

Outline Submittal

FOR THE DRESDEN INITIAL EXAM - JUNE 2002

Contains the following:

Outline Submittal Letter from Licensee

| | |
|-----------|---|
| ES-201-1 | Examination Preparation Checklist |
| Letter | Exelon cover letter transmitting the Outline |
| ES-201-2 | Examination Outline Quality Checklist |
| ES-301-1 | Administrative Topics Outline (RO) |
| ES-301-1 | Administrative Topics Outline (SRO) |
| ES-301-2 | Control Room and Facility Walk-Through Test Outline (RO/SRO(I)) |
| ES-301-5 | Transient and Event Checklist |
| ES-301-6 | Competencies Checklist |
| D-1 | Dynamic Simulator Scenario Outline for 4 scenarios |
| ES-401-1 | BWR SRO Examination Outline |
| ES-401-2 | BWR RO Examination Outline |
| ES-401-10 | Record of Rejected K/As |
| Admin | There were no NRC Comments on the submitted test outlines |

| Facility: <u>Dresden Nuclear Station U2/U3</u> | | Date of Examination: <u>June 3, 2002</u> |
|--|---|--|
| Examinations Developed by: <input checked="" type="checkbox"/> Facility / <input type="checkbox"/> NRC (circle one) | | |
| Target Date* | Task Description / Reference | Chief Examiner's Initials |
| -180 | 1. Examination administration date confirmed (C.1.a; C.2.a & b) | drm |
| -120 | 2. NRC examiners and facility contact assigned (C.1.d; C.2.e) | drm |
| -120 | 3. Facility contact briefed on security & other requirements (C.2.c) | drm |
| -120 | 4. Corporate notification letter sent (C.2.d) | drm |
| [-90] | [5. Reference material due (C.1.e; C.3.c)] | n/a |
| -75 | 6. Integrated examination outline(s) due (C.1.e & f; C.3.d) | drm |
| -70 | 7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e) | drm |
| -45 | 8. Proposed examinations, supporting documentation, and reference materials due (C.1.e, f, g & h; C.3.d) | drm |
| -30 | 9. Preliminary license applications due (C.1.i; C.2.g; ES-202) | drm |
| -14 | 10. Final license applications due and assignment sheet prepared (C.1.i; C.2.g; ES-202) | drm |
| -14 | 11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f) | drm |
| -14 | 12. Examinations reviewed with facility licensee (C.1.j; C.2.f & h; C.3.g) | drm |
| -7 | 13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h) | drm |
| -7 | 14. Final applications reviewed; assignment sheet updated; waiver letters sent (C.2.g, ES-204) | drm |
| -7 | 15. Proctoring/written exam administration guidelines reviewed with facility licensee and authorization granted to give written exams (if applicable) (C.3.k) | drm |
| -7 | 16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i) | drm |
| <p>* Target dates are keyed to the examination date identified in the corporate notification letter. They are for planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.</p> <p>[] Applies only to examinations prepared by the NRC.</p> | | |

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10 CFR 55.40

January 07, 2002

PSLTR: #02-0001

U. S. Nuclear Regulatory Commission
Region III
ATTN: Operator Licensing Branch
801 Warrenville Road
Lisle, IL 60532-4351

Dresden Nuclear Power Station Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
Docket Nos. 50-237 and 50-249

Subject: Initial License Examination Integrated Examination Outline

Enclosed is the integrated examination outline, which Dresden Nuclear Power Station (DNPS) is submitting for review, comment, and approval for the Initial License Examination, scheduled for the week of June 6, 2002, at DNPS.

This submittal includes outlines for the senior reactor operator and reactor operator written examinations, the job performance measure walk-through, the administrative job performance measure walk-through, and the integrated operational scenarios.

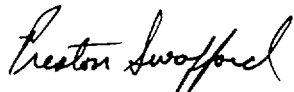
This outline has been developed in accordance with NUREG-1021, "Operator Licensing Examiner Standards," Revision 8, Supplement 1.

In accordance with NUREG 1021, Section ES-201, please ensure that these materials are withheld from public disclosure until after the examinations are complete.

January 7, 2002
U. S. Nuclear Regulatory Commission
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Should you have any questions concerning this letter, please contact Mr. D. F. Ambler, Regulatory Assurance Manager, at (815) 416-2800.

Respectfully,



Preston Swafford
Site Vice President
Dresden Nuclear Power Station

Enclosures:

| | |
|-----------|---|
| ES-201-2 | Examination Outline Quality Checklist |
| ES-201-3 | Examination Security Agreements |
| ES-301-1 | Administrative Topics Outline |
| ES-301-2 | Control Room Systems and Facility Walk-Through Test Outline |
| ES-301-5 | Transient and Event Checklist |
| ES-301-6 | Competencies Checklist |
| ES-401-1 | BWR SRO Examination Outline |
| ES-401-2 | BWR RO Examination Outline |
| ES-401-10 | Record of Rejected K/As |
| ES-D-1 | Scenario Outlines |

cc: NRC Document Control Desk – w/o enclosures
Region III NRC Regional Administrator - w/o enclosures
NRC Senior Resident Inspector - Dresden Nuclear Station – w/o enclosures

| Facility | | Date of Examination | | |
|--|--|------------------------------|----|----------|
| Item | Task Description | Initials | | |
| | | a | b* | c# |
| 1 W R I T E N | a. Verify that the outline(s) fit(s) the appropriate model per ES-401. | MO | DH | DM |
| | b. Assess whether the outline was systematically and randomly prepared in accordance with Section D 1 of ES-401 and whether all K/A categories are appropriately sampled. | MO | DH | DM |
| | c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics. | MO | DH | DM |
| | d. Assess whether the justifications for deselected or rejected K/A statements are appropriate. | MO | DH | DM |
| 2 S I M | a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients. | MO | DH | DM |
| | b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days. | MO | DH | DM |
| | c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D. | MO | DH | DM |
| 3 W / | a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks. | MO | DH | DM |
| | b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301, (2) one task is conducted in a low-power or shutdown condition, (3) 40% of the tasks require the applicant to implement an alternate path procedure, (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and (5) the in-plant walk-through requires the applicant to enter the RCA. | MO | DH | DM |
| | c. Verify that the required administrative topics are covered, with emphasis on performance-based activities. | MO | DH | DM |
| | d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days. | MO | DH | DM |
| 4 G E N E R A L | a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section. | MO | DH | DM |
| | b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate. | MO | DH | DM |
| | c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5. | MO | DH | DM |
| | d. Check for duplication and overlap among exam sections. | MO | DH | DM |
| | e. Check the entire exam for balance of coverage. | MO | DH | DM |
| | f. Assess whether the exam fits the appropriate job level (RO or SRO). | MO | DH | DM |
| a. Author | | Printed Name / Signature | | Date |
| b. Facility Reviewer (*) | | MARK OTTEN / [Signature] | | 1/16/02 |
| c. NRC Chief Examiner (#) | | Dave Givens / [Signature] | | 1/11/02 |
| d. NRC Supervisor | | Dell McNeil / [Signature] | | 01/23/02 |
| | | David E. Mills / [Signature] | | 1/23/02 |
| Note: * Not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required. | | | | |

Facility: Dresden

Date of Examination: May 27, 2002

Examination Level (circle one) **RO** / SRO

Operating Test Number: ILT 01-1

| | Administrative Topic/Subject Description | Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions |
|-----|--|--|
| A.1 | Safety-Related Surveillance | JPM: Determine if Jet Pump Flow Meets Requirements REF: DOS 0202-02, Jet Pump Operability and Degradation K/A: 2.1.25 [Ability to obtain and interpret station reference material such as graphs / monographs / and tables which contain performance data] RO IMPORTANCE: 2.8 |
| | Shutdown Power Sources | JPM: Verify Off-Site Power Sources Available REF: DOS 0040-10, Unit 2 Shutdown Power Sources and Distribution K/A: 2.1.31 [Ability to locate control room switches / controls and indications and to determine that they are correctly reflecting the desired plant lineup] RO IMPORTANCE: 4.2 |
| A.2 | Tracking of Limiting Conditions for Operations | JPM: Log and Track Short Duration Timeclock REF: OP-AA-108-104, Technical Specification Compliance K/A: 2.2.23 [Ability to track limiting conditions for operations] RO IMPORTANCE: 2.6 |
| A.3 | Radiation Control Requirements | JPM: Locate Valve 2-1201-122 and Determine Requirements for Entering RCA REF: RP-AA-460, Controls for High and Very High Radiation Areas K/A: 2.3.1 [Knowledge of 10 CFR 20 and related facility radiation control requirements] RO IMPORTANCE: 2.6 |
| A.4 | Post-Accident Instrumentation | JPM: Estimating the Post Accident Noble Gas Activity REF: DOP 1700-10, Estimating the Post Accident Noble Gas Activity Release With/Without the Eberline SPING-4 Monitor Available K/A: 2.4.3 [Ability to identify post-accident instrumentation] RO IMPORTANCE: 3.5 |

Facility: Dresden

Examination Level (circle one): RO / **SRO**

Date of Examination: May 27, 2002

Operating Test Number: ILT 01-1

| | Administrative Topic/Subject Description | Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions |
|-----|--|---|
| A.1 | Safety-Related Surveillance Review | JPM: Review Faulted Jet Pump Operability Surveillance REF: DOS 0202-02, Jet Pump Operability and Degradation K/A: 2.1.12 [Ability to apply technical specifications for a system] SRO IMPORTANCE: 4.0 |
| | Overtime Limitations | JPM: Evaluate Overtime of Operators and Complete Required Documentation for Exceeding Allowable Limits REF: LS-AA-119, Overtime Controls K/A: 2.1.5 [Ability to locate and use procedures and directives related to shift staffing and activities] SRO IMPORTANCE: 3.4 |
| A.2 | Controlling Temporary Changes | JPM: Review and Approve Temporary Modification REF: CC-AA-112, Temporary Configuration Changes K/A: 2.2.11 [Knowledge of the process for controlling temporary changes] SRO IMPORTANCE: 3.4 |
| A.3 | Reviewing Liquid Release Permits | JPM: Review Liquid Radwaste Discharge Permit REF: DOP 2000-110, Waste Surge Tank Radwaste Discharge to River with the Off Stream Liquid Effluent Monitor Operable K/A: 2.3.6 [Knowledge of the requirements for reviewing and approving release permits] SRO IMPORTANCE: 3.1 |
| A.4 | Emergency Plan Off-Site Notifications | JPM: Prepare a NARS Form for Transmittal Including Determination of PARS REF: EP-AA-114, Notifications; EP-AA-113, Protective Actions K/A: 2.4.38 [Ability to take actions called for in the facility emergency plan / including (if required) supporting or acting as emergency coordinator] SRO IMPORTANCE: 4.0 |

Facility: Dresden

Date of Examination: May 27, 2002

Exam Level (circle one) **RO / SRO(I)** SRO(U)

Operating Test No.: ILT 01-1

B.1 Control Room Systems

| System / JPM Title | Type Code* | Safety Function |
|---|------------|--|
| a. Recirculation Flow Control System / Transfer Recirculation Flow Control from Individual Man. to Master Man., DOP 0202-03; K/A: 202002A4.08, 3.3 / 3.3 | D, S | (1) Reactivity Control |
| b. High Pressure Coolant Injection System / Manually Start HPCI for Surveillance with Exhaust Pot Drain Alarm, DOS 2300-03; K/A: 206000A4.12, 4.0 / 3.9 | N, A, S, | (2) Reactor Water Inventory Control |
| c. Main Turbine Generator and Auxiliary Systems / Synchronize the Main Generator to the Grid, DGP 01-01; K/A: 245000A4.02, 3.1 / 2.9 | N, S, L | (4) Heat Removal frm Reactor Core |
| d. Safety Relief Valves / Relief Valve Testing at Low and at High Pressure, DOS 0250-04; K/A: 239002A4.01, 4.4 / 4.4 | N, A, S, L | (3) Reactor Pressure Control |
| e. A. C. Electrical Distribution / Crosstie Bus 23-1 and 33-1 using the crosstie breakers, DOP 6500-30; K/A: 262001A4.01, 3.4 / 3.7 | M, S, L | (6) Electrical |
| f. Rod Worth Minimizer System / Enter Substitute Rod Position Data, DOP 0400-02; K/A: 201006A4.06, 3.2 / 3.2 | D, S | (7) Instrumentation |
| g. Standby Gas Treatment System / SBTG Post Maintenance Testing with Receipt of Auto Initiation Signal, DOS 7500-02; K/A: 295020AK2.11, 3.2 / 3.4 | D, A, S | (9) Radioactivity Release |

B.2 Facility Walk-Through

| | | |
|---|------|--------------------------------------|
| a. Isolation Condenser / Isolation Condenser Makeup Pump Start with Faulted Lube Oil Pressure, DSSP 100-CR; K/A: 295016AA1.09, 4.0 / 4.0 | D, A | (4) Heat Removal frm Reactor Core |
| b. Reactor Protection System / Transfer RPS to Reserve Power Supply, DOP 0500-03; K/A: 212000K4.03, 3.0 / 3.1 | D | (7) Instrumentation |
| c. Instrument Air System / Unit 2/3 Instrument Air Cross-Connect Operation, DOP 4700-03; K/A: 295019AA1.02, 3.3 / 3.1 | D, R | (8) Plant Service Systems |

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Facility: Dresden

Scenario No: ILT-N-1

Op-Test No: ILT 01-1

Summary:

The crew assumes the shift with a unit startup in progress and the reactor at about 15% power. In accordance with the unit startup procedure, the SRO directs the Assistant NSO (ANSO) to transfer auxiliary electrical power from transformer 22 to transformer 21. The NSO, as directed by the SRO, then increases reactor power by control rod withdrawal. Following the power increase, the main turbine bypass valve #1 opens spuriously. The valve is closed when the ANSO takes manual action at the EHC control panel. Circulating water pump 2B then trips on overload and the ANSO manually starts circulating water pump 2C to maintain condenser vacuum. APRM channel 5 fails downscale followed by a companion IRM 15 spike upscale and a partial half-scam occurs. The NSO inserts a complete half-scam. The SRO addresses the technical specification requirements for the ARPM channel. The ARPM channel is bypassed but the half-scam cannot be reset by the NSO. A spurious RPS "A" channel half scam occurs resulting in a full reactor scram. Several control rods fail to insert and an ATWS occurs. During actions to recover from the ATWS an ECCS suction line break occurs resulting in a lowering torus water level. An emergency depressurization is then performed as directed by the DEOP for primary containment control. The scenario is terminated when the reactor is depressurized, reactor pressure is being controlled, and actions are taken to address the lowering torus water level.

Facility: Dresden

Scenario No: ILT-N-2

Op-Test No: ILT 011

Examiners: _____ Operators: _____

Initial Conditions: Unit in Mode 2 at approximately 1% reactor power; IRM channel 12 out of service; Unit 3 is in Mode 5.

Turnover: Unit startup in progress; return RBCCW pump 2B to service following maintenance then continue power ascension

| Event No. | Mal. No. | Event Type* | | Event Description |
|-----------|-----------|-------------|----------|---|
| 1 | N/A | N | ANSO SRO | swap RBCCW pumps |
| 2 | N/A | R | NSO SRO | raise reactor power by withdrawing control rods |
| 3 | RODxxxDN | C | NSO SRO | control rod double notches during withdrawal |
| 4 | NII12POT | I | NSO SRO | IRM channel fails upscale |
| 5 | PCP85401 | I | ANSO SRO | drywell pressure controller failure |
| 6 | K49 T12 | C | ANSO SRO | main feed breaker to MCC 24-1 trips with failure of emergency diesel generator to start automatically |
| 7 | I31 | M | ALL | steam line break in X-area (outside drywell) from main steam line 2A |
| 8 | I12 / I16 | | ALL | partial failure of group 1 isolation; steam discharge into X-area continues at reduced rate |

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

NUREG-1021, Revision 8, Supplement 1

Facility: Dresden

Scenario No. LT-N-2

Op-Test No: ILT 01-1

Summary:

The crew assumes the shift with a unit startup in progress and the reactor in Mode 2 at about 1% power. Maintenance has been completed on RBCCW pump 2B and the SRO directs the ANSO to switch running pumps and place the RBCCW pump 2B in service. The NSO, as directed by the SRO, then continues the power ascension for unit startup by control rod withdrawal. During the control rod withdrawal, a control rod double notches beyond the withdraw limit and must be repositioned. IRM channel 12 then fails upscale and a half-scam occurs on the RPS "A" channel. The NSO bypasses the failed IRM channel and the SRO addresses the technical specification requirements for the failure. Drywell pressure then begins to decrease and pressure control is regained when the ANSO takes manual control of the drywell pressure controller. The main feed breaker to MCC 24-1 then trips and the U2 EDG fails to automatically start. The U2 EDG does run when manually started by the ANSO and power is restored to MCC 24-1. Temperature alarms in the X-area are received when a break in main steam line 2A occurs outside of the drywell. As temperatures increase, a group 1 isolation and reactor scram are automatically initiated. The MSIVs in main steam line 2A do not close fully and steam discharge into the X-area continues at a reduced rate. An emergency depressurization is then conducted as directed by the DEOP for secondary containment control. The scenario terminates when reactor pressure has been reduced and is under control.

Facility: Dresden

Scenario No: ILT-N-3

Op-Test No: ILT 01-1

Examiners _____

Operators: _____

Initial Conditions: Approximately 40% reactor power; IRM channel 12 out of service; Unit 3 is in Mode 5.

Turnover: Unit shutdown in progress for forced outage; shutdown reactor feed pump 2B, then continue power reduction for unit shutdown

| Event No. | Malf. No. | Event Type* | | Event Description |
|-----------|--------------------|-------------|----------|---|
| 1 | N/A | N | ANSO SRO | shutdown reactor feed pump for unit shutdown |
| 2 | N/A | R | NSO SRO | lower reactor power by reducing recirculation flow |
| 3 | RLLMLS | I | NSO SRO | feedwater level control system setpoint drifts high |
| 4 | SER1371 FW/DOP1 | C | NSO SRO | reactor feed pump 2A failure |
| 5 | ADS3xSD | I | ANSO SRO | spurious ADS valve opening |
| 6 | K11 MGE SCBTR | C | ANSO SRO | stator cooling water pump trips on overload and standby pump fails to start automatically |
| 7 | K21 | M | ANSO SRO | Bus 22 normal feed breaker trips on overload |
| 8 | K24 | | ALL | feed line break inside of drywell |
| 9 | HPI/BKR | | ANSO SRO | HPCI injection valve failure |

* (N)ormal, (F)ault activity, (I)nstrument, (C)omponent, (M)ajor
NUREG-1021, Revision 8, Supplement 1

Facility: Dresden

Scenario No: ILT-N-3

Op-Test No: ILT 01-1

Summary:

The crew assumes the shift with a unit shutdown in progress and the reactor at about 40% power. The SRO, in accordance with the unit shutdown procedure, directs the ANSO to shutdown a reactor feed pump. The NSO, as directed by the SRO, then lowers reactor power by reducing recirculation flow. Manual control of the feedwater level control system is taken by the NSO after it is observed that the setpoint begins to drift high. A low oil pressure alarm is received for reactor feed pump 2A and the auxiliary oil pump cannot be started. The NSO then starts the standby reactor feed pump and pump 2A is shutdown. An ADS valve then spuriously opens and is manually closed by the ANSO. The SRO addresses the technical specification requirements for the ADS valve failure. The running stator water cooling pump trips and the standby pump fails to start automatically. The standby pump is manually started by the ANSO. The normal feeder breaker to Bus 22 then trips on overload resulting in a loss of all reactor feed pumps. The reactor scrams (or is scrammed) on low water level and shortly thereafter, a feed line break occurs inside the drywell. When HPCI is initiated the injection valve fails to open. An emergency depressurization is performed as directed by the DEOPs due to the inability to maintain reactor water level. The scenario terminates when reactor water level is restored.

| | | |
|--|----------------------|-----------------------|
| Facility: Dresden | Scenario No: ILT-N-5 | Op-Test: No: ILT 01-1 |
| Examiners: _____ | | Operators: _____ |
| _____ | | _____ |
| _____ | | _____ |
| <p><u>Initial Conditions:</u> Approximately 70% reactor power; IRM channel 12 out of service Unit 3 is in Mode 5.</p> <p><u>Turnover:</u> Power reduction in progress for drywell entry.</p> | | |

| Event No. | Malf. No. | Event Type* | | Event Description |
|-----------|----------------------|-------------|----------|---|
| 1 | N/A | N | ANSO SRO | establish drywell de-inerting lineup |
| 2 | N/A | R | NSO SRO | lower reactor power by reducing recirculation flow |
| 3 | RRMAFDBK | I | NSO SRO | recirculation pump controller speed signal failure |
| 4 | MGGH2CON | I | ANSO SRO | main generator hydrogen temperature controller output fails low |
| 5 | ICTUBLK | C | ANSO SRO | isolation condenser tube leak |
| 6 | N/A | C | NSO SRO | CRD pump failure |
| 7 | CIGP11 | M | ALL | spurious group 1 actuation and reactor scram |
| 8 | RDFHYLK | | ALL | SDV full hydraulic lock (ATWS) |
| 9 | SCRLFVAD SCRLFVBD | | NSO SRO | SBLC pump relief valves fail open |

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

Facility: Dresden

Scenario No: ILT-N-5

Op-Test No: ILT 01-1

Summary:

The crew assumes the shift with reactor power at about 70% and a power reduction in progress to conduct a drywell entry for leakage inspections. The ANSO, as directed by the SRO, lines up systems for drywell de-inerting. The NSO then lowers reactor power by reducing recirculation flow following direction by the SRO. During the power reduction, the speed control signal fails low for recirculation pump 2A and the pump flow reduction is stopped when the NSO locks out the scoop tube. Alarms are then received due to high main generator hydrogen temperature resulting from a failed controller. Hydrogen temperature is restored after the controller is placed in manual by the ANSO. Alarms are then received due to an isolation condenser tube leak. The isolation condenser is manually isolated by the ANSO. The SRO addresses the technical specification requirements for the inoperable isolation condenser. A field report is received that the 2A CRD pump is failing due to rapid oil loss from a leak. The NSO shutdowns the 2A CRD pump and starts the 2B CRD pump. During MD work on main steam line flow transmitters, a spurious group 1 isolation and a reactor scram occurs. A full hydraulic lock of the scram discharge volume results in little inward rod motion and an ATWS. When boron injection is initiated, the SBLC pumps do not inject boron into the reactor due to the pump relief valves failing open. The crew then initiates actions for alternate SBLC injection. The scenario terminates after manual driving in of control rods is in progress and a scram/reset has been successfully initiated.

Facility: Dresden

Form ES-401-1

Exam Date: 05/27/2002

Exam Level: SRO

| Tier | Group | K/A Category Points | | | | | | | | | | | Point Total |
|---|-------------|---------------------|----|----|-------|----|-------|----|-------|----|-------|---|-------------|
| | | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 4 | 5 | 3 | | | | 5 | 5 | | | 4 | 26 |
| | 2 | 3 | 2 | 3 | | | | 3 | 3 | | | 3 | 17 |
| | Tier Totals | 7 | 7 | 6 | | | | 8 | 8 | | | 7 | 43 |
| 2. Plant Systems | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 23 |
| | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 2 | 13 |
| | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 4 |
| | Tier Totals | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 2 | 7 | 40 |
| 3. Generic Knowledge And Abilities | | | | | Cat 1 | | Cat 2 | | Cat 3 | | Cat 4 | | |
| | | | | | 4 | | 5 | | 4 | | 4 | | 17 |

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

BWR SP² Examination Outline

Printed: 01 72

Facility: Dresden

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|--|------|--------|
| 295003 | Partial or Complete Loss of A.C. Power / 6 | | | | X | | | AA1.03 - Systems necessary to assure safe plant shutdown | 4.4* | 1 |
| 295003 | Partial or Complete Loss of A.C. Power / 6 | | X | | | | | AK2.03 - A.C. electrical distribution system | 3.9 | 1 |
| 295009 | Low Reactor Water Level / 2 | | | | | X | | AA2.02 - Steam flow/feedflow mismatch | 3.7 | 1 |
| 295010 | High Drywell Pressure / 5 | | | | | X | | AA2.06 - Drywell temperature | 3.6 | 1 |
| 295013 | High Suppression Pool Temperature / 5 | | | | | X | | AA2.01 - Suppression pool temperature | 4.0 | 1 |
| 295014 | Inadvertent Reactivity Addition / 1 | | X | | | | | AK2.01 - RPS | 4.1 | 1 |
| 295014 | Inadvertent Reactivity Addition / 1 | | | X | | | | AK3.02 - Control rod blocks | 3.7 | 1 |
| 295015 | Incomplete SCRAM / 1 | | | | | | X | 2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies. | 3.6 | 1 |
| 295015 | Incomplete SCRAM / 1 | X | | | | | | AK1.04 - Reactor pressure: Plant-Specific | 3.8 | 1 |
| 295016 | Control Room Abandonment / 7 | | | | | | X | 2.1.32 - Ability to explain and apply system limits and precautions. | 3.8 | 1 |
| 295016 | Control Room Abandonment / 7 | | | | X | | | AA1.04 - A.C. electrical distribution | 3.2 | 1 |
| 295017 | High Off-Site Release Rate / 9 | | X | | | | | AK2.04 - Plant ventilation systems | 3.3 | 1 |

Facility: Dresden

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|---|----|----|----|----|----|---|---|------|--------|
| 295023 | Refueling Accidents / 8 | | | | | | X | 2.1.14 - Knowledge of system status criteria which require the notification of plant personnel. | 3.3 | 1 |
| 295023 | Refueling Accidents / 8 | | | | X | | | AA1.03 - Fuel handling equipment | 3.6 | 1 |
| 295024 | High Drywell Pressure / 5 | X | | | | | | EK1.01 - Drywell integrity: Plant-Specific | 4.2* | 1 |
| 295025 | High Reactor Pressure / 3 | | | | | | X | 2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. | 4.3 | 1 |
| 295025 | High Reactor Pressure / 3 | | | X | | | | EK3.04 - Isolation condenser initiation: Plant-Specific | 4.7* | 1 |
| 295030 | Low Suppression Pool Water Level / 5 | | | | | X | | EA2.04 - Drywell/ suppression chamber differential pressure: Mark-I&II | 3.7 | 1 |
| 295031 | Reactor Low Water Level / 2 | | | | | X | | EA2.01 - Reactor water level | 4.6* | 1 |
| 295031 | Reactor Low Water Level / 2 | | X | | | | | EK2.16 - Reactor water level control | 4.1 | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | X | | | EA1.04 - SBLU | 4.5* | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | X | | | | | | EK1.02 - Reactor water level effects on reactor power | 4.3* | 1 |
| 295038 | High Off-Site Release Rate / 9 | | | | X | | | EA1.03 - Process liquid radiation monitoring system | 3.9 | 1 |
| 295038 | High Off-Site Release Rate / 9 | X | | | | | | EK1.03 - Meteorological effects on off-site release | 3.8 | 1 |

Facility: Dresden

BWR SPCC Examination Outline

Printed: 01 02

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|---|----|----|----|----|----|---|--|------|--------|
| 500000 | High Containment Hydrogen Concentration / 5 | | X | | | | | EK2.09 - Drywell nitrogen purge system | 3.3 | 1 |
| 500000 | High Containment Hydrogen Concentration / 5 | | | X | | | | EK3.01 - Initiation of containment atmosphere control system | 3.3 | 1 |

K/A Category Totals: 4 5 3 5 5 4

Group Point Total: 26

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

Ka

| Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 | | | | | | | | | | Form ES-401- | |
|--|--|----|----|----|----|----|---|---|------|--------------|--|
| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points | |
| 295001 | Partial or Complete Loss of Forced Core Flow Circulation / 1 | | | | | | X | 2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. | 3.7 | 1 | |
| 295002 | Loss of Main Condenser Vacuum / 3 | | | | | | X | 2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. | 4.0 | 1 | |
| 295002 | Loss of Main Condenser Vacuum / 3 | | X | | | | | AK2.04 - Reactor/turbine pressure regulating system | 3.3 | 1 | |
| 295004 | Partial or Complete Loss of D.C. Power / 6 | | | X | | | | AK3.02 - Ground isolation/fault determination | 3.3 | 1 | |
| 295005 | Main Turbine Generator Trip / 3 | | | | X | | | AA1.04 - Main generator controls | 2.8 | 1 | |
| 295005 | Main Turbine Generator Trip / 3 | X | | | | | | AK1.02 - †Core thermal limit considerations | 3.6 | 1 | |
| 295008 | High Reactor Water Level / 2 | | | X | | | | AK3.04 - Reactor feed pump trip: Plant-Specific | 3.5 | 1 | |
| 295019 | Partial or Complete Loss of Instrument Air / 8 | | | | | X | | AA2.02 - Status of safety-related instrument air system loads (see AK2.1-AK2.19) | 3.7 | 1 | |
| 295019 | Partial or Complete Loss of Instrument Air / 8 | | X | | | | | AK2.17 - High pressure coolant injection: Plant-Specific | 2.7 | 1 | |
| 295022 | Loss of CRD Pumps / 1 | | | | | X | | AA2.01 - Accumulator pressure | 3.6 | 1 | |
| 295028 | High Drywell Temperature / 5 | X | | | | | | EK1.02 - Equipment environmental qualification | 3.1 | 1 | |
| 295029 | High Suppression Pool Water Level / 5 | | | | | X | | EA2.03 - Drywell/containment water level | 3.5 | 1 | |

Facility: Dresden

BWR SP² Examination Outline

Printed: 01, 22

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|---|------|--------|
| 295032 | High Secondary Containment Area Temperature / 5 | | | | | | X | 2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. | 4.0 | 1 |
| 295032 | High Secondary Containment Area Temperature / 5 | | | | X | | | EA1.03 - Secondary containment ventilation | 3.7 | 1 |
| 295033 | High Secondary Containment Area Radiation Levels / 9 | | | | X | | | EA1.01 - Area radiation monitoring system | 4.0 | 1 |
| 295034 | Secondary Containment Ventilation High Radiation / 9 | X | | | | | | EK1.01 - Personnel protection | 4.1 | 1 |
| 295035 | Secondary Containment High Differential Pressure / 5 | | | X | | | | EK3.02 - Secondary containment ventilation response | 3.5 | 1 |

K/A Category Totals: 3 2 3 3 3 3

Group Point Total: 17

BWR SRO Examination Outline

Printed: C 002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 202002 | Recirculation Flow Control System / 1 | | | | X | | | | | | | | K4.05 - Limiting recirculation pump speed mismatch: Plant-Specific | 3.4 | 1 |
| 202002 | Recirculation Flow Control System / 1 | | | | | X | | | | | | | K5.01 - Fluid coupling: BWR-3, 4 | 2.8 | 1 |
| 206000 | High Pressure Coolant Injection System / 2 | | | | | | X | | | | | | K6.09 - Condensate storage and transfer system: BWR-2, 3, 4 | 3.5 | 1 |
| 206000 | High Pressure Coolant Injection System / 2 | | | | | | | X | | | | | A1.06 - System flow: BWR-2, 3, 4 | 3.7 | 1 |
| 209001 | Low Pressure Core Spray System / 2 | X | | | | | | | | | | | K1.10 - Emergency generator | 3.8 | 1 |
| 209001 | Low Pressure Core Spray System / 2 | | | X | | | | | | | | | K3.03 - Emergency generators | 3.0 | 1 |
| 211000 | Standby Liquid Control System / 1 | | | | | | | | | | | X | 2.4.6 Knowledge symptom based EOP mitigation strategies. | 4.0 | 1 |
| 215004 | Source Range Monitor (SRM) System / 7 | | | | | | | | | | | X | A4.04 - SRM drive control switches | 3.2 | 1 |
| 215005 | Average Power Range Monitor/Local Power Range Monitor System / 7 | | | | | | | | | X | | | A3.07 - RPS status | 3.8 | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | | | | X | | | | | | K6.01 - A.C. electrical distribution | 3.3 | 1 |
| 218000 | Automatic Depressurization System / 3 | | | X | | | | | | | | | K3.01 - Restoration of reactor water level after a break that does not depressurize the reactor when required | 4.4* | 1 |

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 218000 | Automatic Depressurization System / 3 | | | | X | | | | | | | | K4.01 - Prevent inadvertent initiation of ADS logic | 3.9 | 1 |
| 223001 | Primary Containment System and Auxiliaries / 5 | | | | | | | | | X | | | A3.02 - Vacuum breaker/relief valve operation | 3.4 | 1 |
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | | | | | | | | | | | X | 2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures. | 4.3 | 1 |
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | X | | | | | | | | | | | K1.19 - Component cooling water systems | 2.9 | 1 |
| 226001 | RHR/LPCI: Containment Spray System Mode / 5 | | X | | | | | | | | | | K2.02 - Pumps | 2.9* | 1 |
| 226001 | RHR/LPCI: Containment Spray System Mode / 5 | | | | | X | | | | | | | K5.02 - Water hammer | 2.7 | 1 |
| 259002 | Reactor Water Level Control System / 2 | | | | | | | | X | | | | A2.01 - Loss of any number of main steam flow inputs | 3.4 | 1 |
| 259002 | Reactor Water Level Control System / 2 | | | | | | | | | | X | | A4.06 - DP/Single/three element control selector switch: Plant-Specific | 3.2 | 1 |

261000 Standby Gas Treatment System / 9

X 2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies.

3.6 1

BWR SRO Examination Outline

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|---------------------------------------|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 261000 | Standby Gas Treatment System / 9 | | | | | | | | X | | | | A2.04 - High train moisture content | 2.7 | 1 |
| 262001 | A.C. Electrical Distribution / 6 | | X | | | | | | | | | | K2.01 - Off-site sources of power | 3.6 | 1 |
| 264000 | Emergency Generators (Diesel/Jet) / 6 | | | | | | | X | | | | | A1.09 - Maintaining minimum load on emergency generator (to prevent reverse power) | 3.1 | 1 |

K/A Category Totals: 2 2 2 2 2 2 2 2 2 2 2 2 3

Group Point Total: 23

BWR SRO Examination Outline

Printed: C 002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|---|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 201001 | Control Rod Drive Hydraulic System / 1 | | X | | | | | | | | | | K2.05 - Alternate rod insertion valve solenoids: Plant-Specific | 4.5* | 1 |
| 201006 | Rod Worth Minimizer System (RWM) (Plant Specific) / 7 | | | | | | | | | X | | | A3.05 - Latched group indication: P-Spec(Not-BWR6) | 3.1 | 1 |
| 202001 | Recirculation System / 1 | | | | | | X | | | | | | K6.02 - Component cooling water systems | 3.2 | 1 |
| 204000 | Reactor Water Cleanup System / 2 | | | | | | | | | | | X | 2.1.14 - Knowledge of system status criteria which require the notification of plant personnel. | 3.3 | 1 |
| 205000 | Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4 | | | | X | | | | | | | | K4.03 - Low reactor water level: Plant-Specific | 3.8 | 1 |
| 215002 | Rod Block Monitor System / 7 | X | | | | | | | | | | | K1.01 - APRM: BWR-3, 4, 5 | 3.0 | 1 |
| 219000 | RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5 | | | | | | | X | | | | | A1.02 - System flow | 3.5 | 1 |
| 230000 | RHR/LPCI: Torus/Suppression Pool Spray Mode / 5 | | | | | | X | | | | | | K6.05 - Suppression pool | 3.4 | 1 |
| 234000 | Fuel Handling Equipment / 8 | | | | | | | | X | | | | A2.03 - †Loss of electrical power | 3.1 | 1 |
| 245000 | Main Turbine Generator and Auxiliary Systems / 4 | | | X | | | | | | | | | K3.02 - Reactor pressure | 4.0 | 1 |
| 262002 | Uninterruptable Power Supply (A.C./D.C.) / 6 | | | X | | | | | | | | | K3.17 - Process monitoring: Plant-Specific | 3.1 | 1 |

BWR SRO Examination Outline

Printed: 0002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|---|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 271000 | Offgas System / 9 | | | | | X | | | | | | | K5.07 - Radioactive decay | 2.9 | 1 |
| 400000 | Component Cooling Water System (CCWS) / 8 | | | | | | | | | | | X | 2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. | 4.0 | 1 |

K/A Category Totals: 1 1 2 1 1 2 1 1 1 0 2

Group Point Total: 13

BWR SRO Examination Outline

Printed: 6/1/002

Facility: resden

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-1

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|----------------------------------|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 239001 | Main and Reheat Steam System / 3 | | | | | X | | | | | | | K5.06 - Air operated MSIV's | 2.9 | 1 |
| 288000 | Plant Ventilation Systems / 9 | | | | | | | | X | | | | A2.01 - High drywell pressure: Plant-Specific | 3.4 | 1 |
| 288000 | Plant Ventilation Systems / 9 | | | | | | | | | | | X | 2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications. | 4.0 | 1 |
| 290002 | Reactor Vessel Internals / 5 | | | | | | | | | | | X | 2.1.32 - Ability to explain and apply system limits and precautions. | 3.8 | 1 |

K/A Category Totals: 0 0 0 0 1 0 0 1 0 0 2

Group Point Total: 4

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 01/04/20

BWR SRO Examination Outline

Form ES-401-5

Facility: Dresden

| Generic Category | KA | KA Topic | Imp. | Points |
|------------------------------|--------|---|------|----------|
| Conduct of Operations | 2.1.13 | Knowledge of facility requirements for controlling vital / controlled access. | 2.9 | 1 |
| | 2.1.11 | Knowledge of less than one hour technical specification action statements for systems. | 3.8 | 1 |
| | 2.1.22 | Ability to determine Mode of Operation. | 3.3 | 1 |
| | 2.1.8 | Ability to coordinate personnel activities outside the control room. | 3.6 | 1 |
| Category Total: | | | | 4 |
| Equipment Control | 2.2.3 | (multi-unit) Knowledge of the design, procedural, and operational differences between units. | 3.3 | 1 |
| | 2.2.8 | Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question. | 3.3 | 1 |
| | 2.2.26 | Knowledge of refueling administrative requirements. | 3.7 | 1 |
| | 2.2.2 | Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. | 3.5 | 1 |
| | 2.2.34 | Knowledge of the process for determining the internal and external effects on core reactivity. | 3.2* | 1 |
| Category Total: | | | | 5 |
| Radiation Control | 2.3.9 | Knowledge of the process for performing a containment purge. | 3.4 | 1 |
| | 2.3.6 | Knowledge of the requirements for reviewing and approving release permits. | 3.1 | 1 |
| | 2.3.2 | Knowledge of facility ALARA program. | 2.9 | 1 |
| | 2.3.4 | Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized. | 3.1 | 1 |
| Category Total: | | | | 4 |

BWR SRO E. mination Outline

Printed: 01/04/20

Facility: Dresden

Form ES-401-5

| Generic Category | KA | KA Topic | Imp. | Points |
|------------------|--------|---|------|--------|
| Emergency Plan | 2.4.32 | Knowledge of operator response to loss of all annunciators. | 3.5 | 1 |
| | 2.4.7 | Knowledge of event based EOP mitigation strategies. | 3.8 | 1 |
| | 2.4.35 | Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications. | 3.5 | 1 |
| | 2.4.45 | Ability to prioritize and interpret the significance of each annunciator or alarm. | 3.6 | 1 |

Category Total: 4

Generic Total: 17

Facility: Dresden

Form ES-401-2

Exam Date: 05/27/2002

Exam Level: RO

Exam Level: RO

| Tier | Group | K/A Category Points | | | | | | | | | | | Point Total |
|--|-------------|---------------------|----|-------|----|-------|----|-------|----|-------|----|----|-------------|
| | | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 4 | 3 | 3 | | | | 2 | 1 | | | 0 | 13 |
| | 2 | 4 | 4 | 3 | | | | 4 | 3 | | | 1 | 19 |
| | 3 | | 0 | 1 | | | | 2 | 0 | | | 1 | 4 |
| | Totals Tier | 8 | 7 | 7 | | | | 8 | 4 | | | 2 | 36 |
| 2. Plant Systems | 1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 28 |
| | 2 | | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 19 |
| | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 4 |
| | Tier Totals | 8 | 5 | 5 | 5 | 5 | 4 | 4 | 7 | 6 | 4 | 3 | 51 |
| 3. Generic Knowledge And Abilities | | | | Cat 1 | | Cat 2 | | Cat 3 | | Cat 4 | | | |
| | | | | 3 | | 3 | | 4 | | 3 | | 13 | |
| Note: | | | | | | | | | | | | | |
| 1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier. | | | | | | | | | | | | | |
| 2. Actual point totals must match those specified in the table. | | | | | | | | | | | | | |
| 3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities. | | | | | | | | | | | | | |
| 4. Systems/evolutions within each group are identified on the associated outline. | | | | | | | | | | | | | |
| 5. The shaded areas are not applicable to the category tier. | | | | | | | | | | | | | |

Facility: Jden

BWR Reactor Examination Outline

Printed: 01/ 02

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|---|----|----|----|----|----|---|--|------|--------|
| 295005 | Main Turbine Generator Trip / 3 | | | | X | | | AA1.04 - Main generator controls | 2.7 | 1 |
| 295005 | Main Turbine Generator Trip / 3 | X | | | | | | AK1.02 - †Core thermal limit considerations | 3.2 | 1 |
| 295014 | Inadvertent Reactivity Addition / 1 | | X | | | | | AK2.01 - RPS | 3.9 | 1 |
| 295014 | Inadvertent Reactivity Addition / 1 | | | X | | | | AK3.02 - Control rod blocks | 3.7 | 1 |
| 295015 | Incomplete SCRAM / 1 | X | | | | | | AK1.04 - Reactor pressure: Plant-Specific | 3.8 | 1 |
| 295024 | High Drywell Pressure / 5 | X | | | | | | EK1.01 - Drywell integrity: Plant-Specific | 4.1 | 1 |
| 295025 | High Reactor Pressure / 3 | | | X | | | | EK3.04 - Isolation condenser initiation: Plant-Specific | 4.5* | 1 |
| 295031 | Reactor Low Water Level / 2 | | X | | | | | EK2.16 - Reactor water level control | 4.1* | 1 |
| 295031 | Reactor Low Water Level / 2 | | | | | X | | EA2.01 - Reactor water level | 4.6* | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | X | | | | | | EK1.02 - Reactor water level effects on reactor power | 4.1* | 1 |
| 295037 | SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | X | | | EA1.04 - SBLC | 4.5* | 1 |
| 500000 | High Containment Hydrogen Concentration / 5 | | X | | | | | EK2.09 - Drywell nitrogen purge system | 3.0 | 1 |
| 500000 | High Containment Hydrogen Concentration / 5 | | | X | | | | EK3.01 - Initiation of containment atmosphere control system | 2.9 | 1 |

K/A Category Totals: 4 3 3 2 1 0

Group Point Total: 13

Facility: Eden

BWR Reactor Examination Outline

Printed: 01/ 22

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|---|----|----|----|----|----|---|---|------|--------|
| 295002 | Loss of Main Condenser Vacuum / 3 | | X | | | | | AK2.04 - Reactor/turbine pressure regulating system | 3.2 | 1 |
| 295003 | Partial or Complete Loss of A.C. Power / 6 | | X | | | | | AK2.03 - A.C. electrical distribution system | 3.7 | 1 |
| 295003 | Partial or Complete Loss of A.C. Power / 6 | | | | X | | | AA1.03 - Systems necessary to assure safe plant shutdown | 4.4* | 1 |
| 295004 | Partial or Complete Loss of D.C. Power / 6 | | | X | | | | AK3.02 - Ground isolation/fault determination | 2.9 | 1 |
| 295008 | High Reactor Water Level / 2 | | | X | | | | AK3.04 - Reactor feed pump trip: Plant-Specific | 3.3 | 1 |
| 295013 | High Suppression Pool Temperature / 5 | | | | | X | | AA2.01 - Suppression pool temperature | 3.8 | 1 |
| 295016 | Control Room Abandonment / 7 | | | | X | | | AA1.04 - A.C. electrical distribution | 3.1 | 1 |
| 295017 | High Off-Site Release Rate / 9 | | X | | | | | AK2.04 - Plant ventilation systems | 3.1 | 1 |
| 295017 | High Off-Site Release Rate / 9 | | | X | | | | AK3.03 - †Implementation of site emergency plan | 3.3 | 1 |
| 295018 | Partial or Complete Loss of Component Cooling Water / 8 | | | | | | X | 2.1.14 - Knowledge of system status criteria which require the notification of plant personnel. | 2.5 | 1 |
| 295019 | Partial or Complete Loss of Instrument Air / 8 | | X | | | | | AK2.17 - High pressure coolant injection: Plant-Specific | 2.7 | 1 |
| 295020 | Inadvertent Containment Isolation / 5 | | | | | X | | AA2.01 - Drywell/containment pressure | 3.6 | 1 |
| 295028 | High Drywell Temperature / 5 | X | | | | | | EE1.02 - Equipment environmental qualification | 2.9 | 1 |
| 295029 | High Suppression Pool Water Level / 5 | | | | | X | | EA2.02 - Reactor pressure | 3.5 | 1 |

Facility: Eden

BWR RC Examination Outline

Printed: 01/01/02

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|--|------|--------|
| 295033 | High Secondary Containment Area Radiation Levels / 9 | | | | X | | | EA1.01 - Area radiation monitoring system | 3.9 | 1 |
| 295034 | Secondary Containment Ventilation High Radiation / 9 | X | | | | | | EK1.01 - Personnel protection | 3.8 | 1 |
| 295038 | High Off-Site Release Rate / 9 | X | | | | | | EK1.03 - †Meteorological effects on off-site release | 2.8 | 1 |
| 295038 | High Off-Site Release Rate / 9 | | | | X | | | EA1.03 - Process liquid radiation monitoring system | 3.7 | 1 |
| 600000 | Plant Fire On Site / 8 | X | | | | | | AK1.02 - Fire Fighting | 2.9 | 1 |

K/A Category Totals: 4 4 3 4 3 1

Group Point Total: 19

Facility: Jden

BWR Reactor Examination Outline

Printed: 01/ 02

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-2

| E/APE # | E/APE Name / Safety Function | K1 | K2 | K3 | A1 | A2 | G | KA Topic | Imp. | Points |
|---------|--|----|----|----|----|----|---|---|------|--------|
| 295023 | Refueling Accidents / 8 | | | | X | | | AA1.03 - Fuel handling equipment | 3.3 | 1 |
| 295023 | Refueling Accidents / 8 | | | | | | X | 2.1.14 - Knowledge of system status criteria which require the notification of plant personnel. | 2.5 | 1 |
| 295032 | High Secondary Containment Area Temperature / 5 | | | | X | | | EA1.03 - Secondary containment ventilation | 3.7 | 1 |
| 295035 | Secondary Containment High Differential Pressure / 5 | | | X | | | | EK3.02 - Secondary containment ventilation response | 3.3 | 1 |

K/A Category Totals: 0 0 1 2 0 1

Group Point Total: 4

BWR RO Elimination Outline

Printed: 0 002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|--|------|--------|
| 201001 | Control Rod Drive Hydraulic System / 1 | | X | | | | | | | | | | K2.05 - Alternate rod insertion valve solenoids: Plant-Specific | 4.5* | 1 |
| 202002 | Recirculation Flow Control System / 1 | | | | X | | | | | | | | K4.05 - Limiting recirculation pump speed mismatch: Plant-Specific | 3.1 | 1 |
| 202002 | Recirculation Flow Control System / 1 | | | | | X | | | | | | | K5.01 - Fluid coupling: BWR-3, 4 | 2.8 | 1 |
| 206000 | High Pressure Coolant Injection System / 2 | | | | | | X | | | | | | K6.09 - Condensate storage and transfer system: BWR-2, 3, 4 | 3.5 | 1 |
| 206000 | High Pressure Coolant Injection System / 2 | | | | | | | X | | | | | A1.06 - System flow: BWR-2, 3, 4 | 3.8 | 1 |
| 207000 | Isolation (Emergency) Condenser / 4 | | | X | | | | | | | | | K3.02 - †Reactor water level (EPG's address the isolation condenser as a water source): BWR-2, 3 | 3.8* | 1 |
| 209001 | Low Pressure Core Spray System / 2 | X | | | | | | | | | | | K1.10 - Emergency generator | 3.7 | 1 |
| 209001 | Low Pressure Core Spray System / 2 | | | X | | | | | | | | | K3.03 - Emergency generators | 2.9 | 1 |
| 211000 | Standby Liquid Control System / 1 | | X | | | | | | | | | | K2.02 - Explosive valves | 3.1* | 1 |
| 212000 | Reactor Protection System / 7 | | X | | | | | | | | | | K2.01 - RPS motor-generator sets | 3.2 | 1 |
| 212000 | Reactor Protection System / 7 | | | | | | | | | | X | | A4.06 - Control rod position | 4.2* | 1 |

Facility: esden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

| Sys/Ev # | System / Evolution Name | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | KA Topic | Imp. | Points |
|----------|--|----|----|----|----|----|----|----|----|----|----|---|---|------|--------|
| 215004 | Source Range Monitor (SRM) System / 7 | | | | | | | | | | X | | A4.04 - SRM drive control switches | 3.2 | 1 |
| 215005 | Average Power Range Monitor/Local Power Range Monitor System / 7 | | | | | | | | | X | | | A3.07 - RPS status | 3.8 | 1 |
| 215005 | Average Power Range Monitor/Local Power Range Monitor System / 7 | | | | | X | | | | | | | K5.06 - Assignment of LPRM's to specific APRM channels | 2.5* | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | | | | X | | | | | | K6.01 - A.C. electrical distribution | 3.1 | 1 |
| 216000 | Nuclear Boiler Instrumentation / 7 | | | | X | | | | | | | | K4.01 - Reading of nuclear boiler parameters outside the control room | 3.6 | 1 |
| 218000 | Automatic Depressurization System / 3 | | | X | | | | | | | | | K3.01 - Restoration of reactor water level after a break that does not depressurize the reactor when required | 4.4* | 1 |
| 218000 | Automatic Depressurization System / 3 | | | | X | | | | | | | | K4.01 - Prevent inadvertent initiation of ADS logic | 3.7 | 1 |
| 223001 | Primary Containment System and Auxiliaries / 5 | | | | | | | | | X | | | A3.02 - Vacuum breaker/relief valve operation | 3.4 | 1 |
| 223002 | Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5 | X | | | | | | | | | | | K1.19 - Component cooling water systems | 2.7 | 1 |