Facility: Clinton Date of Examination: 7/11/05

Examination Level (circle one): RO Operating Test Number:ILT0401-1

| Administrative (see Note) | Describe activity to be performed |
|---|---|
| Conduct of Operations<br>Plant Parameter Verification<br>N | Complete a CPS 3006.01C003, Control Rod Withdrawal Checklist – Mode 4.<br><br>K/A 2.1.23 (3.9) 30060117LAF01 |
| Conduct of Operations<br>Mode Change<br>P | Verify Conditions are Met to Enter Mode 2 From Mode 1<br><br>K/A 2.1.31 (4.2) |
| Equipment Control<br>Surveillance Testing<br>D | Perform a Jet Pump Operability Test<br><br>K/A 2.2.12 (3.0) 90410101LAN01 |
| Radiation Control<br>Exposure Limits<br>D | Determine expected dose operator would receive while performing an LLRT.<br><br>K/A 2.3.10 (2.9) 99555501NAN01 |
| Emergency Plan | N/A |

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

* Type codes & Criteria:

(C)ontrol room

(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)

(S)imulator

Facility: Clinton Date of Examination: 7/11/05

Examination Level (circle one): SRO Operating Test Number: ILT0401-1

| Administrative (see Note) | Describe activity to be performed |
|---|---|
| Conduct of Operations<br>Security<br>D | Determine Actions Required for a Security Threat<br><br>K/A 2.1.6 (4.3) 43050101SAN01 |
| Conduct of Operations<br>Mode Change<br>D,P | Verify Conditions are Met to Enter Mode 2<br><br>K/A 2.1.31 (3.9) |
| Equipment Control<br>D | Review and Approve a Jet Pump Operability Test<br><br>K/A 2.2.12 (3.4) 90410101SAF01 |
| Radiation Control<br>M | Redirect Worker in a High Radiation Area<br><br>K/A 2.3.10 (3.3) 99555501SAN01 |
| Emergency Plan<br>D | Complete a NARS Form and make the required notifications.<br><br>K/A 2.4.38 (4.0) |

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

* Type codes & Criteria:

(C)ontrol room

(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)

(S)imulator

Facility: Clinton Date of Examination: 7/11/05

Exam Level (circle one): RO Operating Test Number: ILT0401-1

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

| System / JPM Title | Type Code* | Safety Function |
|---|---|---|
| a. Bypass a Rod Position at the Rod Action Control Cabinets<br>K/A 201005, A4.01 (3.7/3.7) 33040220LSN01 | D, C | 1 |
| b. Inject to the RPV Using SX Through LPCI<br>K/A 295031, EA1.08 (3.8/3.9) 44110315LSN01 | D, S | 2 |
| c. Place Main Turbine Control in Standby<br>K/A 241000, A4.19 (3.5/3.4) 31050119LSN01 | N, S | 3 |
| d. RCIC Restart and swap of suction valve failure.<br>K/A 217000, A2.16 (3.5/3.4) 33100108LSA01 | A, N, S | 4 |
| e. Verify Group 8 Isolation<br>K/A 223002, A4.06 (3.6/3.7) 40010201LSF01 | A, L, N, S | 5 |
| f. Parallel DG 1B with Off Site Power<br>K/A 264000, A2.01 (3.5/3.6) 35060105LSA01 | D, A, P, S | 6 |
| g. SBGT Shutdown with failure of Cooling fan to start<br>K/A 261000, A2.13 (3.4/3.7) 33190103LSA01 | N, A, S | 9 |
| h. SF Valve Stroke Timing Test<br>K/A 223002, A1.02 (3.7/3.7) 90610301LSA01 | M,A,S | 8 |
| In-Plant Systems[@] (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U) | | |
| i. Place RHR in Shutdown Cooling at the Remote Shutdown Panel<br>K/A 205000, A1.06 (3.7/3.7) 40030104LSN01 | D, E, L, R | 4 |
| j. Lineup SLC Test Tank for RPV Injection<br>K/A 295031, EA1.08 (3.8/3.9) 44110306NSN01 | D, E, R | 2 |
| k. Operate RPS Scram Breakers<br>K/A 295015, AA1.02 (4.0/4.2) 44110804LSN01 | D, E, R | 7 |

| * 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 |
| (L)ow Power | ≥ 1 / ≥ 1 / ≥ 1 |
| (N)ew or (M)odified from bank | ≥ 2 / ≥ 2 / ≥ 1 |
| (P)revious 2 exams | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) |
| (R)CA | ≥ 1 / ≥ 1 / ≥ 1 |
| (S)imulator | |

Facility: Clinton Date of Examination: 7/11/05

Exam Level (circle one): SRO(I) Operating Test Number: ILT0401-1

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

| System / JPM Title | Type Code* | Safety Function |
|---|---|---|
| a. Bypass a Rod Position at the Rod Action Control Cabinets<br>K/A 201005, A4.01 (3.7/3.7) 33040220LSN01 | D, C | 1 |
| b. Inject to the RPV Using SX Through LPCI<br>K/A 295031, EA1.08 (3.8/3.9) 44110315LSN01 | D, S | 2 |
| c. Place Main Turbine Control in Standby<br>K/A 241000, A4.19 (3.5/3.4) 31050119LSN01 | N, S | 3 |
| d. RCIC Restart and swap of suction valve failure.<br>K/A 217000, A2.16 (3.5/3.4) 33100108LSA01 | A, N, S | 4 |
| e. Verify Group 8 Isolation<br>K/A 223002, A4.06 (3.6/3.7) 40010201LSF01 | A, L, N, S | 5 |
| f. Parallel DG 1B with Off Site Power<br>K/A 264000, A2.01 (3.5/3.6) 35060105LSA01 | D, A, P, S | 6 |
| g. SBGT Shutdown with failure of Cooling fan to start<br>K/A 261000, A2.13 (3.4/3.7) 33190103LSA01 | N, A, S | 9 |
| h. | | |
| In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U) | | |
| i. Place RHR in Shutdown Cooling at the Remote Shutdown Panel<br>K/A 205000, A1.06 (3.7/3.7) 40030104LSN01 | D, E, L, R | 4 |
| j. Lineup SLC Test Tank for RPV Injection<br>K/A 295031, EA1.08 (3.8/3.9) 44110306NSN01 | D, E, R | 2 |
| k. Operate RPS Scram Breakers<br>K/A 295015, AA1.02 (4.0/4.2) 44110804LSN01 | D, E, R | 7 |

* 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 |
| (L)ow Power | ≥ 1 / ≥ 1 / ≥ 1 |
| (N)ew or (M)odified from bank | ≥ 2 / ≥ 2 / ≥ 1 |
| (P)revious 2 exams | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) |
| (R)CA | ≥ 1 / ≥ 1 / ≥ 1 |
| (S)imulator | |

Facility: Clinton Date of Examination: 7/11/05

Exam Level (circle one): SRO(U) Operating Test Number: ILT0401-1

Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)

| System / JPM Title | Type Code* | Safety Function |
|---|---|---|
| a. | | |
| b. Inject to the RPV Using SX Through LPCI<br>K/A 295031, EA1.08 (3.8/3.9) 44110315LSN01 | D, S | 2 |
| c. | | |
| d. | | |
| e. Verify Group 8 Isolation<br>K/A 223002, A4.06 (3.6/3.7) 40010201LSF01 | A, L, N, S | 5 |
| f. Parallel DG 1B with Off Site Power<br>K/A 264000, A2.01 (3.5/3.6) 35060105LSA01 | D, A, P, S | 6 |
| g. | | |
| h. | | |
| In-Plant Systems@ (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U) | | |
| i. Place RHR in Shutdown Cooling at the Remote Shutdown Panel<br>K/A 205000, A1.06 (3.7/3.7) 40030104LSN01 | D, E, L, R | 4 |
| j. | | |
| k. Operate RPS Scram Breakers<br>K/A 295015, AA1.02 (4.0/4.2) 44110804LSN01 | D, E, R | 7 |

* 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 |
| (L)ow Power | ≥ 1 / ≥ 1 / ≥ 1 |
| (N)ew or (M)odified from bank | ≥ 2 / ≥ 2 / ≥ 1 |
| (P)revious 2 exams | ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) |
| (R)CA | ≥ 1 / ≥ 1 / ≥ 1 |
| (S)imulator | |

Facility: Clinton Power Station Scenario No.: 1 Operating Test No.: **ILT0401-1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
7% power, normal plant startup is in progress.
Thunderstorm watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Continue Power increase to 9% power.
- Start RCIC for surveillance 9054.01, and then place mode switch in RUN.
- RHR B is in Suppression Pool Cooling to support RCIC surveillance.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | N/A | R-ATC/SRO | Raise reactor power with rods to 9%. |
| 2 | Override | C-ATC/SRO | Difficult to Withdraw Control Rod |
| 3 | N/A | N-BOP<br>TS-SRO | Start RCIC for Surveillance. |
| 4 | Override | I-BOP | RCIC Auto Controller fails with low demand. |
| 5 | N/A | TS-SRO | Containment Upper Airlock Outer Door Failure |
| 6 | CW06A | C-BOP/SRO | Auto Trip of 'B' CCW Pump |
| 7 | Override | I-ATC/SRO | Condenser Hotwell Overflow Controller Failure |
| 8 | ED04A | M-ALL | Loss of Power to 4160 V Bus 1A |
| 9 | RR03 | M-ALL | Recirc Loop Rupture |
| 10 | HP04 | C-BOP/SRO | HPCS Injection Valve fails to open, may be manually opened |
| | | | |

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

**Scenario No.: 1** **Operating Test No.:** ILT0401-1

**Narrative Summary**

**Event #** **Description**

1. Power will be increased to 9% using rods.
2. While power is being increased rod 32-25 will experience difficulty in being withdrawn requiring the ATC Operator to increase drive water pressure to free the rod.
3. RCIC will be started by the BOP operator for surveillance 9054.01.
4. At the completion of RCIC startup the BOP operator will respond to failure of the RCIC flow controller. This will require evaluation of Technical Specifications LCO 3.5.3, Action A.1 & A.2 which requires within 1 hour verifying HPCS is operable and restoring RCIC to operable status within 14 days.
5. A security guard will report that upon exiting the containment upper airlock door he could not get the outer door to shut. The will require the SRO to evaluate Technical Specification 3.6.1.2.a and declare the upper containment airlock Inoperable.
6. A trip of the 'B' Component Cooling Water (CCW) Pump will force the BOP operator to start the standby pump. This sets the stage for a loss of power to trip the other 2 pumps later in the scenario.
7. Condenser Hotwell Overflow Controller failure will require the ATC Operator to take manual control and close the Overflow Valve.
8. A loss of power to 4.16kv bus 1A will cause the remaining CCW Pumps to trip. This will require the ATC Operator to trip the 'B' Reactor Recirc Pump within 1 minute. The perturbation on the system will cause a Recirc piping rupture.
9. The Recirc Loop Rupture will cause the crew to respond to the LOCA that causes a Scram and RPV Level to decrease. RPV pressure reduction and maximum injection will be required to keep RPV level above TAF.
10. The crew will also need to respond to the failure to open of the HPCS injection valve (1E22-F004). An operator may be dispatched to manually open 1E22-F004.

EOP
1, 6

**Critical tasks:**

- Scram upon the trip of both Reactor Recirc Pumps.
- Enters EOP-3, Blowdown, and then maximizes injection to recover level above TAF.

Facility: Clinton Power Station Scenario No.: 2 Operating Test No.: **ILT0401-1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
73% power, Plant Shutdown in progress.
Thunderstorm Watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Continue normal plant shutdown and prepare to downshift RR Pumps after control rod pattern is verified.
- Start and run SX Pump 'C' for 1 hour to obtain hot oil sample.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | N/A | N-BOP/SRO | Start SX Pump 'C' |
| 2 | Annunc | TS-SRO | Hydrogen Ignitor Division 1 Power Failure |
| 3 | N/A | R-ATC/SRO | Reduce power with flow |
| 4 | EG03 Override | I-ATC/SRO | High Generator Field Voltage requiring Manual Control of Voltage Regulator. |
| 5 | CW04C Override | C-BOP TS-SRO | SX Pump 'C' trips requiring manually opening 1SX014C. HPCS Inoperable. |
| 6 | DC02D | C-ATC/SRO | DCS Component Failure |
| 7 | RM01A | C-BOP/SRO | Trip of TBCCW Pump |
| 8 | ED02A ED02B | M-ALL | Tornado, Loss of RAT & ERAT, Failure of DG Div II Diesel to Auto Start. |
| 9 | Override | M-ALL | RCIC Line Break & MSL Line Break |
| | | | |

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

Scenario No.: 2 Operating Test No.: ILT0401-1

**Narrative Summary**

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

1. The BOP operator will start SX 1C Pump IAW CPS No. 3211.01, Section 8.1.2 to perform PMT.
2. Annunciator CPS 5041-5H, Hyd Ignitor Sys Div 1 Trouble, is received. Technical Specifications will be evaluated and LCO 3.6.3.2, Action A1 will require the Hydrogen Ignitor Division to be restored to Operable status within 30 days.
3. Power reduction with flow will commence. Power reduction can be halted upon direction from the Lead Examiner by initiating next event.
4. Generator field voltage will start to increase requiring the ATC Operator to take manual control of the voltage regulator and adjust voltage. Annunciator CPS 5008-3E, Gen/Exciter Field Trouble, will also initiate alerting the operator to the problem.
5. The Shutdown Service Water (SX) pump, which is running for PMT, will trip. The BOP operator will need to open the 1SX014C valve to restore cooling water to the SX components. Technical Specifications LCO 3.7.2, Action A. will be evaluated which will require that HPCS be declared Inoperable immediately.
6. Annunciator 5004-2L, DCS Component Failure, causing a loss of the #4 and #8 DCS screens. This will require the RO to reroute the information by operating the DG 4 Bypass pushbutton on the P680 panel.
7. A trip of TBCCW Pump 'B' will require the BOP Operator to start the standby pump.
8. Security will report that the Thunderstorm Watch has been upgraded to a Tornado Warning and that a Tornado has been sighted on the South edge of Clinton. A Tornado will tear through the RAT and ERAT causing a loss of off-site power. The Div II DG will fail to auto start.
9. A RCIC line break and small MSL break will develop causing entry into EOP-8, Secondary Containment Control as temperatures exceed Max Safe Values.

EOP
1, 8, 3

**Critical tasks:**

- Perform actions to re-energize 4160V Bus 1B1.
- Performs Blowdown when two or more areas are above the Max Safe Value.

Facility: Clinton Power Station Scenario No.: 3 Operating Test No.: **ILT0401-1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
73% Reactor Power, steady state, waiting on surveillance testing to complete.
Thunderstorm Watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Shift Plant Service Water (WS) Pumps to 'A' in service and 'C' secured.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | N/A | TS-SRO | SLC Pump 'A' Oil Sightglass Empty |
| 2 | N/A | N-BOP/SRO | Shift WS Pumps |
| 3 | Annunc | C-BOP | Low Flow CW Pump 1C Brg Seal Water |
| 4 | CU01A | C-ATC/SRO | Loss of 'A' RT Filter Demin. |
| 5 | TU02 | I-BOP | Turbine LO Temp Controller Failure |
| 6 | Annunc | C-ATC | Low Pressure RFP 1A Seal Water. |
| 7 | N/A | R-ATC/SRO | Power Reduction to remove RFP 1A from service. |
| 8 | Override | TS-SRO | LPCS/RHR A Water Leg Pump trip |
| 9 | Annunc RP01 | M-ALL | Seismic Event, Main Turbine High Vibration, with Scram and ATWS |
| 10 | Override | C-BOP | SLC Squib Valves fail to fire. |
| | | | |
| | | | |

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

Scenario No.: 3 Operating Test No.: ILT0401-1

**Narrative Summary**

**Event #** **Description**

1. A report will be made by the Area Operator stating that the Oil Sightglass for the 'A' SLC Pump is empty and there is oil on the skid. This will require entry into Technical Specification 3.1.7, Action A.1, which requires restoring the SLC Pump to Operable status within 7 days.
2. The BOP Operator will shift Plant Service Water Pumps, placing 'A' WS Pump in service and securing 'C' WS Pump.
3. Annunciator 5041-3G, Low Flow CW Pump 1C Brg Seal Water, is received. This will require the BOP operator to secure the 1C CW Pump.
4. Annunciator CPS 5000-2C, F-D System Trouble will be received. The ATC Operator will then need to analyze system conditions and lineup system for 2 pump /1 filter operation.
5. The BOP operator will need to diagnose the problem with the temperature controller and take manual control to stabilize temperature.
6. Annunciator 5002-2A, Low Pressure Reactor Feed Pump 1A Seal Water, will be received. The RO will determine that seal pressure cannot be restored and will remove the RFP from service.
7. A power reduction to <65% will be initiated to allow RFP 1A to be removed from service.
8. Annunciator 5063-3H, LPCS/RHR A Water Leg Pump Auto Trip, is received. BOP operator will determine that the Water Leg Pump has tripped. This will require entry into Technical Specification 3.5.1, Action A.1, which requires restoring the low pressure subsystem to Operable status within 7 days.
9. A seismic event exceeding an SSE condition will be received. This will require an orderly plant shutdown. The Main Turbine will experience high vibration which will require a manual scram with ATWS.
10. The SLC Squib Valves will not fire preventing SLC Pump 'B' from injecting into the reactor. This will require Alternate Boron Injection.

EOP
6, 1A, (Alternate Boron Injection)

**Critical tasks:**

- Insert Control Rods to Shutdown the Reactor.
- Terminate and Prevent Injection to reduce power.

Facility: Clinton Power Station Scenario No.: 4 Operating Test No.: **ILT0401-1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
93% power, steady state operation.
Thunderstorm Watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Continue steady state operation
- Secure DG 1A from CPS 9080.01, DG 1A Operability – Manual and Quick Start Operability, by performing section 8.3.1 through 8.3.7.

| Event No. | Malf. No. | Event Type* | Event Description |
|---|---|---|---|
| 1 | N/A | N-BOP | Secure DG 1A from surveillance |
| 2 | Annunc | TS-SRO | Low Level DG Fuel Oil Storage Tank TS 3.8.3 |
| 3 | LC08A | C-BOP | CRD Pump C001B Seal Leakage High |
| 4 | Override | C-ATC<br>TS-SRO | CRD Accumulator Fault |
| 5 | Override | C-BOP | Auto Trip of 'C' Cycle Condensate Pump |
| 6 | Override | C-ATC<br>R-ATC | Loss of Feedwater Heating & Recirc Motor 'B' Brg Oil Level Low |
| 7 | RP03 | M-ALL | Core Instabilities, Scram, Hydraulic Lock ATWS |
| 8 | LC08B | C-BOP | CRD Pump 'A' will trip (recoverable with delay) |
| | | | |

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

Scenario No.: 4 Operating Test No.: **ILT0401-1**

**Narrative Summary**

**Event #** **Description**

1. CPS 9080.01, DG 1A Operability – Manual and Quick Start Operability, has been completed. The BOP operator will secure DG 1A and place it back in standby.
2. Annunciator 5060-8B, Low Level DG Fuel Oil Storage Tank, is received requiring entry into Technical Specification 3.8.3, Action A.1, which requires restoring the level within 48 hours.
3. Annunciator 5068-6C, CRD Pump C001B Seal Leakage High, is received. The BOP operator is required to shift to the 'A' CRD Pump per CPS 3304.01.
4. Two accumulator faults will be received. The RO will have to determine which control rods have the accumulator faults. One fault will make a control rod inoperable requiring entry into Technical Specification 3.1.5, Action A, which requires declaring the control inoperable within 8 hours.
5. A trip of 'C' Cycle Condensate (CY) Pump will be initiated requiring the BOP Operator to start a standby pump and verify that system pressure returns to normal.
6. The #6A FW Heater Inlet Valve will stroke closed. This will require entry into CPS 4005.01, Loss of Feedwater Heating. Reactor power will need to be adjusted to maintain power at or below the original power. Then annunciator 5003-5H, Recirc Mtr B Brg Oil Lvl Lo, is received with a motor bearing temperature increase to ≥ 212°F. This will require the RO to stop the RR Pump and enter CPS 4008.01, Abnormal Reactor Coolant Flow.
7. Core Instabilities will be seen requiring a Scram to be initiated and partial rod motion will be seen. Reactor power will still be above 5%.
8. The 'A' CRD Pump will trip, but may be recovered by the BOP operator if attempted.

EOP
1A

**Critical tasks:**

- Initiate a scram when core instabilities are identified.
- Initiate Standby Liquid Control to shutdown the reactor.
- Terminate and Prevent Injection to lower level.