 |
| | NOR | | | 1 | 1 | | | | | | | | | 2 | 1 | 1 | 1 |
| | I/C | | | 4,7 | 3,4,5,6 | | | | 4,8 | | | | | 8 | 4 | 4 | 2 |
| | MAJ | | | 8,9,10 | 7,8,9,10 | | | | 9,10,11 | | | | | 10 | 2 | 2 | 1 |
| | TS | | | | 5,6 | | | | | | | | | 2 | 0 | 2 | 2 |
| RO ☒ SRO-I □ SRO-U □ | RX | | 2 | | | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | | 1 | | | 1 | | | | 2 | 1 | 1 | 1 |
| | I/C | | 3,5 | | | | 3,5 | | | 5,7 | | | | 6 | 4 | 4 | 2 |
| | MAJ | | 8,9,10 | | | | 7,8,9,10 | | | 9,10,11 | | | | 10 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions. Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: Clinton                    Date of Exam: 08/22/2011                    Operating Test Number: 2011-301

| APPLICANT | EVENT TYPE | Scenarios | | | | | | | | | | | | TOTAL | MINIMUM(*) | | |
| | | 1 | | | 2 | | | 3 | | | 4 | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | SRO | ATC | BOP | | R | I | U |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RO □ SRO-I □ SRO-U ☒ | RX | 2 | | | 2 | | | | | | | | | 2 | 1 | 1 | 0 |
| | NOR | 1 | | | 1 | | | | | | | | | 2 | 1 | 1 | 1 |
| | I/C | 3,4,5,7 | | | 3,4,5,6 | | | | | | | | | 8 | 4 | 4 | 2 |
| | MAJ | 8,9,10 | | | 7,8,9,10 | | | | | | | | | 7 | 2 | 2 | 1 |
| | TS | 4,6 | | | 5,6 | | | | | | | | | 4 | 0 | 2 | 2 |
| RO ☒ SRO-I □ SRO-U □ | RX | | | | | 2 | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | 1 | | | | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | 4,7 | | | 4,6 | | | | | | | | 4 | 4 | 4 | 2 |
| | MAJ | | 8,9,10 | | | 7,8,9,10 | | | | | | | | 7 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO ☒ SRO-I □ SRO-U □ | RX | | 2 | | | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | | 1 | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | 3,5 | | | | 3,5 | | | | | | | 4 | 4 | 4 | 2 |
| | MAJ | | 8,9,10 | | | | 7,8,9,10 | | | | | | | 7 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO □ SRO-I □ SRO-U □ | RX | | | | | | | | | | | | | | 1 | 1 | 0 |
| | NOR | | | | | | | | | | | | | | 1 | 1 | 1 |
| | I/C | | | | | | | | | | | | | | 4 | 4 | 2 |
| | MAJ | | | | | | | | | | | | | | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 2 | 2 |

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions. Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.

2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D.  (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.

3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Facility: <u>Clinton Power Station</u>          Scenario No.: <u>One</u>          Operating Test No.: <u>2011-301</u>

Examiners: _____          Operators: _____
          _____                     _____
          _____                     _____

Initial Conditions:
- Subcritical ~600 psig, Hot Restart in progress.
- A Thunderstorm Watch is in effect. Thunderstorms are expected in the area within the next hour.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

Turnover:
- Continue Hot Restart. Pull Rods to criticality.
- Test the Generator Emergency Seal Oil Pump per CPS 3109.01 Section 8.1.2.3 – First Priority.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | N/A | N-BOP SRO | Test the Generator Emergency Seal Oil Pump. |
| 2 | NA | R-ATC SRO | Withdraw rods to criticality. |
| 3 | ROD3637TFIA4 | C-ATC SRO | Control Rod 36-37 is difficult to withdraw. |
| 4 | HP01HP_1E22C003_MTFSHEAR1 | C-BOP TS-SRO | HPCS Water Leg Pump shaft shears. |
| 5 | SRM_BI_ACTION2 and 1 | I-ATC SRO | B SRM fails. |
| 6 | A05_A02_A06086_TVM<br><br>H_A05_A02_A13S15_2<br><br>H_A05_A02_A13DS27_1 | TS-SRO | SLC A OOS (Loss of Power to SLC Suction Valve A "From SLC Storage Tank" – 1C41-F001A). |
| 7 | CDSR_VAC_PMP_A | C-BOP SRO | Vacuum Pump Trip. |
| 8 | YARITPLA_1<br><br>Override | M-All | RCIC unisolable steam leak. |
| 9 | YP_XMFTB_4964 | M-All | Auto Scram failure. |
| 10 | YP_XMFTB_4094 | M-All | MDRFP Trip. |

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

2/16/2012

**Scenario No.:** <u>One</u>                                            **Operating Test No.:** <u>2011-301</u>
**Narrative Summary**

| Event # | Description |
|---------|-------------|

1. The BOP Operator will coordinate with the field operator to test the Generator Emergency Seal Oil Pump per CPS 3109.01 Section 8.1.2.3.
2. The ATC Operator will continue the Hot Restart.  First milestone this shift will be withdrawing control rods to criticality.
3. Rod 36-37 will indicate a failure to move upon the ATC Operator's initial attempt to withdraw it.  The ATC Operator must increase drive water pressure to free the rod per CPS 3304.01 Section 8.3.4.
4. Annunciator HPCS WATER LEG PUMP DISCHARGE PRESSURE LOW (5062-7D) comes in due to the HPCS Water Leg Pump shaft shear.  The BOP Operator will dispatch a field operator to investigate.  Upon the report of a shaft shear, the BOP operator will stop the HPCS Water Leg Pump and direct the field operator to pull the HPCS Pump Breaker control power fuses per CPS 3309.01 Section 4.3.  Technical Specification LCO 3.5.1 Actions B.1 and B.2 will be evaluated requiring verification by administrative means that the RCIC system is operable when required AND the HPCS system is restored to operable status within 14 days.
5. Annunciator ROD OUT BLOCK (5006-2H), SRM UPSC ALARM OR INOP (5005-1K), SRM PERIOD (5005-2K) and SRM DNSC (5005-3K) come in due to SRM B failing downscale.  The B SRM channel must be bypassed per CPS 3306.01 Section 8.2.2 to clear the rod block and proceed with the startup.  Technical Specification 3.3.1.4 action A.1 and ORM 2.2.2 Action 3.2.2.a will be evaluated and found to be satisfied.
6. Annunciator STANDBY LIQUID CONTROL OUT OF SERVICE (50677-8F) comes in along with postage stamp C001A or F001A PWR LOSS or OVLD due to a loss of power to SLC Suction Valve A "From SLC Storage Tank" – 1C41-F001A.  The valve's green indicating light is dark.  The BOP Operator will dispatch a field operator to investigate.  Technical Specifications LCO 3.1.7, Action A. will be evaluated which will require that the SLC subsystem be restored to operable within 7 days.
7. Annunciator AUTO TRIP PUMP/MOTOR (5019-1A) comes in due to a trip of the Condenser Vacuum Pump 1A (0CA01PA).  The BOP Operator notes that the trip is <u>NOT</u> due to Hi MSL Rad and starts the standby Condenser Vacuum Pump per CPS 3112.01 Section 8.1.1.
8. Multiple annunciators are received due to The RCIC steam supply line develops a leak causing the RCIC room temperature to rise resulting in an EOP-8 entry.  A scram is required prior to exceeding the Maximum safe temperature.
9. When a Reactor Scram is attempted, an Auto Scram failure occurs due to a fault in the Reactor Protection system.  The ATC Operator must perform a manual initiation of the SCRAM <u>OR</u> ARI to insert the control rods.

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10. The MDRFP (1FW01PC) trips due to an actuation of the breaker's (1AP05EF) "C" phase protective relay.  The ATC Operator must restore feedwater by either opening the RFP 1A/1B Discharge Bypass Valve (1FW003A/B) or coordinating with the BOP operator to open the Feed Pump Bypass Valve (1FW024).

**EOP**
8,1A,1

**Critical tasks:**
- Manual initiation of Reactor Scram prior to exceeding Maximum safe temperature.
- Maintain RPV water level >TAF.  Restore and control RPV water level to a band of Level 3 to Level 8.

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| Facility: <u>Clinton Power Station</u> | Scenario No.: <u>Two</u> | Operating Test No.: <u>2011-301</u> |
|---|---|---|

Examiners: _____          Operators: _____
     _____               _____
     _____               _____

Initial Conditions:
- 72% power, power ascension in progress.
- A Thunderstorm Watch is in effect. Thunderstorms are expected in the area within the next hour.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

Turnover:
- Raise Reactor Power to 96% using a combination of rods and flow.
- RCIC Surveillance 9054.01 was completed last shift. RHR B is currently in Suppression Pool Cooling to support the RCIC surveillance and is no longer required. Secure Suppression Pool Cooling per CPS 3312.01 Section 8.1.10 – First Priority.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | N/A | N-BOP SRO | Secure from Suppression Pool Cooling. |
| 2 | N/A | R-ATC SRO | Raise Reactor Power to 96% using a combination of rods and flow. |
| 3 | YFFWPPSS_13 1 | C-BOP | MC pump 1B coupling fails. |
| 4 | A01_A08_A01_1 | I-ATC SRO | Hot well overflow level control valve failure. |
| 5 | YP_XMFTB_5010 | C-BOP TS-SRO | Train A Control Room Supply Fan (0VC03CA) trips. |
| 6 | YPRR15AA | I-ATC TS-SRO | FWLC level control RPV level instrument fails high. |
| 7 | RAT_A_DIFFERENTIAL | M-All | RAT A trips on Differential Overcurrent. A circuit breaker supplying the HPCS injection valve (1E22F004) trips open. |
| 8 | YPXMALSE_511 | M-All | An unisolable RR loop leak develops and the RCIC turbine will trip when started and cannot be reset. |
| 9 | N/A | M-All | When RPV water level reaches TAF, enter EOP-3 and blowdown. Recover and restore RPV level IAW EOP-3. |
| 10 | YP-XMFTB_4948 | M-All | RHR B Pump fails to auto start. Pump will operate as intended by handswitch manipulation. |

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

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**Scenario No.:** Two                    **Operating Test No.:** 2011-301

**Narrative Summary**

Event #                                        Description

1. The BOP Operator will secure Suppression Pool Cooling per CPS 3312.01 Section 8.1.10.
2. The ATC Operator will raise reactor power to 96% using a combination of control rods and reactor coolant flow.
3. Annunciator LOW PRESS MAKE-UP COND XFER PUMPS DISCH HDR (5014-2C) comes in due to the Make-Up Condensate Transfer Pump 1B (0MC01PB) shaft shear. The BOP Operator will dispatch a field operator to investigate. Upon the report of a shaft shear, the BOP operator will stop the failed pump and start the standby pump per CPS 3208.01 Section 8.1.1 (or 8.2.2).
4. Annunciator NOT FULLY CLOSED CDSR EMERG O/FLOW VLV 1CD020 (5014-4B) is received or an Operator notes Hot well Level is lowering. Upon discovery, the ATC Operator recognizes the failure of the Hot well Level Control Valve to control in automatic and takes manual control per CPS 3104.01 Section 8.6.1.
5. Annunciator AUTO TRIP PUMP/FAN DIVISION 1 (5050-1A) comes in due to the Train A Control Room Supply Fan (0VC03CA) tripping. The BOP Operator will coordinate with the field operator to shift Control Room HVAC (VC) to Train B per CPS 3402.01 Section 8.1.7. Technical Specification LCO 3.7.3 Actions A.1 will be evaluated requiring restoration of control room ventilation subsystem to an operable status within 7 days. Technical Specification LCO 3.7.4 Actions A.1 will also be evaluated requiring restoration of control room AC subsystem to an operable status within 30 days.
6. Annunciator WTR LVL SIG FAILURE (5002-2P) comes in due to the A channel feedwater level control RPV level instrument failing high. Upon discovery, the ATC Operator will swap feedwater controls to the operable (B) channel. Technical Specification ORM Action 2.2.12.b will also be evaluated requiring restoration of the inoperable channel to an operable status within 7 days.
7. Multiple annunciators are received due to the "A" Reserve Auxiliary Transformer (RAT A) tripping on Differential Overcurrent. Concurrent with this event, the circuit breaker supplying the HPCS injection valve (1E22F004) trips open on overcurrent.
8. Immediately following the Scram Choreography, an unisolable RR loop leak develops. The RCIC turbine will trip when started and cannot be reset. This failure completes a loss of all major high pressure feed sources.
9. Reactor Pressure Vessel (RPV) water level will lower until it reaches Top of Active Fuel (TAF). At that time the CRS will enter EOP-3, blowdown, recover and restore RPV level per EOP-3.

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10. The "B" RHR Pump (1E12AC002B) fails to automatically start.  The BOP Operator must manually start the "B" RHR Pump to maximize injection of available sources per EOP-1.

**EOP**
1,3,6

**Critical tasks:**
- Enter EOP-3, Blowdown.
- Maximizes injection to recover level above TAF.  Restore and control RPV water level to a band of Level 3 to Level 8.

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Facility: <u>Clinton Power Station</u>          Scenario No.: <u>Three</u>          Operating Test No.: <u>2011-301</u>

Examiners: _____          Operators: _____
          _____                     _____
          _____                     _____

Initial Conditions:
- 96% power, steady state operation.
- A Thunderstorm Watch is in effect.  Thunderstorms are expected in the area within the next hour.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

Turnover:
- MISO has declared a grid emergency and requested that CPS lower generator output by 100 MWe over the next hour.
- Secure Division 2 Diesel Generator (DG 1B) from CPS 9080.02, DG 1B Operability – Manual and Quick Start Operability, by performing Section 8.3.1 through 8.3.7 – First Priority.

| Event No. | Malf. No. | Event Type* | Event Description |
|-----------|-----------|-------------|-------------------|
| 1 | N/A | N-BOP | Secure DG 1B. |
| 2 | N/A | R-ATC SRO | Lower Reactor Power/Generator Output with flow. |
| 3 | Annunc | TS-SRO | Low DG Starting Air Pressure. |
| 4 | LC08A | C-ATC SRO | Clogged Oil Filter – CB Pump 1A. |
| 5 | CW06A | C-BOP SRO | Auto Trip of 'B' CCW Pump. |
| 6 | YP_XMF TB_4914 | TS-SRO | 'C' APRM fails downscale. |
| 7 | YPXMA LSE_612 | I-BOP | TGLO Temperature Controller Failure. |
| 8 | Override | C-ATC | 'B' RWCU pump seal plate temperature high. |
| 9 | Override | M-All | "A" Inboard MSIV drifts shut/Group 1 Isolation/Rx Scram. |
| 10 | Override | M-All | Rx Coolant Leak. |
| 11 | Override | M-All | During B/D, 2 SRV's fail to open. |

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

2/16/2012

Scenario No.: <u>Three</u>                                    Operating Test No.: <u>2011-301</u>
**Narrative Summary**

**Event #**                                               **Description**

1. CPS 9080.02, DG 1B Operability – Manual and Quick Start Operability, has been completed. The BOP operator will secure DG 1B and place it back in standby.
2. The ATC Operator will lower reactor power/generator output using reactor coolant flow.
3. Annunciator OUT OF SERVICE DIESEL GEN 1B (5061-7F) comes in due to low Starting Air Pressure (190 psig). The BOP operator will dispatch a field operator to investigate. No cause will be evident. Technical Specification 3.8.3, Action E.1 will be evaluated requiring starting air receiver pressure be restored to ≥ 200 psig within 48 hours.
4. Annunciator CLOGGED OIL FILTER CONDENSATE BOOSTER PUMP 1A (5001-1H) comes in due to a clogged CUNO filter. The ATC Operator will dispatch a field operator to clear the alarm. Attempts are unsuccessful and the ATC Operator will startup the standby condensate booster pump and shutdown the affected pump per the Annunciator Response Procedure (ARP).
5. Annunciator AUTO TRIP PUMP/MOTOR (5040-1B) and RECIRC MTR A/B WDG CLG WTR FLOW LO (5003-3D/3K) come in due to a trip of the 'B' Component Cooling Water (CCW) Pump. The BOP Operator will start the standby pump per the Annunciator Response Procedure (ARP).
6. Annunciator ROD OUT BLOCK (5006-2H) and APRM DNSC (5004-1L) come in due to APRM C failing downscale. Technical Specification LCO 3.3.1.1 Actions A.1 will be evaluated requiring the channel's affected function in trip within 48 hours. Technical Specification LCO 3.3.1.3 Actions A.1 <u>or</u> A.2 <u>or</u> A.3 will be evaluated requiring the channel in TRIP <u>or</u> the associated RPS trip system in TRIP <u>or</u> initiate an alternate method to detect and suppress thermal hydraulic instability oscillations all within 30 days.
7. Annunciator HIGH TEMP TURB GEN LUBE OIL (5018-3A) comes in due to a failure in the auto portion of the TURB OIL CLG WTR Controller. The BOP operator will diagnose the problem with the controller, place the controller in MANUAL and coordinate with the ATC Operator to stabilize turbine oil outlet temperature.
8. Annunciator CLEANUP PUMP SEAL GLAND PLATE TEMP HI (5000-2E) comes in due to RWCU Recirc Pump B (1G33-C001B) developing excessive seal leak requiring its removal from service. The ATC Operator will dispatch a field operator and coordinate/perform operations per CPS 3303.01 Sections 8.1.3 and 8.1.4.
9. The "A" Inboard MSIV drifts shut, resulting in a transient that causes a Group 1 isolation due to the increased steam flow in the remaining three Main Steam Lines which in turn causes a Reactor Scram.
10. A Reactor Coolant Leak develops followed shortly by a Drywell to Containment leak. When Containment Pressure exceeds Figure N, EOP-3 is entered and a blowdown is performed.
11. Upon the initiation of ADS 2 SRV's 41B and 41D fail to open which requires manual operation to open two more relief valves to complete the blow down

EOP
1,6,3

**Critical tasks:**
- Enters EOP-3, Blowdown, and then maximizes injection to recover level above TAF.
- Verify Open/Open seven relief valves upon initiation of ADS.

2/16/2012

<div align="center">**MEMORANDUM**</div>

**To:**      Mike Bielby, NRC Chief Examiner
**From:**   Bill Kiser, Clinton Power Station ILT 10-1 NRC Exam Author
**Date:**    02/08/2011
**Subject:**  OUTLINE METHODOLOGY FOR 2011 CLINTON POWER STATION WRITTEN
             NRC EXAM (OPERATING TEST NO.: 2011-301)


The 2011 Clinton Power Station Written NRC Examination Outline was developed using the following widely-available commercial product produced by Western Technical Services, Inc.

<div align="center">

BOILING WATER REACTOR
Outline Generation Software
Version 2.0.2

</div>

This BWR Random Outline Generator produces NRC Initial License Written Exam outlines in accordance with NUREG 1021, Rev. 9, Supp. 1.

K/A statements selected by the software not meeting the balance of coverage requirements or that were deemed inappropriate for testing (using the guidelines set forth in ES-401) were replaced by systematic and random selection. A method based on ES-401 Attachment 1 "Example Systematic Sampling Methodology" was utilized. Replacement "Candidates" were sequentially numbered in each "level" of the process. Random selection from the numbered tokens representing the candidates produced the replacement K/A statement.