

| Facility: <u>BROWNS FERRY</u> | | Date of Examination: <u>8/19/11</u> |
|---|--|-------------------------------------|
| Developed by: Written - Facility <input type="checkbox"/> NRC <input checked="" type="checkbox"/> // Operating - Facility <input checked="" type="checkbox"/> NRC <input type="checkbox"/> | | |
| Target Date* | Task Description (Reference) | Chief Examiner's Initials |
| -180 | 1. Examination administration date confirmed (C.1.a; C.2.a and b) | BN |
| -120 | 2. NRC examiners and facility contact assigned (C.1.d; C.2.e) <u>1/27/11</u> | BN |
| -120 | 3. Facility contact briefed on security and other requirements (C.2.c) <u>1/27/11</u> | BN |
| -120 | 4. Corporate notification letter sent (C.2.d) <u>2/10/11</u> | BN |
| [-90] | [5. Reference material due (C.1.e; C.3.c; Attachment 3)] <u>3/1/11</u> | BN |
| {-75} | 6. Integrated examination outline(s) due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1's, ES-401-1/2, ES-401-3, and ES-401-4, as applicable (C.1.e and f; C.3.d) <u>5/2/11</u> | BN |
| {-70} | {7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)} <u>5/16/11</u> | BN |
| {-45} | 8. Proposed examinations (including written, walk-through JPMs, and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, and any Form ES-201-3 updates), and reference materials due (C.1.e, f, g and h; C.3.d) <u>6/10/11</u> | BN |
| -30 | 9. Preliminary license applications (NRC Form 398's) due (C.1.i; C.2.g; ES-202) <u>7/8/11</u> | BN |
| -14 | 10. Final license applications due and Form ES-201-4 prepared (C.1.j; C.2.i; ES-202) <u>7/25/11</u> | BN |
| -14 | 11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f) <u>6/10/11</u> | BN |
| -14 | 12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g) | BN |
| -7 | 13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h) <u>8/3/11 - O</u> <u>8/17/11 - W</u> | BN |
| -7 | 14. Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications / eligibility; and examination approval and waiver letters sent (C.2.i; Attachment 5; ES-202, C.2.e; ES-204) | BN |
| -7 | 15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k) <u>8/12/11</u> | BN |
| -7 | 16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i) <u>8/3/11</u> | BN |
| <p>* Target dates are generally based on facility-prepared examinations and 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] {Does not apply} to examinations prepared by the NRC.</p> | | |

- WRITTEN EXAM SAMPLE PLAN ONLY -

ES-201

Examination Outline Quality Checklist

Form ES-201-2

| Facility: <u>BROWNS FERRY</u> | | Date of Examination: <u>AUGUST 2011</u> | | |
|---|--|--|-----|-----|
| Item | Task Description | Initials | | |
| | | a | b* | c# |
| 1. W R I T T E N | a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401. | M | N/A | BKL |
| | 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. | M | N/A | BKL |
| | c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics. | M | N/A | BKL |
| | d. Assess whether the justifications for deselected or rejected K/A statements are appropriate. | M | N/A | BKL |
| 2. S I M U L A T O R | a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients. | | | |
| | 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, and ensure that 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 that scenarios will not be repeated on subsequent days. | | | |
| | 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. | | | |
| 3. W / T | a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form. | N | | A |
| | b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations | | | |
| | c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days. | | | |
| 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 sections. | M | N/A | BKL |
| | b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate. | M | N/A | BKL |
| | c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5. | M | N/A | BKL |
| | d. Check for duplication and overlap among exam sections. | N/A | N/A | N/A |
| | e. Check the entire exam for balance of coverage. | M | N/A | BKL |
| | f. Assess whether the exam fits the appropriate job level (RO or SRO). | M | N/A | BKL |
| a. Author <u>MICHAEL K. MEERS</u> Printed Name / <u>Michael Meers</u> Signature b. Facility Reviewer (*) <u>N/A</u> c. NRC Chief Examiner (#) <u>BRUNO CABELLERO</u> / <u>Bruno Caballero</u> d. NRC Supervisor <u>WILSON T. WIDALMA</u> / <u>Wilson Widalma</u> | | 11/24/2010 N/A 12-8-10 12/28/10 | | |
| Note: * Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. Not applicable for NRC-prepared examination outlines | | | | |

OPERATING TEST ONLY

ES-201

Examination Outline Quality Checklist

Form ES-201-2

| Facility: BROWNS FERRY NUCLEAR | | Date of Examination: 8/8/2011 | | |
|--|--|--------------------------------------|----|-----|
| Item | Task Description | Initials | | |
| | | a | b* | c# |
| 1. W R I T T E N | a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401. | NA | NA | N/A |
| | 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. | ↓ | ↓ | ↓ |
| | c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics. | ↓ | ↓ | ↓ |
| | d. Assess whether the justifications for deselected or rejected K/A statements are appropriate. | NA | NA | N/A |
| 2. S I M U L A T O R | a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, technical specifications, and major transients. | OZ | JB | BKN |
| | 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, and ensure that 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 that scenarios will not be repeated on subsequent days. | OZ | JB | BKN |
| | 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. | OZ | JB | BKN |
| 3. W / T | a. Verify that the systems walk-through outline meets the criteria specified on Form ES-301-2: (1) the outline(s) contain(s) the required number of control room and in-plant tasks distributed among the safety functions as specified on the form (2) task repetition from the last two NRC examinations is within the limits specified on the form (3) no tasks are duplicated from the applicants' audit test(s) (4) the number of new or modified tasks meets or exceeds the minimums specified on the form (5) the number of alternate path, low-power, emergency, and RCA tasks meet the criteria on the form. | OZ | JB | BKN |
| | b. Verify that the administrative outline meets the criteria specified on Form ES-301-1: (1) the tasks are distributed among the topics as specified on the form (2) at least one task is new or significantly modified (3) no more than one task is repeated from the last two NRC licensing examinations | OZ | JB | BKN |
| | c. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on subsequent days. | OZ | JB | BKN |
| 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 sections. | OZ | JB | BKN |
| | b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate. | OZ | JB | BKN |
| | c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5. | OZ | JB | BKN |
| | d. Check for duplication and overlap among exam sections. | OZ | JB | BKN |
| | e. Check the entire exam for balance of coverage. | OZ | JB | BKN |
| | f. Assess whether the exam fits the appropriate job level (RO or SRO). | OZ | JB | BKN |
| <div style="display: flex; justify-content: space-between;"> <div> <p>a. Author <u>DANIEL K. ZIELINSKI / D.K. Zielinski</u></p> <p>b. Facility Reviewer (*) <u>JOSEPH G. BENNETT / JOE BENNETT</u></p> <p>c. NRC Chief Examiner (#) <u>BRUNO CABALLERO / Bruno Caballero</u></p> <p>d. NRC Supervisor <u>MARK FRANKIE / Mark Frankie</u></p> </div> <div style="text-align: right;"> <p>Printed Name/Signature</p> <p>Date 4-27-2011 4/27/11 8/17/11 8/17/11</p> </div> </div> | | | | |
| <p>Note: # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines</p> | | | | |

ILT 1108

ES-201

Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/8-22/2011, as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 8/8-22/2011. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

| PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE | NOTE |
|------------------------|-------------------------------|--------------------|---------|--------------------|---------|------|
| 1. DAVIDA MALINOWSKI | OPS TRAINING MANAGER | <i>[Signature]</i> | 4/21/11 | N/A see page 2 | | |
| 2. NEEL SHUKLA | Unit Supervisor - SRO Group 2 | <i>[Signature]</i> | 5/5/11 | N/A see page 2 | | |
| 3. Todd Christensen | Unit Supervisor - SRO Group 3 | <i>[Signature]</i> | 5/6/11 | N/A see page 2 | | |
| 4. James Brachford | UNIT SUPERVISOR | <i>[Signature]</i> | 5-9-11 | N/A see page 2 | | |
| 5. JOHN W. RINDGREN | SRO | <i>[Signature]</i> | 5-9-11 | N/A see page 2 | | |
| 6. RICH A. HOFFMAN | Unit Supervisor | <i>[Signature]</i> | 5/10/11 | N/A see page 2 | | |
| 7. Timothy Andrews | RO | <i>[Signature]</i> | 5/10/11 | N/A see page 2 | | |
| 8. KATHLEEN MURPHY | SRO | <i>[Signature]</i> | 5/17/11 | N/A see page 2 | | |
| 9. Ray A. Jenkins | RO | <i>[Signature]</i> | 5-18-11 | N/A see page 2 | | |
| 10. Van S. Burgess | Operations Specialist CEC | <i>[Signature]</i> | 5/23/11 | N/A | | |
| 11. Walter F. Sanders | Advisor | <i>[Signature]</i> | 8/9/11 | <i>[Signature]</i> | 8/26/11 | * |
| 12. Donald E. Jernigan | Sr VP | <i>[Signature]</i> | 8/5/11 | <i>[Signature]</i> | 8/26/11 | * |
| 13. BOBIE WILLIAMS | RO | <i>[Signature]</i> | 8/5/11 | <i>[Signature]</i> | 8/26/11 | |
| 14. JAMES KARNES | RO | <i>[Signature]</i> | 8/24/11 | <i>[Signature]</i> | 8/24/11 | |
| 15. N/A | N/A | N/A | | | | |

NOTES: * Donald Jernigan & Walter Sanders' signatures via scan

ILT 1108

ES-201

Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/8-22/2011 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 8/8-22/2011. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

| PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE | NOTE |
|-------------------------------|--------------------------------------|--------------------|----------------|-----------------------|----------------|----------|
| 1. <u>DAVIDA MALINOWSKI</u> | <u>OPS TRAINING MANAGER</u> | <u>[Signature]</u> | <u>4/21/11</u> | <u>N/A see page 2</u> | | |
| 2. <u>NEEL SHUKLA</u> | <u>Unit Supervisor - SRO Group 2</u> | <u>[Signature]</u> | <u>5/5/11</u> | <u>N/A see page 2</u> | | |
| 3. <u>Todd Christensen</u> | <u>Unit Supervisor - SRO Group 3</u> | <u>[Signature]</u> | <u>5/6/11</u> | <u>N/A see page 2</u> | | |
| 4. <u>Thomas Bradford</u> | <u>UNIT SUPERVISOR</u> | <u>[Signature]</u> | <u>5-9-11</u> | <u>N/A see page 2</u> | | |
| 5. <u>John W. Ridinger</u> | <u>SRO</u> | <u>[Signature]</u> | <u>5-9-11</u> | <u>N/A see page 2</u> | | |
| 6. <u>Reid A. Hoffman</u> | <u>Unit Supervisor</u> | <u>[Signature]</u> | <u>5/12/11</u> | <u>N/A see page 2</u> | | |
| 7. <u>Timothy Andrews</u> | <u>RO</u> | <u>[Signature]</u> | <u>5/10/11</u> | <u>N/A see page 2</u> | | |
| 8. <u>WALTER MILLER</u> | <u>SRO</u> | <u>[Signature]</u> | <u>5/17/11</u> | <u>N/A see page 2</u> | | |
| 9. <u>Roy A. Jenkins</u> | <u>RO</u> | <u>[Signature]</u> | <u>5-23-11</u> | <u>N/A see page 2</u> | | |
| 10. <u>Van S. Burgess</u> | <u>Operations Specialist CEG</u> | <u>[Signature]</u> | <u>5/23/11</u> | <u>NA *</u> | | <u>*</u> |
| 11. <u>Walter L. Sanders</u> | <u>Advisor</u> | <u>[Signature]</u> | <u>8/9/11</u> | <u>NA *</u> | | <u>*</u> |
| 12. <u>Donald E. Jernigan</u> | <u>Sr VP</u> | <u>[Signature]</u> | <u>8/5/11</u> | <u>NA *</u> | | <u>*</u> |
| 13. <u>BODISY MILLER</u> | <u>RO</u> | <u>[Signature]</u> | <u>8/15/11</u> | <u>[Signature]</u> | <u>8/24/11</u> | |
| 14. <u>JAMES KARNES</u> | <u>RO</u> | <u>[Signature]</u> | <u>8/24/11</u> | <u>[Signature]</u> | <u>8/24/11</u> | |
| 15. <u>N/A</u> | <u>N/A</u> | <u>N/A</u> | | <u>NA</u> | | |

NOTES:

* Signature on scanned sheet

ILT 1108

ES-201

Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/8-22/2011 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 8/8-22/2011. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

| PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE | NOTE |
|-------------------------|----------------------------|-----------------------------|---------|-----------------------------|-----------|------|
| 1. Patrick Scott Steele | UNIT OPERATOR | <i>Patrick Scott Steele</i> | 6/22/11 | <i>Patrick Scott Steele</i> | 8/22/2011 | |
| 2. MICAH XIASIA | SM | <i>Micah Xiasia</i> | 6/24/11 | <i>Micah Xiasia</i> | 8/19/11 | |
| 3. Matthew Rasmussen | OPS Supt | <i>Matthew Rasmussen</i> | 8/27/11 | <i>Matthew Rasmussen</i> | 8/23/11 | |
| 4. Keith Nichols | US | <i>Keith Nichols</i> | 7/6/11 | <i>Keith Nichols</i> | 8/24/11 | |
| 5. Randy Waldrop | EP Specialist | <i>Randy Waldrop</i> | 7/8/11 | <i>Randy Waldrop</i> | 8/23/11 | |
| 6. Douglas Keith | UNIT SUPERVISOR | <i>Douglas Keith</i> | 7/8/11 | <i>Douglas Keith</i> | 8/23/11 | |
| 7. Jason H. Knight | Unit Operator | <i>Jason H. Knight</i> | 7-8-11 | <i>Jason H. Knight</i> | 8-22-2011 | |
| 8. TRON GILPIN | UNIT OPERATOR | <i>Tron Gilpin</i> | 7-8-11 | <i>Tron Gilpin</i> | 8/24/11 | |
| 9. LaGrant May | UNIT OPERATOR | <i>LaGrant May</i> | 7/9/11 | <i>LaGrant May</i> | 8/22/2011 | |
| 10. JEFF BARKER | SRO | <i>Jeff Barker</i> | 7/11/11 | <i>Jeff Barker</i> | 8-24-11 | |
| 11. JAMES KARNES | UNIT OPERATOR | <i>James Karnes</i> | 7/14/11 | <i>James Karnes</i> | 8/24/11 | |
| 12. Clayton Whitworth | SRO | <i>Clayton Whitworth</i> | 7/14/11 | <i>Clayton Whitworth</i> | 9/12/11 | |
| 13. Kenneth Stephenson | UNIT OPERATOR | <i>Kenneth Stephenson</i> | 7/19/11 | <i>Kenneth Stephenson</i> | 8/23/11 | |
| 14. BRIAN MAZE | SRO | <i>Brian Maze</i> | 7/26/11 | <i>Brian Maze</i> | 8/24/11 | |
| 15. Joseph S Ellis | RO | <i>Joseph S Ellis</i> | 7/26/11 | <i>Joseph S Ellis</i> | 8/24/11 | |

NOTES:

ILT 1108

ES-201

Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/8-22/2011 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 8/8-22/2011. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

| PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE | NOTE |
|------------------------|-------------------------------|--------------------|-----------|--------------------|----------|------|
| 1. DAVID A. MALINOWSKI | OPS TRAINING MANAGER | <i>[Signature]</i> | 4/21/11 | <i>[Signature]</i> | 8/19/11 | |
| 2. NEEL SHUKLA | Unit Supervisor - SRO Group 2 | <i>[Signature]</i> | 5/5/11 | <i>[Signature]</i> | 8/25/11 | |
| 3. Todd Christensen | Unit Supervisor - SRO Group 3 | <i>[Signature]</i> | 5/6/11 | <i>[Signature]</i> | 8/25/11 | |
| 4. James Bradford | UNIT SUPERVISOR | <i>[Signature]</i> | 5-9-11 | <i>[Signature]</i> | 8/22/11 | |
| 5. JOHN W. RIDINGER | SRO | <i>[Signature]</i> | 5-9-11 | <i>[Signature]</i> | 8/22/11 | |
| 6. RICH A. HOFFMAN | Unit Supervisor | <i>[Signature]</i> | 5/12/11 | <i>[Signature]</i> | 8/22/11 | |
| 7. Timothy Andrews | RO | <i>[Signature]</i> | 5/10/11 | <i>[Signature]</i> | 8/23/11 | |
| 8. WALTER MILLER | SED | <i>[Signature]</i> | 5/17/11 | <i>[Signature]</i> | 8/23/11 | |
| 9. Ray A. Jenkins | RO | <i>[Signature]</i> | 5-13-2011 | <i>[Signature]</i> | 8-27-11 | |
| 10. Joseph A. Leferski | Sim Services | <i>[Signature]</i> | 5/25/2011 | NA* | * | |
| 11. Allan P. Sison | SRO | <i>[Signature]</i> | 6/2/11 | <i>[Signature]</i> | 8/23/11 | |
| 12. James Brian Fowler | RO | <i>[Signature]</i> | 6/2/11 | <i>[Signature]</i> | 8/23/11 | |
| 13. Charles E. Johnson | System Engineer | <i>[Signature]</i> | 6/2/11 | <i>[Signature]</i> | 9/5/11 | |
| 14. DONALD C. BINKLEY | OPERATIONS TRAINING | <i>[Signature]</i> | 10/14/11 | <i>[Signature]</i> | 08/23/11 | |
| 15. WILLIAM SPINN | license operator | <i>[Signature]</i> | 10-14-11 | <i>[Signature]</i> | 8/23/11 | |

NOTES:

* Signature on scanned sheet

ILT 1108

ES-201

Examination Security Agreement

Form ES-201-3

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 8/8-22/2011 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 8/8-22/2011. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

| PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE | NOTE |
|---------------------------------|----------------------------|--------------------|----------------|--------------------|----------------|------|
| 1. <u>TIMOTHY A. BURGE</u> | <u>UNIT OPERATOR</u> | <u>[Signature]</u> | <u>7/26/11</u> | <u>[Signature]</u> | <u>8/23/11</u> | |
| 2. <u>JAMES T. SUTPHIN</u> | <u>SRO</u> | <u>[Signature]</u> | <u>7/29/11</u> | <u>[Signature]</u> | <u>8/25/11</u> | |
| 3. <u>GREGORY W. COBB</u> | <u>Unit Operator</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |
| 4. <u>JEFFREY K. CANAN</u> | <u>UNIT OPERATOR</u> | <u>[Signature]</u> | <u>8/1/11</u> | <u>[Signature]</u> | <u>8-23-11</u> | |
| 5. <u>STEVEN W. RUSS</u> | <u>Unit Operator</u> | <u>[Signature]</u> | <u>8/1/11</u> | <u>[Signature]</u> | <u>8/23/11</u> | |
| 6. <u>DONNA G. SPARKS</u> | <u>Info Records Rep</u> | <u>[Signature]</u> | <u>8/2/11</u> | <u>[Signature]</u> | <u>8/23/11</u> | |
| 7. <u>DOUG J. PIERCE</u> | <u>OPS INST.</u> | <u>[Signature]</u> | <u>8/3/11</u> | <u>[Signature]</u> | <u>8/25/11</u> | |
| 8. <u>DAVID J. MCCONNELL</u> | <u>ILT SUPERVISOR</u> | <u>[Signature]</u> | <u>8/6/11</u> | <u>[Signature]</u> | <u>8/25/11</u> | |
| 9. <u>BRIAN P. STETSON</u> | <u>Ops Instructor</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/28/11</u> | |
| 10. <u>MICHAEL R. OLSON</u> | <u>OPS INSTRUCTOR</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |
| 11. <u>WILLIAM CHAUSSE</u> | <u>OPS INSTRUCTOR</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |
| 12. <u>FRANK KAGAN</u> | <u>OPS INSTRUCTOR</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |
| 13. <u>JOSEPH P. SUTHERLAND</u> | <u>OPS INSTRUCTOR</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |
| 14. <u>TERRY L. CHANDLER</u> | <u>OPS INSTRUCTOR</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |
| 15. <u>TERRY L. RIVNELS JR.</u> | <u>OPS INSTRUCTOR</u> | <u>[Signature]</u> | <u>8/8/11</u> | <u>[Signature]</u> | <u>8/29/11</u> | |

NOTES:

* Signature on Scanned sheet

Facility: Browns Ferry NPPDate of Examination: 8/8/2011

Examination Level: RO/SRO

Operating Test Number: 1108

| Administrative Topic (see Note) | Type Code * | Describe activity to be performed |
|------------------------------------|----------------|---|
| Conduct of Operations RO A1a | D | 2.1.4 Determine Adequate Performance of License Reactivation (RO only) |
| SRO A1a | | 2.1.4 Determine Adequate Performance of License Reactivation |
| Conduct of Operations RO A1b | N | 2.1.19 ICS Logs |
| SRO A1b | | 2.1.18 NRC event notification due to Safety Limit Violation |
| Equipment Control RO/SRO A2 | M | 2.2.44 Evaluate Recombiner Performance |
| Radiation Control SRO A3 | M | 2.3.4 Determine Stay Time under Emergency Conditions and authorize |
| Emergency Plan RO A4 | M | 2.4.43 Unit Operator Emergency Call-out |
| SRO A4 | N | 2.4.41 Classify an Event |

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 and RO retakes)
- (N)ew or (M)odified from bank (≥ 1)
- (P)revious 2 exams (≤ 1 ; randomly selected)
- (S)imulator

Reactor Operator

1. Determine Adequate Performance of License Reactivation

- Direct
- OPDP-10, License Status Maintenance, Reactivation, and Proficiency for Non-Licensed Positions
- Given examples of 3 Reactor Operators returning to shift from rotating assignments, determine which personnel have correctly completed the license reactivation requirements.
- 2.1.4 Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc. RO 3.3

2. ICS Logs

- New
- 2-SR-2 or 3-SR-2
- Perform Operator logs using ICS screens in accordance with 2-SR-2 Instrument Checks and Observations for log tables 1.1, 1.6, 1.25, and 1.30. Verify acceptance criteria are satisfied in accordance with notes.
- 2.1.19 Ability to use plant computers to evaluate system or component status. RO 3.9

3. Evaluate Recombiner Performance

- Modified
- 3-OI-66, Offgas System
- Determines that Recombiner performance meets the acceptance criteria and standby Recombiner is not required to be placed in service.
- 2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions RO 4.2

4. Unit Operator Notifications in an Alert

- Modified
- EPIP 3, Alert
- Perform Appendix B of EPIP-3 with the EPS operable. When a responder fails to respond to the notification the operator takes actions IAW EPIP-3 to fill the vacant position. Requiring Manual Call-Out with the Weekly Duty List and the Call-Out List
- 2.4.43 Knowledge of emergency communications systems and techniques RO 3.2.

Senior Reactor Operator

1. Determine Adequate Performance of License Reactivation

- Direct
- OPDP-10, License Status Maintenance, Reactivation, and Proficiency for Non-Licensed Positions
- Given examples of 6 licensed personnel returning to shift from rotating assignments, determine which personnel have correctly completed the license reactivation requirements.
- 2.1.4 Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc. SRO 3.8

2. NRC event notification due to Safety Limit Violation

- New
- NPG-SPP-03.5, Regulatory Reporting Requirements
- Determine NRC event notification requirements, as the Shift Manager due to a Safety Limit Violation.
- 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. SRO 3.8

3. Evaluate Recombiner Performance

- Modified
- 3-OI-66, Offgas System
- Determines that Recombiner performance meets the acceptance criteria and standby Recombiner is not required to be placed in service.
- 2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions SRO 4.4

4. Determination of Stay Time and Approving Authority to perform an emergency evolution to save equipment.

- Modified
- EPIP 15, Emergency Exposure
- Determine amount of time an operator has to perform an emergency evolution due to radiation levels and authorize on the correct form.
- 2.3.4 Knowledge of radiation exposure limits under normal and emergency conditions. Importance SRO 3.7

5. Classify an Event

- New
- EPIP-1 and 4 Emergency Classification Procedure and Site Area Emergency
- The event is classified as a Site Area Emergency 2.3-S1 and the Initial Notification appendix is completed with the correct information. Event is classified within 15 minutes and Initial Notification is completed within 15 minutes of classification.
- 2.4.41 Knowledge of emergency action level thresholds and classifications. Importance SRO 4.6

Facility: Browns Ferry NPPDate of Examination: 8/8/2011Exam Level: RO/SROI/SROUOperating Test No.: 1108**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. Recirc Pump Recovery with Manual Scram | A, N, S | 1 |
| b. EOI-Appendix-7D Standby Coolant Injection | D, L, S | 2 |
| c. HPCI in Pressure Control Mode | A, L, M, S | 4 |
| d. EOI-Appendix-13 Emergency Vent Primary Containment | A, D, EN, S | 5 |
| e. RWM Functional Test for Startup | D, L, S | 7 |
| f. USST 1B Transformer Tap Changer Auto Checks | A, N, S | 6 |
| g. Containment Venting High Off-Site Release | M, S, A | 9 |
| h. Close MSIVs during Power Operations | P, S | 3(RO only) |

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

| | | |
|--|------------|---|
| i. Stator Cooling Water Return to Automatic Temp Control | N, R | 3 |
| j. Transfer DG A control to A 4KV SD BD & Secure DG A | N, R | 6 |
| k. Alternate Injection Fire Sys Lineup 1-EOI Appendix-7K | R, E, L, D | 2 |

@ 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 | 4-6/2-3 (5)(5)(3) |
| (C)ontrol room | |
| (D)irect from bank | $\leq 9/\leq 4$ (4)(4)(2) |
| (E)mergency or abnormal in-plant | ≥ 1 (2)(2)(1) |
| (EN)gineered safety feature | - / ≥ 1 (control room system) (1)(1)(1) |
| (L)ow-Power / Shutdown | ≥ 1 (4)(4)(1) |
| (N)ew or (M)odified from bank including 1(A) | ≥ 2 (6)(6)(3) |
| (P)revious 2 exams | $\leq 3/\leq 2$ (1)(0)(0) (randomly selected) |
| (R)CA | ≥ 1 (1)(1)(1) |
| (S)imulator | (8)(7)(3) |

Control Room Systems:**a. Recirc Pump Recovery with Manual Scram (Unit 2 or 3)**

- Alternate path / New / Simulator
- 2/3-OI-68 Reactor Recirculation System
2/3-AOI-68-1A Recirc Pump Trip/Core Flow Decrease OPRMs Operable
2/3-AOI-100-1 Reactor Scram
- 202001 Recirculation System A2.04 Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Multiple recirculation pump trip IMPORTANCE: RO 3.7 SRO 3.8
- Operator directed to recover tripped Recirculation Pump at power in accordance with 2/3-OI-68 at step 5.3[10], in process, the other pump will trip and operator will insert a manual reactor scram in accordance with 2/3-AOI-68-1A, section 4.2 step [1] and perform immediate actions of 2/3-AOI-100-1 Reactor Scram

b. EOI-Appendix-7D Standby Coolant Injection (Unit 2 or 3)

- Direct from bank / Low Power / Simulator
- 2/3-EOI-Appendix-7D Injection with Standby Coolant
- 295031 Reactor Low Water Level EA1.08 Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL: Alternate Injection Systems
IMPORTANCE: RO 3.8 SRO 3.9
- Operator will inject in accordance with EOI-Appendix-7D and raise level.

c. HPCI in Pressure Control Mode (Unit 2 or 3)

- Low Power / Modified from bank / Simulator / Alternate path
- 2/3-EOI-Appendix-11C Alternate RPV Pressure Control Systems HPCI Test Mode
- 206000 A4.06 Ability to manually operate and/or monitor in the control room: Reactor pressure IMPORTANCE: RO 4.3 SRO 4.3
- Operator will place HPCI in Test Mode from standby for alternate RPV Pressure Control in accordance with 2/3-EOI-Appendix-11C. HPCI flow controller will fail in Automatic and operator will shift to manual to control pressure

d. EOI Appendix-13 Emergency Vent Primary Containment (Unit 2 or 3)

- Alternate Path / Direct from Bank / Engineered Safety Feature / Simulator
- 2/3-EOI Appendix-13 Emergency Venting Primary Containment
- 295024 High Drywell Pressure EA2.01 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell pressure IMPORTANCE: RO 4.2 SRO 4.4
- Operator is directed to emergency vent Primary Containment to restore and maintain Drywell Pressure below 55 psig as directed by 2/3-EOI Appendix 13, Emergency Venting Primary Containment. Emergency Venting of the Suppression Chamber through the Hardened Wetwell Vents will be unsuccessful and Operator will vent the Drywell to Secondary Containment via Primary Containment vent duct failure.

e. RWM Functional Test for Startup (Unit 2 or 3)

- Direct from Bank / Low Power-Shutdown / Simulator
- 2/3-SR-3.3.2.1.2 RWM functional test for startup
- 201006 Rod Worth Minimizer System (RWM) A2.05 Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Out of sequence rod movement; P-Spec(Not-BWR6) IMPORTANCE: RO 3.1 SRO 3.5
- Operator will perform 2/3-SR-3.3.2.1.2, RWM Functional Test for Startup, which requires operator to select and withdraw a control rod out of sequence to test the functionality of the Select Error, Withdraw Error and Withdraw Block

f. USST 1B Transformer Tap Changer Auto Checks (Unit 2 only)

- Alternate Path / New / Simulator
- 0-GOI-300-4, Switchyard Manual
- 262001 AC Electrical Distribution A4.05 Ability to manually operate and/or monitor in the control room: Voltage, current, power, and frequency on AC buses. IMPORTANCE: RO 3.3 SRO 3.3
- Operator is directed to perform USST 1B Transformer Tap Changer Auto Checks. The Tap changer will fail the initial auto check and a second will have to be performed to verify proper operation of USST 1B Tap Changer.

g. Containment Venting High Off-Site Release (Unit 2 or 3)

- Modified / Simulator / Alternate Path
- 2/3-EOI Appendix-12 Primary Containment Venting
- Vent Primary Containment Vent Primary Containment IAW 2/3-EOI Appendix-12, after Suppression Chamber Vent path fails will vent through Drywell and flow adjusted to limit high release rates.
- 295017 High Off-Site Release Rate AA1.03 Ability to operate and/or monitor the following as they apply to High Off-Site Release Rate: Plant ventilation systems
IMPORTANCE: RO 3.4 SRO 3.4

h. Close MSIVs during Power Operation (Unit 2 or 3)(RO only)

- Previous 2 exams / Simulator
- 2/3-OI-1, Main Steam System
- 239001 Main and Reheat Steam System A4.01 Ability to manually operate and/or monitor in the control room: MSIVs IMPORTANCE: RO 4.2 SRO 4.0
- Operator will close Inboard and Outboard MSIVs on Main Steam Line C, at power, in accordance with 2/3-OI-1 section 8.2.3

In-Plant Systems:**i. Stator Cooling Water Return to Automatic Temp Control**

- New / RCA
- 2-ARP-25-114A, Window 9, Stator Clg Water Gen Inlet Hi Temp
- 241000 Reactor/Turbine Pressure Regulating System A2.10 Ability to (a) predict the impacts of the following on the REACTOR/TURBINE PRESSURE REGULATING SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of stator water cooling: Plant-Specific IMPORTANCE: RO 3.1 SRO 3.2
- Operator will simulate restoring the Stator Cooling Water System to Automatic Temperature Control following a Stator Cooling Water Generator Inlet Temp High Alarm and manual control of 2-TCV-35-54 in accordance with 2-ARP-25-114A, Window 9, step L

j. Transfer DG A control to A 4KV SD BD & Secure DG A

- New / RCA Entry
- 0-OI-82, Standby Diesel Generator System
- 264000 Emergency Generators (Diesel/Jet) A2.01 Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Parallel operation of emergency generator
IMPORTANCE: RO 3.5 SRO 3.6
- Operator will simulate transferring DG A control to the A 4KV SD BD, in accordance with 0-OI-82 section 8.4, then simulate shutting down the diesel from the A 4KV Shutdown board, in accordance with 0-OI-82 section 7.2 thru step [9].

k. Alternate Injection Fire System Lineup 1-EOI Appendix-7K

- RCA / Emergency or Abnormal In-Plant / Low Power / Direct from Bank
- 1-EOI Appendix-7K, Alternate RPV Injection System Lineup Fire System
- 295031EA1.08 Reactor Low Water Level Ability to operate and/or monitor the following as they apply to REACTOR LOW WATER LEVEL: Alternate Injection systems: plant-specific IMPORTANCE: RO 3.8 SRO 3.9
- Operator will simulate performing Attachment 1 of 1-EOI-Appendix-7K due to a Loss of Off-Site Power and a failure of the Diesel Generators. Operator will simulate re-positioning valves by direction of the Unit 1 Operator to line up the Fire System to Inject to the RPV through RHR System II.

| Facility: Browns Ferry | | Date of Examination: August 2011 | | Operating Test Number: ILT 1108 | |
|--|---|---|----------|--|----|
| 1. General Criteria | | | Initials | | |
| | | | a | b* | c# |
| a. | The operating test conforms with the previously approved outline; changes are consistent with sampling requirements (e.g., 10 CFR 55.45, operational importance, safety function distribution). | | 02 | JB | BN |
| b. | There is no day-to-day repetition between this and other operating tests to be administered during this examination. | | 02 | JB | BN |
| c. | The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.) | | 02 | JB | BN |
| d. | Overlap with the written examination and between different parts of the operating test is within acceptable limits. | | 02 | JB | BN |
| e. | It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level. | | 02 | JB | BN |
| 2. Walk-Through Criteria | | | -- | -- | -- |
| a. | Each JPM includes the following, as applicable: <ul style="list-style-type: none"> • initial conditions • initiating cues • references and tools, including associated procedures • reasonable and validated time limits (average time allowed for completion) and specific designation if deemed to be time-critical by the facility licensee • operationally important specific performance criteria that include: <ul style="list-style-type: none"> - detailed expected actions with exact criteria and nomenclature - system response and other examiner cues - statements describing important observations to be made by the applicant - criteria for successful completion of the task - identification of critical steps and their associated performance standards - restrictions on the sequence of steps, if applicable | | 02 | JB | BN |
| b. | Ensure that any changes from the previously approved systems and administrative walk-through outlines (Forms ES-301-1 and 2) have not caused the test to deviate from any of the acceptance criteria (e.g., item distribution, bank use, repetition from the last 2 NRC examinations) specified on those forms and Form ES-201-2. | | 02 | JB | BN |
| 3. Simulator Criteria | | | -- | -- | -- |
| The associated simulator operating tests (scenario sets) have been reviewed in accordance with Form ES-301-4 and a copy is attached. | | | 02 | JB | BN |
| Printed Name / Signature | | Date | | | |
| a. Author | <u>DANIEL W. ZIELINSKI / D.W. Zielinski</u> | <u>7-28-2011</u> | | | |
| b. Facility Reviewer(*) | <u>JOSEPH G. BENNETT / JGB</u> | <u>7/28/11</u> | | | |
| c. NRC Chief Examiner (#) | <u>BRUNO CABALLERO / Bruno Caballero</u> | <u>8-3-11</u> | | | |
| d. NRC Supervisor | <u>MARK FRANKE / M. Franke</u> | <u>8/3/11</u> | | | |
| <p>NOTE: * The facility signature is not applicable for NRC-developed tests.</p> <p># Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.</p> | | | | | |

| Facility: Browns Ferry Date of Exam: August 2011 Scenario Numbers: Operating Test No.: ILT 1108 | | | | |
|--|--|--------------------------|----|----|
| QUALITATIVE ATTRIBUTES | | Initials | | |
| | | a | b* | c# |
| 1. | The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events. | 02 | JB | BN |
| 2. | The scenarios consist mostly of related events. | 02 | JB | BN |
| 3. | Each event description consists of <ul style="list-style-type: none"> the point in the scenario when it is to be initiated the malfunction(s) that are entered to initiate the event the symptoms/cues that will be visible to the crew the expected operator actions (by shift position) the event termination point (if applicable) | 02 | JB | BN |
| 4. | No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event. | 02 | JB | BN |
| 5. | The events are valid with regard to physics and thermodynamics. | 02 | JB | BN |
| 6. | Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives. | 02 | JB | BN |
| 7. | If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given. | 02 | JB | BN |
| 8. | The simulator modeling is not altered. | 02 | JB | BN |
| 9. | The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios. | 02 | JB | BN |
| 10. | Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301. | 02 | JB | BN |
| 11. | All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios). | 02 | JB | BN |
| 12. | Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios). | 02 | JB | BN |
| 13. | The level of difficulty is appropriate to support licensing decisions for each crew position. | 02 | JB | BN |
| Target Quantitative Attributes (Per Scenario; See Section D.5.d) | | Actual Attributes | -- | -- |
| 1. | Total malfunctions (5-8) | 7/9/7/8/10 | 02 | JB |
| 2. | Malfunctions after EOP entry (1-2) | 2/4/2/2/6 | 02 | JB |
| 3. | Abnormal events (2-4) | 4/4/4/4/4 | 02 | JB |
| 4. | Major transients (1-2) | 1/1/1/1/2 | 02 | JB |
| 5. | EOPs entered/requiring substantive actions (1-2) | 3/2/2/2/3 | 02 | JB |
| 6. | EOP contingencies requiring substantive actions (0-2) | 1/1/1/0/2 | 02 | JB |
| 7. | Critical tasks (2-3) | 3/4/3/2/4 | 02 | JB |

| Facility: Browns Ferry NPP | | | Date of Exam: August 8 - 19, 2011 | | | | | | | | | | | Ops Test # ILT1108 | | | | |
|---|---|------------------|-----------------------------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|-----------------------|--|---|---|---|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | | | | | |
| | | 7 | | | 1 | | | 6 | | | 4 | | | T O T A L | M I N I M U M (*) | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | | |
| | | | | | | | | | | | | | | | R | I | U | |
| SH R O I L - U O W A Y ✓ | RX | | | | | | | | | | | | | | | | | |
| | NOR | | | | 1 | | | 1 | | | | | | | 2 | | | 1 |
| | I/C | | | | 2,4,5,6 | | | 3,4,5,6 | | | | | | | 8 | | | 2 |
| | MAJ | | | | 7 | | | 7 | | | | | | | 2 | | | 1 |
| | TS | | | | 2,6 | | | 5,6 | | | | | | | 4 | | | 2 |
| SS R O O F - I L E ✓ | RX | 2 | | | 3 | | | | 2 | | | | | | 3 | | 1 | |
| | NOR | 1 | | | 1 | | | | | | | | | | 2 | | 1 | |
| | I/C | 3,4,5,6 | | | 2,4,5,6 | | | | 3,6 | | | | | | 10 | | 4 | |
| | MAJ | 7 | | | 7 | | | | 7 | | | | | | 3 | | 2 | |
| | TS | 1,3 | | | 2,6 | | | | | | | | | | 4 | | 2 | |
| SB R O I L - I L ✓ | RX | 2 | | | | 3 | | 2 | | | | | | | 3 | | 1 | |
| | NOR | 1 | | | | | | 1 | | | | | | | 2 | | 1 | |
| | I/C | 3,4,5,6 | | | | 4,6 | | 3,4,5,6 | | | | | | | 10 | | 4 | |
| | MAJ | 7 | | | | 7 | | 7 | | | | | | | 3 | | 2 | |
| | TS | 1,3 | | | | | | 5,6 | | | | | | | 4 | | 2 | |

| Facility: Browns Ferry NPP | | | Date of Exam: August 8 - 19, 2011 | | | | | | | | | | | Ops Test # ILT1108 | | | | |
|---|---|------------------|-----------------------------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|-----------------------|--|---|---|--|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | | | | | |
| | | 7 | | | 1 | | | 6 | | | 4 | | | T O T A L | M I N I M U M (*) | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | | |
| | | | | | | | | | | | | | | | R | I | U | |
| SB R o o h e r | RX | 2 | | | 3 | | | | 2 | | | | | | 3 | | 1 | |
| | NOR | 1 | | | 1 | | | | | | | | | | 2 | | 1 | |
| | I/C | 3,4,5,6 | | | 2,4,5,6 | | | | 3,6 | | | | | | 10 | | 4 | |
| | MAJ | 7 | | | 7 | | | | 7 | | | | | | 3 | | 2 | |
| | TS | 1,3 | | | 2,6 | | | | | | | | | | 4 | | 2 | |
| RY O u n g | RX | | 2 | | | | | | | | | | | | 1 | 1 | | |
| | NOR | | | | | | 1 | | | | | | | | 1 | 1 | | |
| | I/C | | 4,6 | | | | 2,5 | | | | | | | | 4 | 4 | | |
| | MAJ | | 7 | | | | 7 | | | | | | | | 2 | 2 | | |
| | TS | | | | | | | | | | | | | | | | | |

| Facility: Browns Ferry NPP | | | Date of Exam: August 8 - 19, 2011 | | | | | | | | | | | Ops Test # ILT1108 | | | | |
|--|---|------------------|-----------------------------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|------------------|-------------|-------------|-----------------------|--|---|---|--|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | | | | | |
| | | 7 | | | 1 | | | 6 | | | 4 | | | T O T A L | M I N I M U M (*) | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | | |
| | | | | | | | | | | | | | | | R | I | U | |
| <input checked="" type="checkbox"/> R A O l i d a y <input type="checkbox"/> <input type="checkbox"/> | RX | | | | | 3 | | | | | | | | | 1 | 1 | | |
| | NOR | | | 1 | | | | | | 1 | | | | | 2 | 1 | | |
| | I/C | | | 3,5 | | 4,6 | | | | 4,5 | | | | | 6 | 4 | | |
| | MAJ | | | 7 | | 7 | | | | 7 | | | | | 3 | 2 | | |
| | TS | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> R W O h e e l e r <input type="checkbox"/> <input type="checkbox"/> | RX | | 2 | | | | | | | | | | | | 1 | 1 | | |
| | NOR | | | | | | 1 | | | | | | 1 | | 2 | 1 | | |
| | I/C | | 4,6 | | | | 2,5 | | | | | | 4,6 | | 6 | 4 | | |
| | MAJ | | 7 | | | | 7 | | | | | | 8 | | 3 | 2 | | |
| | TS | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> R A O d a m s <input type="checkbox"/> <input type="checkbox"/> | RX | | | | | | | | | | | 2 | | | 1 | 1 | | |
| | NOR | | | 1 | | | | | | | | | | | 1 | 1 | | |
| | I/C | | | 3,5 | | | | | | | | 5,7 | | | 4 | 4 | | |
| | MAJ | | | 7 | | | | | | | | 8 | | | 2 | 2 | | |
| | TS | | | | | | | | | | | | | | | | | |

| Facility: Browns Ferry NPP | | | | Date of Exam: August 8 - 19, 2011 | | | | | | | | | Ops Test # ILT1108 | | | | |
|--|---|------------------|-------------|-----------------------------------|------------------|-------------|-------------|------------------|-------------|-------------|------------------|-------------|--------------------|-----------------------|-------------------------------------|---|---|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | T O T A L | M I N I M U M (*) | | |
| | | 7 | | | 1 | | | 6 | | | 4 | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | |
| | | | | | | | | | | | | | | | R | I | U |
| <input checked="" type="checkbox"/> RT <input type="checkbox"/> O <input type="checkbox"/> a <input type="checkbox"/> y <input type="checkbox"/> l <input type="checkbox"/> o <input type="checkbox"/> r | RX | | 2 | | | | | | | | | | | 1 | 1 | | |
| | NOR | | | | | | 1 | | | 1 | | | | 2 | 1 | | |
| | I/C | | 4,6 | | | | 2,5 | | | 4,5 | | | | 6 | 4 | | |
| | MAJ | | 7 | | | | 7 | | | 7 | | | | 3 | 2 | | |
| | TS | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> RA <input type="checkbox"/> O <input type="checkbox"/> l <input type="checkbox"/> i <input type="checkbox"/> s <input type="checkbox"/> o <input type="checkbox"/> n | RX | | | | | 3 | | | | | | | | 1 | 1 | | |
| | NOR | | | 1 | | | | | | | | | | 1 | 1 | | |
| | I/C | | | 3,5 | | 4,6 | | | | | | | | 4 | 4 | | |
| | MAJ | | | 7 | | 7 | | | | | | | | 2 | 2 | | |
| | TS | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> RM <input type="checkbox"/> O <input type="checkbox"/> i <input type="checkbox"/> l <input type="checkbox"/> l <input type="checkbox"/> e <input type="checkbox"/> r | RX | | | | | | | | | | 2 | | | 1 | 1 | | |
| | NOR | | | | | | | | 1 | | | | | 1 | 1 | | |
| | I/C | | | | | | | | 4,5 | | 5,7 | | | 4 | 4 | | |
| | MAJ | | | | | | | | 7 | | 8 | | | 2 | 2 | | |
| | TS | | | | | | | | | | | | | | | | |

| Facility: Browns Ferry NPP | | | | Date of Exam: August 8 - 19, 2011 | | | | Ops Test # ILT1108 | | | | | | | | | |
|---|---|------------------|-------------|-----------------------------------|------------------|-------------|-------------|--------------------|-------------|-------------|------------------|-------------|-------------|-----------------------|-------------------------------------|---|---|
| A P P L I C A N T | E V E N T T Y P E | Scenarios | | | | | | | | | | | | T O T A L | M I N I M U M (*) | | |
| | | 7 | | | 1 | | | 6 | | | 4 | | | | | | |
| | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | CREW POSITION | | | | | | |
| | | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | S R O | A T C | B O P | | | | |
| | | | | | | | | | | | | | | | R | I | U |
| RH <input checked="" type="checkbox"/> O u m <input type="checkbox"/> - p h r i e s <input type="checkbox"/> | RX | | | | | | | | 2 | | | | | 1 | 1 | | |
| | NOR | | | | | | | | | | | | 1 | 1 | 1 | | |
| | I/C | | | | | | | | 3,6 | | | | 4,6 | 4 | 4 | | |
| | MAJ | | | | | | | | 7 | | | | 8 | 2 | 2 | | |
| | TS | | | | | | | | | | | | | | | | |
| <p>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</p> <p>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</p> <p>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</p> | | | | | | | | | | | | | | | | | |

| Facility: Browns Ferry Date of Examination: August 2011 Operating Test No.: ILT 1108 | | | | | | | | | | | | | | | |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Competencies | APPLICANTS | | | | | | | | | | | | | | |
| | RO | | | | | SRO-I | | | | | SRO-U | | | | |
| | SCENARIO | | | | | SCENARIO | | | | | SCENARIO | | | | |
| | 1 | 2 | 4 | 6 | 7 | 1 | 2 | 4 | 6 | 7 | 1 | 2 | 4 | 6 | 7 |
| Interpret/Diagnose Events and Conditions | 2,4,5,6 | 1,3,4,5,6 | 3,4,5,6,7 | 3,4,5,6 | 1,3,4,5,6 | 2,4,5,6 | 1,3,4,5,6 | 3,4,5,6,7 | 3,4,5,6 | 1,3,4,5,6 | 2,4,5,6 | 1,3,4,5,6 | 3,4,5,6,7 | 3,4,5,6 | 1,3,4,5,6 |
| Comply With and Use Procedures (1) | 1,2,3,7 | 1,3,4,5,6 | 1,2,3,6,7 | 1,2,3,4,6 | 1,2,3,4,5,6 | 1,2,3,7 | 1,3,4,5,6 | 1,2,3,6,7 | 1,2,3,4,6 | 1,2,3,4,5,6 | 1,2,3,7 | 1,3,4,5,6 | 1,2,3,6,7 | 1,2,3,4,6 | 1,2,3,4,5,6 |
| Operate Control Boards (2) | 1,2,3,4,5,7 | 1,2,3,4,5,6 | 1,2,4,5,6,7 | 1,2,3,4,5,6 | 1,2,3,4,5,6 | 1,2,3,4,5,7 | 1,2,3,4,5,6 | 1,2,4,5,6,7 | 1,2,3,4,5,6 | 1,2,3,4,5,6 | 1,2,3,4,5,7 | 1,2,3,4,5,6 | 1,2,4,5,6,7 | 1,2,3,4,5,6 | 1,2,3,4,5,6 |
| Communicate and Interact | 7 | 7 | 7,8 | 5,7 | 7,8,9 | 7 | 7 | 7,8 | 5,7 | 7,8,9 | 7 | 7 | 7,8 | 5,7 | 7,8,9 |
| Demonstrate Supervisory Ability (3) | | | | | | 4,5,6,7 | 3,4,5,7,9 | 4,5,6,7,8 | 4,5,6,7 | 7,8,9 | 4,5,6,7 | 3,4,5,7,9 | 4,5,6,7,8 | 4,5,6,7 | 7,8,9 |
| Comply With and Use Tech. Specs. (3) | | | | | | 2,7 | 3,5,6 | 3,5 | 5,6 | 1,3 | 2,7 | 3,5,6 | 3,5 | 5,6 | 1,3 |

Notes:


(1) Includes Technical Specification compliance for an RO.

(2) Optional for an SRO-U.

(3) Only applicable to SROs.

Instructions:

Check the applicants' license type and enter one or more event numbers that will allow the examiners to evaluate every applicable competency for every applicant.

| Facility: BROWNS FERRY | | | | | | | | | | | | | | Date of Exam: AUGUST 2011 | | | | | | | | | | | | | |
|--|-------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|---------------------------|----|-------|----|---|--|---|--|---|--|--|--|--|--|
| Tier | Group | RO K/A Category Points | | | | | | | | | | | | SRO-Only Points | | | | | | | | | | | | | |
| | | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G * | Total | A2 | G* | Total | | | | | | | | | | | |
| 1. Emergency & Abnormal Plant Evolutions | 1 | 4 | 3 | 3 | | | | 3 | 3 | | | | 4 | 20 | 3 | 4 | 7 | | | | | | | | | | |
| | 2 | 2 | 1 | 1 | N/A | | | 1 | 1 | N/A | | | 1 | 7 | 2 | 1 | 3 | | | | | | | | | | |
| | Tier Totals | 6 | 4 | 4 | | | | 4 | 4 | | | | 5 | 27 | 5 | 5 | 10 | | | | | | | | | | |
| 2. Plant Systems | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 26 | 4 | 2 | 6 | | | | | | | | | | | |
| | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 | 0 | 1 | 2 | | | | | | | | | | | |
| | Tier Totals | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 38 | 5 | 3 | 8 | | | | | | | | | | | |
| 3. Generic Knowledge and Abilities Categories | | | | 1 | | 2 | | 3 | | 4 | | 10 | | 1 | | 2 | | 3 | | 4 | | 7 | | | | | |
| | | | | 3 | | 2 | | 2 | | 3 | | | | 2 | | 2 | | 1 | | 2 | | | | | | | |
| <p>Note: 1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).</p> <p>2. The point total for each group and tier in the proposed outline must match that specified in the table.  The final point total for each group and tier may deviate by ± 1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.</p> <p>3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems/evolutions that are not included on the outline should be added. Refer to Section D.1.b of ES-401 for guidance regarding the elimination of inappropriate K/A statements.</p> <p>4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.</p> <p>5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.</p> <p>6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.</p> <p>7.* The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system. Refer to Section D.1.b of ES-401 for the applicable K/As.</p> <p>8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note #1 does not apply). Use duplicate pages for RO and SRO-only exams.</p> <p>9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ES-401 | | BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO / SRO) | | | | | | Form ES-401-1 | |
|---|--------|--|--------|--------|--------|---|---|---------------|----|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G | K/A Topic(s) | IR | # |
| 295001 Partial or Complete Loss of Forced Core Flow Circulation / 1 & 4 | | | | | R | | 295001 AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION : Neutron monitoring. (CFR: 41.10 / 43.5 / 45.13) | 3.1 | 1 |
| 295003 Partial or Complete Loss of AC / 6 | | | | | | R | 295003 G2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation. (CFR: 41.10 / 43.5 / 45.2 / 45.6) | 4.3 | 2 |
| 295004 Partial or Total Loss of DC Pwr / 6 | R | | | | S | | 295004 AK1.02 Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Redundant D.C. power supplies: Plant-Specific.... (CFR: 41.8 to 41.10) | 3.2 | 3 |
| | | | | | | | 295004 AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Extent of partial or complete loss of D.C. power..... (CFR: 41.10 / 43.5 / 45.13) | 3.9 | 76 |
| 295005 Main Turbine Generator Trip / 3 | | R | | | | | 295005 AK2.01 Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: RPS..... (CFR: 41.7 / 45.8) | 3.8 | 4 |
| 295006 SCRAM / 1 | | | R | | | S | 295006 AK3.06 Knowledge of the reasons for the following responses as they apply to SCRAM : Recirculation pump speed reduction: Plant-Specific.... (CFR: 41.5 / 45.6) | 3.2 | 5 |
| | | | | | | | 295006 G2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11) | 4.6 | 77 |
| 295016 Control Room Abandonment / 7 | | | | R | S | | 295016 AA1.08 Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT: Reactor Pressure. (CFR: 41.7 / 45.6) | 4.0 | 6 |
| | | | | | | | 295016 AA2.06 (replaced) Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : Cooldown rate.... (CFR: 41.10 / 43.5 / 45.13) → 295038 EA2.03 | 3.5 4.3 | 78 |

| | | | | | | | | |
|---|---|---|---|---|---|---|-----------------------|-------------|
| 295018 Partial or Total Loss of CCW / 8 | R | | | | | 295018 AK1.01 Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER : Effects on component/system operations (CFR: 41.8 to 41.10) | 3.5 | 7 |
| 295019 Partial or Total Loss of Inst. Air / 8 | | R | | | | 295019 AK2.17 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: High pressure coolant injection: Plant-Specific (CFR: 41.7 / 45.8) | 2.7 | 8 |
| 295021 Loss of Shutdown Cooling / 4 | | | R | | S | 295021 AK3.04 Knowledge of the reasons for the following responses as they apply to LOSS OF SHUTDOWN COOLING : Maximizing reactor water cleanup flow (CFR: 41.5 / 45.6) 295021 G2.4.30 Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11) | 3.3 4.1 | 9 79 |
| 295023 Refueling Acc / 8 | | | | R | | 295023 AA1.05 Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS : Fuel transfer system: Plant-Specific (CFR: 41.7 / 45.6) | 2.8 | 10 |
| 295024 High Drywell Pressure / 5 | | | | | R | 295024 EA2.05 <i>replaced</i> Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Suppression chamber air-space temperature: Plant-Specific.... (CFR: 41.10 / 43.5 / 45.13) <i>295024 EA2.01</i> | 2.6 4.2 | 11 |
| 295025 High Reactor Pressure / 3 | | | | | R | 295025 G2.4.47 Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material. (CFR: 41.10 / 43.5 / 45.12) | 4.2 | 12 |
| 295026 Suppression Pool High Water Temp. / 5 | | R | | | | 295026 EK2.06 Knowledge of the interrelations between SUPPRESSION POOL HIGH WATER TEMPERATURE and the following: Suppression pool level... (CFR: 41.7 / 45.8) | 3.5 | 13 |
| 295027 High Containment Temperature / 5 | | | | | | | | |
| 295028 High Drywell Temperature / 5 | | | | R | | 295028 EA1.03 Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE : Drywell cooling system. (CFR: 41.7 / 45.6) | 3.9 | 14 |

| | | | | | | | | | |
|--|---|--|--|--|---|---|---|-----|------|
| 295030 Low Suppression Pool Wtr Lvl / 5 | | | | | R | S | 295030 EA2.01 Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL : Suppression pool level.. (CFR: 41.10 / 43.5 / 45.13) | 4.1 | 15 |
| | | | | | | | 295030 G2.4.6 Knowledge of EOP mitigation strategies (CFR: 41.10 / 43.5 / 45.13) | 4.7 | 80 |
| 295031 Reactor Low Water Level / 2 | | | | | R | | 295031 EK3.01 Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL : Automatic depressurization system actuation (CFR: 41.5 / 45.6) | 4.2 | 16 |
| 295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1 | | | | | | R | 295037 G2.4.46 Ability to verify that the alarms are consistent with the plant conditions. (CFR: 41.10 / 43.5 / 45.3 / 45.12) | 4.2 | 17 |
| 295038 High Off-site Release Rate / 9 | R | | | | | | 295038 EK1.03 Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE : †Meteorological effects on off-site release (CFR: 41.8 to 41.10) | 2.8 | 18 |
| 600000 Plant Fire On Site / 8 | | | | | | R | 600000 G2.4.34 Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects. (CFR: 41.10 / 43.5 / 45.13) | 4.2 | 19 |
| | | | | | | S | 600000 G2.4.41 Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11) | 4.6 | 81 |
| 700000 Generator Voltage and Electric Grid Disturbances / 6 | R | | | | | S | 700000 AK1.02 Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Over-excitation. (CFR: 41.4, 41.5, 41.7, 41.10 / 45.8) | 3.3 | 20 |
| | | | | | | | 700000 AA2.05 Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: Operational Status of Offsite Circuit. (CFR: 41.5 and 43.5 / 45.5, 45.7, and 45.8) | 3.8 | 82 |
| | | | | | | | | | |
| | | | | | | | | | |
| K/A Category Totals: | | | | | | | Group Point Total: | | 20/7 |

| ES-401 | | BWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO / SRO) | | | | | | | Form ES-401-1 | |
|--|--------|--|--------|--------|--------|---|--|-----|---------------|--|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G | K/A Topic(s) | IR | # | |
| 295002 Loss of Main Condenser Vac / 3 | | | | R | | | 295002 AA1.08 Ability to operate and/or monitor the following as they apply to LOSS OF MAIN CONDENSER VACUUM : Recirculating flow control system (CFR: 41.7 / 45.6) | 2.6 | 21 | |
| 295007 High Reactor Pressure / 3 | | | | | | | | | | |
| 295008 High Reactor Water Level / 2 | | | | | | | | | | |
| 295009 Low Reactor Water Level / 2 | | | | | S | | 295009 AA2.01 Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL : Reactor Water Level (CFR: 41.10 / 43.5 / 45.13) | 4.2 | 83 | |
| 295010 High Drywell Pressure / 5 | | | | | R | | 295010 AA2.04 (replaced) Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE : Drywell humidity: Plant-Specific (CFR: 41.10 / 43.5 / 45.13) → 295010 AA2.01 | 2.8 | 22 | |
| 295011 High Containment Temp / 5 | | | | | | | | | | |
| 295012 High Drywell Temperature / 5 | | | | | | | | | | |
| 295013 High Suppression Pool Temp. / 5 | | | | | | R | 295013 G2.4.3 Ability to identify post-accident instrumentation. (CFR: 41.6 / 45.4) | 3.7 | 23 | |
| 295014 Inadvertent Reactivity Addition / 1 | | | | | | S | 295014 G2.2.38 Knowledge of conditions and limitations in the facility license. (CFR: 41.7 / 41.10 / 43.1 / 45.13) | 4.5 | 84 | |
| 295015 Incomplete SCRAM / 1 | | | | | | | | | | |
| 295017 High Off-site Release Rate / 9 | | | | | | | | | | |
| 295020 Inadvertent Cont. Isolation / 5 & 7 | | | | | | | | | | |
| 295022 Loss of CRD Pumps / 1 | R | | | | | | 295022 AK1.02 Knowledge of the operational implications of the following concepts as they apply to LOSS OF CRD PUMPS: Reactivity control (CFR: 41.8 to 41.10) | 3.6 | 24 | |
| 295029 High Suppression Pool Wtr Lvl / 5 | | | | | | | | | | |
| 295032 High Secondary Containment Area Temperature / 5 | | | | | S | | 295032 EA2.02 Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE : Equipment operability (CFR: 41.10 / 43.5 / 45.13) | 3.5 | 85 | |

| | | | | | | | | |
|---|---|---|---|--|--|--|-----|-----|
| 295033 High Secondary Containment Area Radiation Levels / 9 | | R | | | | 295033 EK2.02 Knowledge of the interrelations between HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS and the following: Process radiation monitoring system (CFR: 41.7 / 45.8) | 3.8 | 25 |
| 295034 Secondary Containment Ventilation High Radiation / 9 | | | | | | | | |
| 295035 Secondary Containment High Differential Pressure / 5 | | | R | | | 295035 EK3.01 Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE : Blow-out panel operation: Plant-Specific (CFR: 41.5 / 45.6) | 2.8 | 26 |
| 295036 Secondary Containment High Sump/Area Water Level / 5 | | | | | | | | |
| 500000 High CTMT Hydrogen Conc. / 5 | R | | | | | 500000 EK1.01 Knowledge of the operational implications of the following concepts as they apply to HIGH CONTAINMENT HYDROGEN CONCENTRATIONS: Containment integrity (CFR: 41.8 to 41.10) | 3.3 | 27 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| K/A Category Point Totals: | | | | | | Group Point Total: | | 7/3 |

| ES-401 | | BWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRO) | | | | | | | | | | | Form ES-401-1 | |
|--|--------|--|--------|--------|--------|--------|--------|--------|--------|--------|---|---|---------------|----|
| System # / Name | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G | K/A Topic(s) | IR | # |
| 203000 RHR/LPCI: Injection Mode | | | | | | R | | | | | | 203000 K6.01 Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) : A.C. electrical power (CFR: 41.7 / 45.7) | 3.6 | 28 |
| 205000 Shutdown Cooling | | | | | | | R | | | | | 205000 A1.02 Ability to predict and/or monitor changes in parameters associated with operating the SHUTDOWN COOLING SYSTEM (RHR SHUTDOWN COOLING MODE) controls including: SDC/RHR pump flow (CFR: 41.5 / 45.5) | 3.3 | 29 |
| 206000 HPCI | | | | | | | | R | | | | 206000 A2.15 Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of control oil pressure: BWR-2,3,4 (CFR: 41.5 / 45.6) | 3.4 | 30 |
| | | | | | | | | | R | | | 206000 A3.06 Ability to monitor automatic operations of the HIGH PRESSURE COOLANT INJECTION SYSTEM including: System discharge pressure: BWR-2,3,4 (CFR: 41.7 / 45.7) | 3.8 | 31 |
| 207000 Isolation (Emergency) Condenser | | | | | | | | | | | | | | |
| 209001 LPCS | | | | | | | | | | R | | 209001 A4.05 Ability to manually operate and/or monitor in the control room: Manual initiation controls (CFR: 41.7 / 45.5 to 45.8) | 3.8 | 32 |
| 209002 HPCS | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|-----------------------------|---|---|---|---|---|--|--|---|--|--|--|--|-----|----|
| 211000 SLC | R | | | | | | | S | | | | 211000 K1.07 Knowledge of the physical connections and/or cause effect relationships between STANDBY LIQUID CONTROL SYSTEM and the following: Jet pump differential pressure indication: Plant-Specific (CFR: 41.2 to 41.9 / 45.7 to 45.8) | 2.6 | 33 |
| | | | | | | | | | | | | 211000 A2.08 Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to SCRAM (CFR: 41.5 / 45.6) | 4.2 | 86 |
| 212000 RPS | | R | | | | | | | | | | 212000 K2.01 Knowledge of electrical power supplies to the following: RPS motor-generator sets (CFR: 41.7) | 3.2 | 34 |
| 215003 IRM | | | R | | | | | | | | | 215003 K3.01 Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: RPS (CFR: 41.7 / 45.4) | 3.9 | 35 |
| 215004 Source Range Monitor | | | | R | R | | | | | | | 215004 K4.06 Knowledge of SOURCE RANGE MONITOR (SRM) SYSTEM design feature(s) and/or interlocks which provide for the following: IRM/SRM interlock (CFR: 41.7) | 3.2 | 36 |
| | | | | | | | | | | | | 215004 K5.03 Knowledge of the operational implications of the following concepts as they apply to SOURCE RANGE MONITOR (SRM) SYSTEM : Changing detector position (CFR: 41.5 / 45.3) | 2.8 | 37 |
| 215005 APRM / LPRM | | | | | R | | | | | | | 215005 K5.04 Knowledge of the operational implications of the following concepts as they apply to AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM : LPRM detector location and core symmetry (CFR: 41.5 / 45.3) | 2.9 | 38 |

| | | | | | | | | | | | | | |
|--|---|--|--|--|--|---|--|---|---|--|--|------------|----|
| 217000 RCIC | | | | | | R | | R | | | 217000 K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) : Suppression pool water supply (CFR: 41.7 / 45.7) <i>(replaced)</i> → 217000 A3.01 | 3.5 | 39 |
| | | | | | | | | | | | 217000 A2.05 Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: D.C. power loss (CFR: 41.5 / 45.6) | 3.3 | 40 |
| 218000 ADS | | | | | | | | R | | | 218000 A3.05 Ability to monitor automatic operations of the AUTOMATIC DEPRESSURIZATION SYSTEM including: Suppression pool level (CFR: 41.7 / 45.7) <i>(replaced)</i> → 218000 A3.01 | 3.6 4.2 | 41 |
| | | | | | | | | | R | | 218000 G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13) | 4.4 | 42 |
| 223002 PCIS/Nuclear Steam Supply Shutoff | | | | | | | | | R | | 223002 A4.06 Ability to manually operate and/or monitor in the control room: Confirm initiation to completion (CFR: 41.7 / 45.5 to 45.8) | 3.6 | 43 |
| 239002 SRVs | | | | | | | | | R | | 239002 G2.1.20 Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12) | 4.6 | 44 |
| 259002 Reactor Water Level Control | R | | | | | | | S | | | 259002 K1.02 Knowledge of the physical connections and/or cause effect relationships between REACTOR WATER LEVEL CONTROL SYSTEM and the following: Main steam flow (CFR: 41.2 to 41.9 / 45.7 to 45.8) | 3.2 | 45 |
| | | | | | | | | | | | 259002 A2.06 Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of controller signal output (CFR: 41.5 / 45.6) | 3.4 | 87 |

| | | | | | | | | | | | | | | |
|-----------------------------------|--|--|---|---|---|---|---|---|--|--|---|---|-----|----|
| 261000 SGTS | | | R | | | | R | | | | | 261000 K3.03 Knowledge of the effect that a loss or malfunction of the STANDBY GAS TREATMENT SYSTEM will have on following: Primary containment pressure: Mark-I&II (CFR: 41.7 /45.6) | 3.2 | 46 |
| | | | | | | | | | | | | 261000 A1.05 (replaced) Ability to predict and/or monitor changes in parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including: Primary containment oxygen level: Mark-I&II (CFR: 41.5 / 45.5) → 261000 A1.07 | 2.8 | 47 |
| 262001 AC Electrical Distribution | | | R | | | | | | | | S | 262001 K2.01 Knowledge of electrical power supplies to the following: Off-site sources of power (CFR: 41.7) | 3.3 | 48 |
| | | | | | | | | | | | | 262001 G2.1.19 (replaced) Ability to use plant computers to evaluate system or component status. (CFR: 41.10 / 45.12) → 206000 G2.1.7 | 4.7 | 88 |
| 262002 UPS (AC/DC) | | | | R | | | | | | | | 262002 K4.01 Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: Transfer from preferred power to alternate power Supplies (CFR: 41.7) | 3.1 | 49 |
| 263000 DC Electrical Distribution | | | | | R | | | | | | | 263000 K5.01 Knowledge of the operational implications of the following concepts as they apply to D.C. ELECTRICAL DISTRIBUTION : Hydrogen generation during battery charging (CFR: 41.5 / 45.3) | 2.6 | 50 |
| 264000 EDGs | | | | | | R | | S | | | | 264000 K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET) : Lube oil pumps (CFR: 41.7 / 45.7) | 3.5 | 51 |
| | | | | | | | | | | | | 264000 A2.03 Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Operating unloaded, lightly loaded, and highly loaded (CFR: 41.5 / 45.6) | 3.4 | 89 |

| | | | | | | | | | | | | | | | | | | |
|-----------------------------------|--|--|--|---|--|--|--|---|--|--|--|--|--|--|---|--|-----|------|
| 300000 Instrument Air | | | | R | | | | | | | | | | | | 300000 K4.03 Knowledge of (INSTRUMENT AIR SYSTEM) design feature(s) and or interlocks which provide for the following: Securing of IAS upon loss of cooling water (CFR: 41.7) | 2.8 | 52 |
| 400000 Component Cooling Water | | | | | | | | R | | | | | | | S | 400000 A1.01 Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: CCW flow rate (CFR: 41.5 / 45.5) | 2.8 | 53 |
| | | | | | | | | | | | | | | | | 400000 G2.4.11 Knowledge of abnormal condition procedures. (CFR: 41.10 / 43.5 / 45.13) | 4.2 | 90 |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| K/A Category Point Totals: | | | | | | | | | | | | | | | | Group Point Total: | | 26/5 |

| ES-401 | | BWR Examination Outline Plant Systems - Tier 2/Group 2 (RO / SRO) | | | | | | | | | | Form ES-401-1 | | |
|--|--------|--|--------|--------|--------|--------|--------|--------|--------|--------|---|---|-----|----|
| System # / Name | K 1 | K 2 | K 3 | K 4 | K 5 | K 6 | A 1 | A 2 | A 3 | A 4 | G | K/A Topic(s) | IR | # |
| 201001 CRD Hydraulic | | | | | | | | | R | | | 201001 A3.04 Ability to monitor automatic operations of the CONTROL ROD DRIVE HYDRAULIC SYSTEM including: System flow (CFR: 41.7 / 45.7) | 2.8 | 54 |
| 201002 RMCS | | | | | | | | | | | | | | |
| 201003 Control Rod and Drive Mechanism | | | | | | | | | R | | | 201003 A4.01 Ability to manually operate and/or monitor in the control room: CRD mechanism temperature (CFR: 41.7 / 45.5 to 45.8) | 2.6 | 55 |
| 201004 RSCS | | | | | | | | | | | | | | |
| 201005 RCIS | | | | | | | | | | | | | | |
| 201006 RWM | | | | | | | | S | | | | 201006 A2.05 (replaced) Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM (RWH) (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Out of sequence rod movement; P-Spec(Not-BWR6) (CFR: 41.5 / 45.6) 212.000 A2.05 | 3.5 | 91 |
| 202001 Recirculation | | | | | | | | | S | | | 202001 G2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (CFR: 41.5 / 43.5 / 45.12) | 4.4 | 92 |
| 202002 Recirculation Flow Control | | | | | | | | | | | | | | |
| 204000 RWCU | | | | | | | | | R | | | 204000 G2.1.28 Knowledge of the purpose and function of major system components and controls. (CFR: 41.7) | 4.1 | 56 |
| 214000 RPIS | | | | | | | | S | | | | 214000 A2.01 Ability to (a) predict the impacts of the following on the ROD POSITION INFORMATION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failed reed switches (CFR: 41.5 / 45.6) | 3.3 | 93 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|---|-----|----|
| 215001 Traversing In-core Probe | R | | | | | | | | | | | | | | | | | 215001 K1.05 Knowledge of the physical connections and/or cause effect relationships between TRAVERSING IN-CORE PROBE and the following: Primary containment isolation system: (Not-BWR1) (CFR: 41.2 to 41.9 / 45.7 to 45.8) | 3.3 | 57 |
| 215002 RBM | | R | | | | | | | | | | | | | | | | 215002 K2.03 Knowledge of electrical power supplies to the following: APRM channels: BWR-3,4,5 (CFR: 41.7) | 2.8 | 58 |
| 216000 Nuclear Boiler Inst. | | | R | | | | | | | | | | | | | | | 216000 K3.02 Knowledge of the effect that a loss or malfunction of the NUCLEAR BOILER Instrumentation will have on following: PCIS/NSSSS (CFR: 41.7 / 45.4) | 4.0 | 59 |
| 219000 RHR/LPCI: Torus/Pool Cooling Mode | | | | | | | | | | | | | | | | | | | | |
| 223001 Primary CTMT and Aux. | | | | R | | | | | | | | | | | | | | 223001 K4.06 Knowledge of PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES design feature(s) and/or interlocks which provide for the following: Maintains proper containment/secondary containment to drywell differential pressure (CFR: 41.7) | 3.1 | 60 |
| 226001 RHR/LPCI: CTMT Spray Mode | | | | | | | | | | | | | | | | | | | | |
| 230000 RHR/LPCI: Torus/Pool Spray Mode | | | | | R | | | | | | | | | | | | | 230000 K5.07 Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE : Vacuum breaker operation (CFR: 41.5 / 45.3) | 2.9 | 61 |
| 233000 Fuel Pool Cooling/Cleanup | | | | | | | | | | | | | | | | | | | | |
| 234000 Fuel Handling Equipment | | | | | | | | | | | | | | | | | | | | |
| 239001 Main and Reheat Steam | | | | | | | | | | | | | | | | | | | | |
| 239003 MSIV Leakage Control | | | | | | | | | | | | | | | | | | | | |
| 241000 Reactor/Turbine Pressure Regulator | | | | | | | | | | | | | | | | | | | | |
| 245000 Main Turbine Gen. / Aux. | | | | | | R | | | | | | | | | | | | 245000 K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS : Hydrogen seal oil (CFR: 41.7 / 45.7) | 2.8 | 62 |
| 256000 Reactor Condensate | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---------------------------------|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|---|-----|------|
| 259001 Reactor Feedwater | | | | | | | | | | R | | | | | | 259001 A1.01 Ability to predict and/or monitor changes in parameters associated with operating the REACTOR FEEDWATER SYSTEM controls including: Feedwater flow/pressure (CFR: 41.5 / 45.5) | 3.3 | 63 |
| 268000 Radwaste | | | | | | | | | | | | | | | | | | |
| 271000 Offgas | | | | | | | | | | | | | | | | | | |
| 272000 Radiation Monitoring | | | | | | | | | | | | | | | | | | |
| 286000 Fire Protection | | | | | | | | | | | | | | | | | | |
| 288000 Plant Ventilation | | | | | | | | | | | | | | | | | | |
| 290001 Secondary CTMT | | | | | | | | | | | | | | | | | | |
| 290003 Control Room HVAC | | | | | | | | | | R | | | | | | 290003 A2.04 (replaced) Ability to (a) predict the impacts of the following on the CONTROL ROOM HVAC; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Initiation/failure of fire protection system (CFR: 41.5 / 45.6) 290003 A2.01 | 3.1 | 64 |
| 290002 Reactor Vessel Internals | | | | | | | | | | | | | | | | 290002 K3.01 Knowledge of the effect that a loss or malfunction of the REACTOR VESSEL INTERNALS will have on following: Reactor water level (CFR: 41.7 / 45.4) | 3.2 | 65 |
| K/A Category Point Totals: | | | | | | | | | | | | | | | | Group Point Total: | | 12/3 |

| Facility: | | Date of Exam: | | | | |
|--------------------------------|----------|--|-----|----|-----------------------|----|
| Category | K/A # | Topic | RO | | SRO-Only | |
| | | | IR | # | IR | # |
| 1. Conduct of Operations | 2.1. | G2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. (CFR: 41.10 / 45.12 / 45.13) | 3.6 | 66 | | |
| | 2.1. | G2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (CFR: 41.10 / 43.5 / 45.12) | 3.9 | 67 | | |
| | 2.1. | G2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management. (CFR: 41.1 / 43.6 / 45.6) | 4.3 | 68 | | |
| | 2.1. | G 2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. (CFR: 41.10 / 43.5 / 45.12) | | | 3.9 | 94 |
| | 2.1. | G 2.1.13 (replaced) Knowledge of facility requirements for controlling vital/controlled access. (CFR: 41.10 / 43.5 / 45.9 / 45.10) → G2.1.41 | | | 3.7 3.7 | 95 |
| | 2.1. | | | | | |
| | Subtotal | | | | | |
| 2. Equipment Control | 2.2. | G2.2.7 Knowledge of the process for conducting special or infrequent tests. (CFR: 41.10 / 43.3 / 45.13) | 2.9 | 69 | | |
| | 2.2. | G2.2.12 Knowledge of surveillance procedures. (CFR: 41.10 / 45.13) | 3.7 | 70 | | |
| | 2.2. | G2.2.17 Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator. (CFR: 41.10 / 43.5 / 45.13) | | | 3.8 | 96 |
| | 2.2. | G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (CFR: 41.5 / 41.7 / 43.2) | | | 4.2 | 97 |
| | 2.2. | | | | | |

| | | | | | | |
|---|----------|---|-----|----|-----|-----|
| | 2.2. | | | | | |
| | Subtotal | | | | | |
| 3. Radiation Control | 2.3. | G2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. (CFR: 41.12 / 45.10) | 3.5 | 71 | | |
| | 2.3. | G2.3.12 Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 45.9 / 45.10) | 3.2 | 72 | | |
| | 2.3. | G 2.3.15 Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.12 / 43.4 / 45.9) | | | 3.1 | 98 |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | Subtotal | | | | | |
| 4. Emergency Procedures / Plan | 2.4. | G2.4.2 Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions. (CFR: 41.7 / 45.7 / 45.8) | 4.5 | 73 | | |
| | 2.4. | G2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures. (CFR: 41.10 / 43.2 / 45.6) | 4.5 | 74 | | |
| | 2.4. | G2.4.35 Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects. (CFR: 41.10 / 43.5 / 45.13) | 3.8 | 75 | | |
| | 2.4. | G 2.4.5 Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions. (CFR: 41.10 / 43.5 / 45.13) | | | 4.3 | 99 |
| | 2.4. | G2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. (CFR: 41.10 / 43.5 / 45.11) | | | 4.4 | 100 |
| | 2.4. | | | | | |
| | Subtotal | | | | | |
| Tier 3 Point Total | | | | 10 | | 7 |

| Tier / Group | Randomly Selected K/A | Reason for Rejection |
|--------------|-----------------------|--|
| RO 1/1 | 295024 EA2.05 | Unable to write a discriminating question pertaining to torus air space temperature (plant specific) as it applies to high drywell pressure. Randomly selected 295024 EA2.01 (drywell pressure). RO 4.2 |
| RO 2/1 | 218000 A3.05 | Unable to write a discriminating question pertaining to monitoring torus level during an ADS blow down. Randomly selected 218000 A3.01 (ADS valve operation) RO 4.2 |
| RO 2/1 | 261000 A1.05 | Unable to write a discriminating question pertaining to predicting/monitoring changes in oxygen level when operating the SBGT system. Randomly selected 261000 A1.07 (SBGTS train temperature) RO 2.8 |
| SRO 2/1 | 262001 G2.1.19 | Unable to write a discriminating question pertaining to using the plant computers to evaluate AC Electrical Distribution status at the SRO level. Randomly selected 206000 G2.1.7 (HPCI: evaluate plant and make judgements) SRO 4.7 |
| SRO 1/1 | 295016 AA2.06 | Question overlapped with RO Q# 6 (295016 AA1.08) and unable to write an SRO level question pertaining to TS actions (all less than or equal to 1 hour) during Panel 25-32 operations for cool down rate. Randomly selected 295038 EA2.03 (High Offsite Release Rate: rad levels) SRO 4.3 |
| SRO 2/2 | 201006 A2.05 | All the RWM Tech Spec action statements required immediate action (i.e., ≤ 1 hour). Unable to write a discriminating question at the SRO level. Randomly selected 212000 A2.05 (RPS: Nuclear Boiler Instrument Failure) SRO 3.7 |
| SRO 3 | G2.1.13 | Unable to write a discriminating question at the SRO level for vital/controlled access because switchyard access and plant area access controls is also RO knowledge. Randomly selected 2.1.41 (Knowledge of refueling) SRO 3.7 |
| RO 1/2 | 295010 AA2.04 | Unable to write a discriminating question pertaining to drywell humidity – BFN has a dew point indicator at Panel 9-47; however, a proposed question to test the applicants' ability to distinguish between a drywell pressure problem as opposed to whether or not a leak exists (given the dew point indication) would not provide any discrimination. Randomly selected 295010 AA2.01 (leak rate) |
| RO 2/1 | 217000 K6.03 | Unable to write a question that did not overlap with SRO Q#88 (HPCI G2.1.7) because both RCIC and HPCI have the same concern for high torus temperature (140 deg). Randomly selected 217000 A3.01 (Valve operation) |
| RO 2/2 | 290003 A2.04 | Browns Ferry control rooms do not have a fire suppression system (detection only) Randomly selected 290003 A2.01 (initiation/reconfiguration) |

| Facility: <u>Browns Ferry</u> | | Date of Exam: | | Exam Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/> | | | |
|---|--|--------------------|----------|---|-----|----|----|
| Item Description | | | | Initial | | | |
| | | | | a | b* | c# | |
| 1. Questions and answers are technically accurate and applicable to the facility. | | | | Ⓟ | N/A | BK | |
| 2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available. | | | | Ⓟ | | BK | |
| 3. SRO questions are appropriate in accordance with Section D.2.d of ES-401 | | | | Ⓟ | | BK | |
| 4. The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office). | | | | | | BK | |
| 5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: ___ the audit exam was systematically and randomly developed; or ___ the audit exam was completed before the license exam was started; or <input checked="" type="checkbox"/> the examinations were developed independently; or ___ the licensee certifies that there is no duplication; or ___ other (explain) | | | | Ⓟ | | BK | |
| 6. Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right. | | Bank | Modified | New | Ⓟ | BK | |
| | | 0 / - | 15 / - | 60 / - | | | |
| 7. RO 52% Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right. | | Memory | | C/A | | Ⓟ | BK |
| | | RO / SRO 36 / - | | RO / SRO 39 / - | | | |
| 8. References/handouts provided do not give away answers or aid in the elimination of distractors. | | | | Ⓟ | | BK | |
| 9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified. | | | | Ⓟ | | BK | |
| 10. Question psychometric quality and format meet the guidelines in ES Appendix B. | | | | Ⓟ | | BK | |
| 11. The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet. | | | | Ⓟ | N/A | BK | |
| Printed Name / Signature | | | | Date | | | |
| a. Author <u>KENNETH D. SCHAAF / Kenneth D. SchAAF</u> | | | | 8-16-11 | | | |
| b. Facility Reviewer (*) <u>- N/A -</u> | | | | - N/A - | | | |
| c. NRC Chief Examiner (#) <u>BRUNO CABALLERO / Bruno Caballero</u> | | | | 8/16/11 | | | |
| d. NRC Regional Supervisor <u>MARK FRANKE / Mark Franke</u> | | | | 8/16/11 | | | |
| Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. | | | | | | | |

| Facility: | | Date of Exam: | | Exam Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/> | | | |
|---|--|--|--------------|---|---------|----|----|
| Item Description | | | | Initial | | | |
| | | | | a | b* | c* | |
| 1. Questions and answers are technically accurate and applicable to the facility. | | | | ⊙ | N/A | BU | |
| 2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available. | | | | ⊙ | | BU | |
| 3. SRO questions are appropriate in accordance with Section D.2.d of ES-401 | | | | ⊙ | | BU | |
| 4. The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office). | | | | | | BU | |
| 5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: ___ the audit exam was systematically and randomly developed; or ___ the audit exam was completed before the license exam was started; or ✓ the examinations were developed independently; or ___ the licensee certifies that there is no duplication; or ___ other (explain) | | | | ⊙ | | BU | |
| 6. Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right. | | SRO Bank | SRO Modified | SRO New | ⊙ | BU | |
| | | - / 1 | - / 2 | - / 22 | | | |
| 7. Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right. | | Memory | | C/A | | ⊙ | BU |
| 56% SRO | | RO | SRO | RO | SRO | | |
| | | - / 11 | - / 14 | | | | |
| 8. References/handouts provided do not give away answers or aid in the elimination of distractors. | | | | ⊙ | | BU | |
| 9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified. | | | | ⊙ | | BU | |
| 10. Question psychometric quality and format meet the guidelines in ES Appendix B. | | | | ⊙ | ↓ | BU | |
| 11. The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet. | | | | ⊙ | N/A | BU | |
| a. Author | | Printed Name / Signature | | | Date | | |
| b. Facility Reviewer (*) | | KENNETH D SCHARF / <i>Kenneth D Scharf</i> | | | 8-16-11 | | |
| c. NRC Chief Examiner (#) | | BRUNO CABALLERO / <i>Bruno Caballero</i> | | | 8/16/11 | | |
| d. NRC Regional Supervisor | | MARK FRANK / <i>Mark Frank</i> | | | 8/16/11 | | |
| Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. | | | | | | | |

Browns Ferry 2011-301

(RO)

This ES-401-9 was developed by the licensee since the NRC developed the written exam.

| Q#/ Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation | |
|--|--------------------|--------------------|-----------------------|----------|-----|---------------|---------|----------------------|-------------|-------------|---------------|-----------|-------------|-------------|-------------------|--|
| | | | Stem Focus | Cue s | T/F | Cred Dist. | Partial | Job- Link | Minuti a | #/ units | Back- ward | Q= K/A | SRO Only | | | |
| Instructions | | | | | | | | | | | | | | | | |
| [Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.] | | | | | | | | | | | | | | | | |
| 1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level. 2. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable). 3. Check the appropriate box if a psychometric flaw is identified: . The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information). . The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc). . The answer choices are a collection of unrelated true/false statements. . One or more distractors is not credible. . One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem). 4. Check the appropriate box if a job content error is identified: . The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content). . The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory). . The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons). . The question requires reverse logic or application compared to the job requirements. 5. Check questions that are sampled for conformance with the approved K/A and those that are designated SRO-only (K/A and license level mismatches are unacceptable). 6. Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory? 7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met). | | | | | | | | | | | | | | | | |
| RO/SRO Combined Question | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | |
| 1 | H | 4 | | | | | | | | | | Y | | U | Total Recirc Flow documented in ARP and lesson plans. Correct answer is D not B. Eliminate parenthesis after each distractor. See attached |
| 2 | F | 5 | | | | | | | X | | | Y | | U | One Hour is a step in attachment 9 not a Caution or a Note, recall of knowledge too specific for a closed book exam. For second part could have which DG supplies power to a normally aligned EECW Pump. See attached |
| 3 | H | 5 | | | | | | X | X | | | Y | X | U | Change first part from Operable to have power or do NOT have power. Procedure selection SRO level knowledge for restoration, entry requirements for both of these procedures are met, operationally both procedures would be entered and utilized. See attached |
| 4 | H | | X | X | | | | | | | | Y | | U | TURV is TURB, Change power level to 23%, correct answer is C. The way currently written can argue annunciator is lit or not lit due to lack of stem focus. Also at 28% can argue both second part are correct since the status of Aux Steam loads is not identified 4 to 5% power for these loads. Currently answer Key has B checked with D at the bottom of the page. B distractor is different than others. Can argue that all four answers are correct. See attached |
| 5 | F | 3 | | | | | | | | | | Y | | S | Missing a semi colon for A, remove semi colons |
| 6 | H | 5 | | | | | X | | X | | | Y | X | U | Knowing what alarm windows are on the backup control panel is minutia. Pressure Band is a specific step in the AOI and is an SRO Function. Just because you have to verify feed valves closed does not mean the pressure band is 800 to 1000. Recommend BFN Bank Question see attached |
| 7 | H | | | | | | X | | | | | Y | | U | Correct should be C, Two Correct answers. More specific an immediate scram is required or any scram is required at any time. Remove "is" from stem in first sentence. See attached |
| 8 | F | 5 | | | | X | X | | X | | | Y | | U | Distractor B and D are the same, no noun names, no Unit ID's, drain pots will still auto drain. A is not correct, the most correct answer is C. HPCI loss of air low level of importance for all the things that happen on a loss of air. See attached |
| 9 | H | | | | | | X | | | | | Y | | U | Two correct answers C and D. RWCU is always correct for Thermal Stratification. The 200 degrees on all indications is for thermal stratification not alternate decay heat removal. RWCU can be used for both Thermal stratification and alternate decay heat removal. See attached |
| 10 | H | | | | | | X | | | | | Y | | U | Two correct answers, both A and B are immediate actions in 1-AOI-79-2. It would not be wrong to evacuate the refuel floor of personnel not involved in fuel moves. See attached |
| | | | | | | | | | | | | | | | Drywell Sprays are required should read Drywell Sprays |

[illegible]

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|----|--------------|--------------|-----------------------|------|-----|------------|---------|----------------------|---------|---------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | |
| 21 | F | 3 | | | | | | | | | | | | S | formatting |
| 22 | F | 5 | | | | | | X | X | | | | | U | Need a d on increased in D. Minutia memorize a time from subsequent action step 2.14 of the AOI. This AOI also states that multiple conditions would require entry and that the SRO will direct actions based on symptoms and experience. See attached |
| 23 | H | 3 | | | | | | | | | | | | E | Black Frame needs to be Black Label formatting see attached |
| 24 | H | 3 | | | | | | | | | | | | S | formatting see attached |
| 25 | F | 3 | | | | | | | | | | | | S | formatting see attached |
| 26 | F | 4 | | | | | | | | | | | | S | Please spell out FSAR formatting see attached |
| 27 | F | | | | | | X | | | | | | | U | Two correct answers C and D, Change B nitrogen tank to A nitrogen tank. see attached |
| 28 | H | 4 | | | | | | | | | | | | S | formatting see attached |
| 29 | H | 3.5 | | | | | | | | | | | | E | Need to Enhance stem focus to either Bold no further actions taken or Immediately following Pump start and bold immediately. formatting see attached |
| 30 | H | 3 | | | | | | | | | | | | S | formatting see attached |
| 31 | H | 3 | | | | | | | | | | | | E | Change to fill in the blank question formatting see attached |
| 32 | H | 3 | | | | X | | | | | | | | U | Do Not need second half of question or do not need first half of question FCV-75-23 is the Outboard Valve not Inboard. Not sure if A and B are supposed to be Outboard valves and C and D are Inboard valves? IAW 2-EOI Appendix -6D/E Injection Subsystems Lineup Core Spray System 1/2 from 2-OI-75 see attached |
| 33 | H | 3 | | | | | | | | | | | | U | Correct answer is A not B. Calibrated Jet Pumps have a tap on the SLC injection sparger as well as the other 16 jet pumps. The calibrated jet pumps have an extra connection on the diffuser that goes to a separate indicator on panel 9-4 |

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | |
| 34 | H | 3 | | | | | | | | | | | | E | Stem should state "the alternate power supply feed to the 1B RPS Bus is ..." there is no alternate power supply to the 1B RPS MG set |
| 35 | F | 3 | | | | | X | | | | | | | U | two correct answers (A and B). provide a value for IRMs on range 9 in order to make B the correct answer |
| 36 | H | 3 | | | | | | | | | | | | S | formatting see attached |
| 37 | H | 3 | X | | | | X | | | | | | | U | Need to provide the status of the SRMs. Are they partially withdrawn or fully inserted? ARP states a tolerance of +/- 14 cps on the 145 cps which would make the top end of the 125-135 cps band within the tolerance. All answers could be argued correct based on detector position and band being within tolerance of alarm |
| 38 | H | 3 | | | | | | | | | | | | S | |
| 39 | H | 3 | | | | | X | | | | | | | E | D could be argued correct because the 1-55 and 1-56 valves are required to be opened on a RCIC isolation by procedure (2-AOI-64-2C) |
| 40 | H | 4 | | | | | | | | | | | | U | C is the correct answer, not D. The 71-3 valve cannot close without power to the valve formatting see attached |
| 41 | H | 4 | | | | | | | | | | | | E | LOOP should be spelled out, not terminology commonly used. Also, level 1 should be provided (actual level), not terminology commonly used. Provide UNID for timer reset pushbutton. formatting see attached |
| 42 | H | 4 | X | | | | | | X | | | | | U | How can all MSIVs be open if the 'A' DW control air header is depressurized? Did the bypass valves fail to operate as designed to allow pressure to get to 1140 psig? In the stem to ask which main steam lines are used to stabilize pressure is an irrelevant question because the SRVs are upstream of the MSIVs. The first part of the distractors needs to be past tense to properly ask the question of how many SRVs opened at 1140 psig, otherwise the question is posed as "what is happening right now" this would lead to no correct answer. formatting see attached |
| 43 | F | 3 | | | | | | | | | | | | E | Change "HPIC" to "HPCI" in the stem of the question. formatting see attached |
| 44 | H | 4 | | | | | X | | | | | | | U | Propose removing the bullet that states there is a fire in the Unit 3 DG building because this leads to two correct answers, due to 0-SSI-21 actions which state to scram when entry conditions are met. 0-SSI-21 entry conditions: unit above atmospheric pressure, a fire in the proper location, and equipment spuriously operating (SRV). Also, how can Suppression Pool Temperature be stable when an SRV is stuck open. formatting see attached |

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|----|--------------|--------------|-----------------------|------|-----|------------|---------|----------------------|---------|---------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | |
| 45 | H | 5 | | | | | | | X | | | | | U | The question has good intent but needs to be specific to provide what instruments are failed and what instruments are still available. Taking the question to this level is minutia make correct answer B or D. formatting see attached |
| 46 | H | 4 | | | | | X | | | | | | | U | Two correct answers. When DW pressure rises and reaches 2.45 psig, SBTG trains A & B will auto start, therefore, C and D are both correct depending on the time frame. Even though power to RPS has not been lost SBTGs A & B will still start at 2.45 psig. Propose providing time or DW pressure parameter to ensure only one correct answer. formatting see attached |
| 47 | H | 5 | | | | | X | | X | | X | | | U | Need to provide specific value to where the SGT A charcoal bed temperature rises, otherwise the question is ambiguous and multiple answers could be correct. Backward logic for alarm, if in control room would know if train was running or not if alarm was received. Minutia to recall from memory when Decay Heat Removal is required to be initiated IAW 0-OI-65 and whether an alarm comes in with system running or shutdown. Decay heat removal is also only required when the train is no longer in service. formatting see attached |
| 48 | F | 3 | | | | | | | | | | | | E | Need to change "shutdown board" to "shutdown bus" in the second part of the stem formatting see attached |
| 49 | F | 3 | | | | | | | | | | | | S | formatting see attached |
| 50 | F | 3 | | | | | | | | | | | | E | "to be in operation" in A and C should be moved to the stem statement, as it is relative to all choices. formatting see attached |
| 51 | H | 4 | X | | | | | | | | | | | U | There is no correct answer to this question as written. The alarm is only active if the EDG is running or you have a low sump level. If EDG were running, be careful with 'A' distractor. formatting see attached |
| 52 | F | 4 | | | | X | X | | | | | | | U | A and B are subsets, therefore if B is correct so is A. C is also a correct answer based on 0-OI-32 illustration 4. There are 3 correct answers. formatting see attached |
| 53 | H | 4 | | | | | | | | | | | | E | Define procedure title for 2-OI-70 = RBCCW System. Need Unid's for valves in distractor A and B, the RBCCW HX Valves. formatting see attached |
| 54 | H | 4 | | | | | X | | | | | | | U | Delete bullets 1,2 and 5. Only need bullet 3 and 4. Need actual Indicator designators or Unid's. With holding the switch in close for two seconds there are two correct answers not enough room on flow control valve to return flow to normal. formatting see attached |
| 55 | F | 5 | X | X | | | | | | | | | X | U | Stem Cueing, 350 is in the stem. Not RO question for second part, The answer is in Tech Spec Bases. The TI is an engineering procedure and the right answer is in the body of that procedure, and it says refer to note in 3.1.4 and the answer for note one is in tech |

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | |
| | | | | | | | | | | | | | | | spec bases. formatting see attached |
| 56 | F | 3 | | | | | | | | | | | | E | Change second part to on pump suction or on pump discharge upstream or downstream is difficult for a closed loop system. formatting see attached |
| 57 | H | 4 | | | | | | | | | | | | U | Double jeopardy with question 43 for actuation of TIP, if you do not know it in 43 you would miss this question also. Need to designate B TIP Ball and Purge Valves formatting see attached |
| 58 | F | 4 | | | | | | | | | | | | S | formatting see attached |
| 59 | H | 3 | | | | | | | | | | | | E | LIS -3-203A Reactor Water Level Low is tripped LOW due to surveillance. Change lit to in alarm. formatting see attached |
| 60 | F | | | | | | | | | | | | | U | Torus Pressure is always lower than drywell pressure. Correct answer is B, All distractors need to have psid NOT psig. formatting see attached |
| 61 | H | 3 | X | | | X | X | | | | | | | U | No Correct Answer, EOI SAMG actual level is 19.25 Feet, it also references that at 18 feet they will start to cover and EOI Bases has 18 feet, this 18 feet is based on actual control room indications. Change second part to when we stop Drywell Spray which is at 18 feet and we could use 18 feet and 19 feet. formatting see attached |
| 62 | H | 4 | | | | | | | | | | | | E | Change second part to Hydrogen Purity will Drop and Hydrogen Purity will remain unchanged. formatting see attached |
| 63 | H | | | | | | X | X | X | | | | | U | Little to NO operational Validity to operating flow Bias on controller, Operators do not adjust. Use column one or three for operational validity and Auto versus manual on master controller. On simulator correct answer is D. A and B can be argued as correct also, adjusting flow bias on a pump will depend on where that pumps bias and the other pumps bias is already at. formatting see attached |
| 64 | H | 5 | X | | | | | X | | | | | | U | BFN Control Rooms do not have a CO2 system, recommend new K and A, Operation of fire protection has no effect on CREV. Whether an SSI is implemented is not RO knowledge. |
| 65 | F | 3 | | | | | | | | | | | | S | formatting see attached |
| 66 | F | 3 | | | | | | | | | | | | E | Make a question a fill in the blank question formatting see attached |

| Q#/ Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|-----------|--------------------|--------------------|-----------------------|----------|-----|---------------|---------|----------------------|-------------|-------------|---------------|-----------|-------------|-------------|---|
| | | | Stem Focus | Cue s | T/F | Cred Dist. | Partial | Job- Link | Minuti a | #/ units | Back- ward | Q= K/A | SRO Only | | |
| 67 | H | | | | | X | | | | | | | | U | No correct answer, after 2.5 hours you are on the curve. Need additional clarification for correct answer, all validators choose C. Change answer choices to 1 hour, 2 hours, 3 hours and 4 hours. Cannot interpolate between 45 and 60 relative to half hour increments, thus the time frames must be larger to encompass range of operator error. Which One of the listed times below is the formatting see attached |
| 68 | H | 3 | | | | | | | | | | | | S | formatting see attached |
| 69 | F | 5 | | | | | | X | X | | | | ? | U | formatting see attached, pulled a specific step out NPG-SPP, and played with word out of another specific step in the same procedure. May argue SRO Only question depending on additional validation scores. Not discriminatory, would we really deny an RO license on this question. Is the duty of a test director RO knowledge as far as line verification activities. |
| 70 | F | 5 | | | | | X | | X | | | | | U | RO not required to memorize surveillance frequency, when surveillance is conducted data is recorded every 15 minutes for operational conservatism. Correct answer C and D. The question, as written, tests specific knowledge which is not related in any way to a generic knowledge of surveillances. ES-401, page 6 of 33, Section 2.a, last sentence of first paragraph. formatting see attached |
| 71 | F | 5 | X | | | | | | | | | | | U | First part of Stem is incorrect, Change to Unit 3 has entered the EOIs and immediate entry into a High Radiation Area is required by an AUO, NO RWP currently exists for the entry. Delete "without meeting the prior approval requirements of a RWP" formatting see attached |
| 72 | H | 4 | | | | | | | | | | | | E | This is a three part question, the second part has two choices eliminate second part of second part. formatting see attached |
| 73 | F | 2 | | | | | | | | | | | | S | formatting see attached |
| 74 | H | 4 | | | | | | | | | | | | E | Change to The current status of the Offgas System Isolation Valve, 2-FCV-66-28 with the above listed alarms is _____. SUBSEQUENTLY the following alarm is received OG HI HI HI, which of the following identifies the required actions? |

[illegible]

[illegible]

Browns Ferry 2011-301

SROThis ES-401-9 was developed by the licensee
since the NRC developed the written exam.

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation | |
|---|--------------------|--------------------|-----------------------|------|-----|----------------|---------|----------------------|-------------|-------------|---------------|-----------|-------------|-------------|-------------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job- Link | Minuti a | #/ units | Back- ward | Q= K/A | SRO Only | | | |
| Instructions | | | | | | | | | | | | | | | | |
| [Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.] | | | | | | | | | | | | | | | | |
| <ol style="list-style-type: none"> Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable). Check the appropriate box if a psychometric flaw is identified: <ul style="list-style-type: none"> The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information). The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc). The answer choices are a collection of unrelated true/false statements. One or more distractors is not credible. One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem). Check the appropriate box if a job content error is identified: <ul style="list-style-type: none"> The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content). The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory). The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons). The question requires reverse logic or application compared to the job requirements. <u>Check questions that are sampled</u> for conformance with the approved K/A and those that are <u>designated SRO-only</u> (K/A and license level mismatches are unacceptable). Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory? At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met). | | | | | | | | | | | | | | | | |
| RO/SRO Combined Question | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|----------|--------------------|--------------------|-----------------------|----------|-----|---------------|---------|----------------------|-------------|-------------|---------------|-----------|-------------|-------------|---|
| | | | Stem Focus | Cue s | T/F | Cred Dist. | Partial | Job- Link | Minuti a | #/ units | Back- ward | Q= K/A | SRO Only | | |
| 73 | | | | | | | | | | | | | | | |
| 74 | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | |
| SRO ONLY | | | | | | | | | | | | | | | |
| 76 | H | | | | | | | | | | | Y | Y | S | 295004AA2.02 |
| 77 | M | | X | | | | | | | | | Y | Y | E | 295006G2.4.41 change from scram failure to Section 1.0 Reactor, would like to discuss use of reference |
| 78 | H | 5 | | | | | | | X | | | Y | Y | U | 295038EA2.03, requiring them to know all of appendix H PAR flowchart from memory, See attached proposed question |
| 79 | H | | | | | | X | | | | | Y | Y | U | 295021G2.4.30 Two correct answers, remove the word written from the second part of answers. Minor format for how alarms are listed on exams, See attached |
| 80 | H | | | | | | | | | | | Y | Y | E | 295030G2.4.6, Format, Emergency Depressurization is Emergency RPV Depressurization |
| 81 | M | | | | | | | | | | | Y | Y | S | 600000G2.4.41, |
| 82 | H | 5 | X | | | | X | | | | | Y | Y | U | 700000AA2.05 Correct Answer is B NOT A, Do not qualify individual 161 or 500 KV lines either 161 or 500 is NOT Qualified or Qualified. With RED on a 161 KV line that would make the 161 KV system Not qualified. Need additional information on 161KV system. 4KV common board is needless information, makes confusing See attached |
| 83 | H | | X | | | | | | | | | Y | Y | E | 295009AA2.01, Stem Focus and Format, high pressure feed water, two validators asked status of RCIC and HPCI Since well above TAF, if they believe HPCI or RCIC may be available can argue A is also correct. Procedure Titles and Units |
| 84 | H | 5 | X | | | | | X | | | | Y | Y | U | 295014G2.2.38, MFLPD = 0, MFLPD not used on Units 2 and 3, Job Link – Not SRO, Reactor Engineering function at BFN. Need to remove operator mistake from question stem. See attached |

| Q#/ Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|-----------|--------------------|--------------------|-----------------------|------|-----|---------------|---------|----------------------|-------------|-------------|---------------|-----------|-------------|-------------|--|
| | | | Stem Focus | Cues | T/F | Cred Dist. | Partial | Job- Link | Minuti a | #/ units | Back- ward | Q= K/A | SRO Only | | |
| 85 | H | | | | | | | | | | | Y | Y | E | 295032EA2.02, Procedure Titles and Units in plausibility discussion an error exists |
| 86 | H | | X | | | | | | | | | Y | Y | E | 211000A2.08, add to exit RCQ leg, question format Procedure Titles and Units |
| 87 | H | | | | | | | | | | | Y | Y | E | 259002A2.06, typo and format, Capitalize indirectly initiated reactor scram. see attached |
| 88 | H | | | | | | | | | | | Y | Y | E | 206000G2.1.7, format see attached |
| 89 | H | | | | | | | | | | | Y | Y | E | 264000A2.03, format see attached |
| 90 | H | | X | | | | | | | | | Y | Y | E | 400000G2.4.11, DW Pressure normally about 1.2 to 1.5 psig. Need to have temp slowly rising to lend plausibility to second half of question. |
| 91 | H | | | | | | | | | | | Y | Y | E | 212000A2.05, Procedure Titles and Units, see attached |
| 92 | H | | X | | | | | | | X | | Y | Y | U | 202001G2.2.44, values for seal failure are incorrect, if #1 seal fails pressure is reactor pressure on seal 1 and 2 |
| 93 | H | | X | | | | X | | | | | Y | Y | U | 214000A2.01, Insert the control rod first, validators said with control rod at 48 cannot disarm while withdrawn Answer A or D correct |
| 94 | M | | | | | | | | | | | Y | Y | S | G2.1.5 |
| 95 | M | 5 | X | | | | | | | | | Y | Y | U | G2.1.41, Validators are missing the intent of the Refuel Bridge, most are using top of page as North. Label north on drawing or draw in entire Refuel floor for Unit 1. Need to write out Unit 1. New operators never refueled before. Knowing correct component for orientation identifies competent operator. See attached |
| 96 | M | | | | | | | | | | | Y | Y | E | G2.2.17, format see attached |
| 97 | M | | | | | | | | | | | Y | Y | S | G2.2.25 |
| 98 | M | 5 | | X | | | | | X | | | Y | Y | U | G2.3.15, LOD -5, Minutia, Memorize TRM 3.3.5 Table Distractor A ends with declaration. Distractor C ends with classification, see attached proposed question |

| Q#/ Q# | 1. LOK (C/A) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. U/E/S | 7. Explanation |
|-----------|--------------------|--------------------|-----------------------|----------|-----|---------------|---------|----------------------|-------------|-------------|---------------|-----------|-------------|-------------|---|
| | | | Stem Focus | Cue s | T/F | Cred Dist. | Partial | Job- Link | Minuti a | #/ units | Back- ward | Q= K/A | SRO Only | | |
| 99 | M | | | | | | | | | | | Y | Y | E | G2.4.5, Format, confusing or misleading without correct procedure titles, see attached |
| 100 | M | | | | | | | | | | | Y | Y | E | G2.4.38, typo or misspelling, write out distractor D like B second half of question overlaps with Admin JPM |

| Facility: <u>Browns Ferry</u> | | Date of Exam: <u>8/19/11</u> | | Exam Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/> | |
|--|--|------------------------------|-----|---|--|
| Item Description | Initials | | | | |
| | a | b | c | | |
| 1. Clean answer sheets copied before grading | MJR | N/A | BM | | |
| 2. Answer key changes and question deletions justified and documented | N/A | | N/A | | |
| 3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations) | N/A | | BM | | |
| 4. Grading for all borderline cases (80 \pm 2% overall and 70 or 80, as applicable, \pm 4% on the SRO-only) reviewed in detail | MJR | | BM | | |
| 5. All other failing examinations checked to ensure that grades are justified | MJR | | BM | | |
| 6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants | MJR | N/A | BM | | |
| Printed Name/Signature | | Date | | | |
| a. Grader | <u>MARK RICHES / Mark J. Riches</u> | <u>08-31-11</u> | | | |
| b. Facility Reviewer(*) | <u>N/A</u> | <u>N/A</u> | | | |
| c. NRC Chief Examiner (*) | <u>BRUNO CABALLERO / Bruno Caballero</u> | <u>9-1-11</u> | | | |
| d. NRC Supervisor (*) | <u>MALCOLM T. WIDMANN / [Signature]</u> | <u>09/12/11</u> | | | |
| (*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required. | | | | | |

| Facility: <u>Browns Ferry</u> | | Date of Exam: <u>8/19/11</u> | | Exam Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/> | |
|--|--|------------------------------|-----|---|--|
| Item Description | Initials | | | | |
| | a | b | c | | |
| 1. Clean answer sheets copied before grading | MJR | N/A | BK | | |
| 2. Answer key changes and question deletions justified and documented | N/A | | N/A | | |
| 3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations) | N/A | | BK | | |
| 4. Grading for all borderline cases (80 \pm 2% overall and 70 or 80, as applicable, \pm 4% on the SRO-only) reviewed in detail | MJR | | BK | | |
| 5. All other failing examinations checked to ensure that grades are justified | MJR | | BK | | |
| 6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants | MJR | N/A | BK | | |
| Printed Name/Signature | | Date | | | |
| a. Grader | <u>MARK RICHES / Mark Riches</u> | <u>08-30-31-11</u> MJR | | | |
| b. Facility Reviewer(*) | <u>N/A</u> | <u>N/A</u> | | | |
| c. NRC Chief Examiner (*) | <u>BRUNO CABALLERO / Bruno Caballero</u> | <u>9-1-11</u> | | | |
| d. NRC Supervisor (*) | <u>UNCOLM.T. VIDUWAN / Uncolm T. Viduwan</u> | <u>09/12/11</u> | | | |
| (*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required. | | | | | |