

| Facility: <u>SEQUOYAH</u> | | Date of Examination: <u>Feb 2010</u> |
|---|---|--------------------------------------|
| Developed by: Written - Facility <input checked="" type="checkbox"/> NRC <input 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) | TBK |
| -120 | 2. NRC examiners and facility contact assigned (C.1.d; C.2.e) | TBK |
| -120 | 3. Facility contact briefed on security and other requirements (C.2.c) | TBK |
| -120 | 4. Corporate notification letter sent (C.2.d) <u>8/21/09</u> | TBK |
| [-90] | [5. Reference material due (C.1.e; C.3.c; Attachment 3)] <u>12/14/09</u> | TBK |
| {-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>11/16/09</u> | TBK |
| {-70} | {7. Examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e)} | TBK |
| {-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) | TBK |
| -30 | 9. Preliminary license applications (NRC Form 398's) due (C.1.i; C.2.g; ES-202) <u>1/17/10</u> | TBK |
| -14 | 10. Final license applications due and Form ES-201-4 prepared (C.1.i; C.2.i; ES-202) <u>2/2/10</u> | TBK |
| -14 | 11. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f) | N/A |
| -14 | 12. Examinations reviewed with facility licensee (C.1.j; C.2.f and h; C.3.g) <u>1/15/10</u> | TBK |
| -7 | 13. Written examinations and operating tests approved by NRC supervisor (C.2.i; C.3.h) <u>2/9/10</u> | TBK |
| -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) <u>2/5/10</u> | TBK |
| -7 | 15. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k) <u>1/15/10</u> | TBK |
| -7 | 16. Approved scenarios, job performance measures, and questions distributed to NRC examiners (C.3.i) <u>2/16/10</u> | TBK |
| <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> | | |

| Facility: Sequoyah Nuclear Plant 1 & 2 | | Date of Examination: 02/16/2010 | | |
|---|--|--|-----|--------------------|
| 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. | # | 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. | # | N/A | * |
| | c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics. | # | N/A | * |
| | d. Assess whether the justifications for deselected or rejected K/A statements are appropriate. | JCS | NY | BU |
| 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. | JCS | NY | BU |
| | 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. | JCS | NY | BU |
| | 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. | JCS | NY | BU |
| 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. | JCS | NY | BU |
| | 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 | JCS | NY | BU |
| | 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. | JCS | NY | BU |
| 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. | JCS | NY | BU |
| | b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate. | JCS | NY | BU |
| | c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5. | JCS | NY | BU |
| | d. Check for duplication and overlap among exam sections. | JCS | NY | BU |
| | e. Check the entire exam for balance of coverage. | JCS | NY | BU |
| | f. Assess whether the exam fits the appropriate job level (RO or SRO). | JCS | NY | BU |
| a. Author | Michael Buckner | Printed Name/Signature <i>Michael Buckner</i> | | Date 11/01/2009 |
| b. Facility Reviewer (*) | Van Ford | <i>Van Ford</i> | | 11/10/09 |
| c. NRC Chief Examiner (#) | BRUNO CIBALLERO | <i>Bruno Ciballero</i> | | 2/9/10 |
| d. NRC Supervisor | MALCOLM T. WIDALKAIN | <i>Malcolm T. Widalkain</i> | | 02/09/10 |
| Note: | # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines | | | |

* Written outline developed by NRC Region II

Rec'd
11/13/09

| Facility: SEQUOYAH | | Date of Examination: FEB 2010 | | |
|---------------------------|--|--------------------------------------|-----|-----------------|
| Item | Task Description | Initials | | |
| | | a | b* | c# |
| WRITTEN | a. Verify that the outline(s) fit(s) the appropriate model, in accordance with ES-401. | CM | N/A | BL |
| | 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. | CM | | BL |
| | c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics. | CM | | BL |
| | d. Assess whether the justifications for deselected or rejected K/A statements are appropriate. | CM | | BL |
| SIMULATOR | 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. | N-1 | | N/A |
| | 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. | N-1 | | N/A |
| | 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. | N-1 | | N/A |
| 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-1 | | 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 | N-1 | | N/A |
| | 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. | N-1 | | N/A |
| GENERAL | a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam sections. | CM | | BL |
| | b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate. | CM | | BL |
| | c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5. | CM | | BL |
| | d. Check for duplication and overlap among exam sections. | CM | | BL |
| | e. Check the entire exam for balance of coverage. | CM | | BL |
| | f. Assess whether the exam fits the appropriate job level (RO or SRO). | CM | N/A | BL |
| a. Author | <u>Craig Kurtz</u> | Printed Name/Signature | | Date 6/24/09 |
| b. Facility Reviewer (*) | <u>BRUNO CABALLERO</u> | <u>B. Caballero</u> | | 6/25/09 |
| c. NRC Chief Examiner (#) | <u>MARCO T. WIDMANN</u> | <u>[Signature]</u> | | 06/25/09 |
| d. NRC Supervisor | | | | |
| Note: | # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. * Not applicable for NRC-prepared examination outlines | | | |

N-1: This ES-201-2 Form is only for written exam outline.

To: NRC Region II Chief Examiner
Bruno Caballero

Subject: Completed ES-201-3 Forms

Mr. Caballero, please find enclosed the completed ES-201-3, Examination Security Agreement, forms that have been signed off following the completion of the 2010301, Written exam administered at Sequoyah Nuclear Station 1 & 2 on March 3, 2010.

If there are any questions, please feel free to call me the Sequoyah Training Center (423-843-4208).

Respectfully,

Mike Buckner
Exam Project Lead
Sequoyah Nuclear Station

A handwritten signature in black ink, appearing to read "Mike Buckner", written over the typed name.

1. Pre-Examination

Sequoyah Nuclear Plant ILT exam for 02/2010

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 2/16 & 2/22 2010 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 _____. 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. STEVEN V. SMITH | OPERATIONS TRG. INSTRUCTOR / EXAM AUTHOR | <i>Steve V Smith</i> | 7/16/09 | <i>Steve V Smith</i> | 3/3/2010 |
| 2. JOHN B. RODEN | CONTRACTOR | <i>John B Roden</i> | 7/20/09 | <i>John B Roden</i> | 3/9/2010 |
| 3. Michael A. Buckner | Exam Project Lead / Exam Author | <i>Michael Buckner</i> | 7/20/09 | <i>Michael Buckner</i> | 3/3/2010 |
| 4. DAVID A. PORTER | SRO/STA EXAM REVIEWER | <i>David A Porter</i> | 9/2/09 | <i>David A Porter</i> | 3/17/2010 |
| 5. Michael Wilson Reese | Ops Instructor | <i>Michael Wilson Reese</i> | 9/14/09 | <i>Michael Wilson Reese</i> | 3/5/2010 |
| 6. Scott J. Schuel | Ops - Instructor | <i>Scott J Schuel</i> | 09/28/09 | <i>Scott J Schuel</i> | 03/03/2010 |
| 7. Dale Kaunitz | Simulator Srs | <i>Dale Kaunitz</i> | 9/29/09 | <i>Dale Kaunitz</i> | 03/05/2010 |
| 8. Mike Bercher | SIMF Simulator Srs | <i>Mike Bercher</i> | 9/30/09 | <i>Mike Bercher</i> | 3/12/10 |
| 9. James D. Knight | Sim Engineer | <i>James D Knight</i> | 9/30/09 | <i>James D Knight</i> | 3/15/10 |
| 10. Timothy E. Pritchard | Sim Srs Manager | <i>Timothy E Pritchard</i> | 7/30/09 | <i>Timothy E Pritchard</i> | 3/15/10 |
| 11. David M. Beaman | OPS Instructor | <i>David M Beaman</i> | 10/06/09 | <i>David M Beaman</i> | 3/4/2010 |
| 12. Van Ford | Shift Mgr | <i>Van Ford</i> | 10/06/09 | <i>Van Ford</i> | 3/3/2010 |
| 13. MARIE HANKINS | OPS INSTRUCTOR | <i>Marie Hankins</i> | 10/7/09 | <i>Marie Hankins</i> | 3/4/2010 |
| 14. Calvin Fields | Contractor SRO | <i>Calvin Fields</i> | 10/16/09 | <i>Calvin Fields</i> | 3-16-10 |
| 15. DIERYEL WADE | SRO EXAM REVIEWER | <i>Dieryel Wade</i> | 10/16/09 | <i>Dieryel Wade</i> | 3/22/10 |

NOTES:

1. Pre-Examination

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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 _____. 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. Stacy L. Harvey | UO/RO | [Signature] | 11/03/09 | [Signature] | 3/9/10 |
| 2. Casey J. Pfeiffer | UO/RO | [Signature] | 11/03/09 | [Signature] | 3/8/10 |
| 3. Teri Conner | SRO/US | [Signature] | 11/11/09 | [Signature] | 3/22/10 |
| 4. Bruce E. Bock | SRO/US | [Signature] | 11/18/09 | [Signature] | 3/9/10 |
| 5. Terry W. Anderson | UO/RO | [Signature] | 11/24/09 | [Signature] | |
| 6. MATTHEW S. LEVERTS | SRO/US | [Signature] | 11/25/09 | [Signature] | 3/3/10 |
| 7. Donald A. Langford | UO/RO | [Signature] | 11/25/09 | [Signature] | 3/3/10 |
| 8. William D. Link | UO/RO | [Signature] | 11-30-09 | [Signature] | 3/2/10 |
| 9. William D. Link | UO/RO | [Signature] | 12-1-09 | [Signature] | |
| 10. Michael R. McDaniel | UO/RO | [Signature] | 12-7-09 | [Signature] | |
| 11. Ryan Radal | UO/RO | [Signature] | 12/8/09 | [Signature] | 3/9/10 |
| 12. James W. Fuller | SRO/US | [Signature] | 12/11/09 | [Signature] | 3/2/10 |
| 13. Chris T. Brooks | RO | [Signature] | 12/11/09 | [Signature] | 3/5/10 |
| 14. GARY P. GARDNER | SRO | [Signature] | 12/11/09 | [Signature] | 3/3/10 |
| 15. Dianne Hale | Learning & Dev Rep | [Signature] | 1/6/10 | [Signature] | 3/12/10 |

NOTES:

Terry W. Anderson
Per telecon
3-23-10
S. Swett

William D. Link
Per telecon
3-22-10
S. Swett

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 2/16-22/10 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 _____. 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. | STACY L. HARVEY | UC/RO | <i>[Signature]</i> | 11/6/09 | | | |
| 2. | Casey J. Proffey | UC/RO | <i>[Signature]</i> | 11/6/09 | <i>[Signature]</i> | 3/8/10 | |
| 3. | Jeri Conner | SRO/US | <i>[Signature]</i> | 11/11/09 | | | |
| 4. | Bruce E. Bach | SRO/US | <i>[Signature]</i> | 11/18/09 | | | |
| 5. | Tim W. Anderson | UC/RO | <i>[Signature]</i> | 11/24/09 | | | |
| 6. | MATTHEW S. BERGERTS | SRO/US | <i>[Signature]</i> | 11/25/09 | <i>[Signature]</i> | 3/15/10 | |
| 7. | Donald A. Langford | UC/RO | <i>[Signature]</i> | 11/25/09 | <i>[Signature]</i> | 3-3-10 | |
| 8. | C. L. HUNTER, HALLOWAY | UC/RO | <i>[Signature]</i> | 11-30-09 | | | |
| 9. | William D. Link | UC/RO | <i>[Signature]</i> | 12-1-09 | | | |
| 10. | Michael D. McDaniel | UC/RO | <i>[Signature]</i> | 12-7-09 | <i>[Signature]</i> | 3-8-10 | |
| 11. | Rayon K. Lott | UC/RO | <i>[Signature]</i> | 12/8/09 | <i>[Signature]</i> | 3/8/10 | |
| 12. | James W. Fuller | SRO/US | <i>[Signature]</i> | 12/1/09 | | | |
| 13. | Chris T. Brooks | RO | <i>[Signature]</i> | 12/1/09 | | | |
| 14. | GARY P. GARNER | SRO | <i>[Signature]</i> | 12/11/09 | <i>[Signature]</i> | 3/31/10 | |
| 15. | Dianna Hale | Learning + Dev Rep | <i>[Signature]</i> | 1/6/10 | | | |

NOTES:

1. Pre-Examination

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| | PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE | NOTE |
|-----|--------------------|----------------------------|---------------|---------------|---------------|---------|------|
| 1. | FRANK SOENS | SRO | [Signature] | 1/11/10 | [Signature] | 3/17/10 | |
| 2. | Allen Thurman | RO | [Signature] | 1/11/2010 | [Signature] | 3/31/10 | |
| 3. | Dore K. Passy | SRO | [Signature] | 3/11/2010 | [Signature] | 3/3/10 | |
| 4. | Larry Pruett | Contractor / SRO | [Signature] | 1-12-10 | [Signature] | 3/03/10 | |
| 5. | Missi McMillan | Learning & Dev. Rep | [Signature] | 1-12-10 | [Signature] | 3/4/10 | |
| 6. | Brendis D. Pochan | Training Director | [Signature] | 15:45 1/29/10 | | | |
| 7. | DAVID A. SMITH | RO | [Signature] | 2-4-10 | | | |
| 8. | Russell Joplin | Non ACC Erg mgmt | [Signature] | 2-6-10 | [Signature] | 3/16/10 | |
| 9. | Martin J. Quarberg | SRO | [Signature] | 2-8-10 | [Signature] | 3/15/10 | |
| 10. | Gary Cutberto | SRO | [Signature] | 2/8/10 | [Signature] | 3/15/10 | |
| 11. | D.R. Jones | SM | [Signature] | 2/11/10 | | | |
| 12. | M.T. RALPH | SM | [Signature] | 2-12-10 | | 3-15-10 | |
| 13. | ALBERT F. KODDY | SRO/US | [Signature] | 2/10/10 | [Signature] | 3/14/10 | |
| 14. | ARTHUR VEST | INSTRUMENTS | [Signature] | 2/12/10 | [Signature] | 3/3/10 | |
| 15. | Thomas Jones | INST | [Signature] | 2/16/10 | [Signature] | 3/14/10 | |

Allen Thurman
per phone 3-22-10
S Pruett
David Smith
per telecon 3-22-10

NOTES: D.G. Selph INST 2/16/10 (D.G. Selph) 3-22-2010 per phone S Pruett 3-22-10

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| | PRINTED NAME | JOB TITLE / RESPONSIBILITY | SIGNATURE (1) | DATE | SIGNATURE (2) | DATE NOTE |
|--------|------------------|----------------------------|---------------|---------------|---------------|-----------|
| 1. | FRANK SOENS | SLO | [Signature] | 1/11/10 | | |
| 2. | Allen Thurman | RO | [Signature] | 1/11/2010 | | |
| 3. | Dore K. Cassidy | SRO | [Signature] | 1-11-2010 | [Signature] | 3/3/10 |
| 4. | Larry Pruett | Contractor / SRO | [Signature] | 1-12-10 | [Signature] | 3/03/10 |
| 5. | M. S. McMillan | Licensing & Dev. Rep | [Signature] | 1-12-10 | [Signature] | 3/4/10 |
| 6. | BRADLEY D. PUGH | Training Director | [Signature] | 15:45 1/16/10 | [Signature] | 3/8/10 |
| 7. | DAVID A. SMITH | RO | [Signature] | 2-4-10 | | |
| 8. | Russell Joplin | Non Acc Trg mgr | [Signature] | 2-6-10 | | |
| 9. | Alvin J. Quaders | SRO | [Signature] | 2-8-10 | | |
| 10. | Larry Catlett | SRO | [Signature] | 2/8/10 | | |
| 11. | D. R. Jones | SM | [Signature] | 2/11/10 | [Signature] | 3/9/10 |
| 12. | M. J. BALBACON | SM | [Signature] | 2-12-10 | | |
| 13. | ALBERT F. RODY | SM/US | [Signature] | 2/11/10 | [Signature] | 3/14/10 |
| 14. | ANTHONY TEST | INTERPRETER | [Signature] | 02:52:10 | [Signature] | 3/3/10 |
| 15. | Thomas Jones | INST | [Signature] | 2/16/10 | [Signature] | 3/17/10 |
| NOTES: | DG Selph | INST | [Signature] | 2/16/10 | | |

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 2/16-22/10 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 _____. 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. | Michael L. Stephens | ILT Supervisor | <i>[Signature]</i> | 2/16/10 | <i>[Signature]</i> | 3/9/10 |
| 2. | JR Wilkes | OPS Supt. | <i>[Signature]</i> | 2/16/10 | <i>[Signature]</i> | 3/4/10 |
| 3. | W. L. Chandler | SRO/consultant | <i>[Signature]</i> | 2/17/10 | <i>[Signature]</i> | 3/9/10 |
| 4. | Isaac Vanover | COTM | <i>[Signature]</i> | 2/17/10 | <i>[Signature]</i> | 3/4/10 |
| 5. | | | | | | |
| 6. | | | | | | |
| 7. | | | | | | |
| 8. | | | | | | |
| 9. | | | | | | |
| 10. | | | | | | |
| 11. | | | | | | |
| 12. | | | | | | |
| 13. | | | | | | |
| 14. | | | | | | |
| 15. | | | | | | |

NOTES:

| Facility: <u>Sequoyah 1 & 2</u> | | Date of Examination: <u>2/16/2010</u> |
|--|------------------------------|---|
| Examination Level: RO <input checked="" type="checkbox"/> | SRO <input type="checkbox"/> | Operating Test Number: <u>2010301</u> |
| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
| Conduct of Operations | D, R | 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9/4.2) Perform a Reactivity Balance Calculation per 0-SO-62-7, Appendix E (JPM 190 RO) |
| Conduct of Operations | D, R | 2.1.26 Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen). (3.4/3.6) Containment Formaldehyde Stay Time Calculation (JPM 123) |
| Equipment Control | M, S | 2.2.12 Knowledge of surveillance procedures (3.7/4.1) Perform Reactor Coolant System water inventory (JPM 43-2) |
| Radiation Control | | |
| Emergency Procedures/Plan | N, R | 2.4.13 Knowledge of crew roles and responsibilities during EOP usage. (4.0/4.6) Calculating maximum reactor vessel vent time Per EA-0-7 (JPM-2.4) |
| <p>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.</p> | | |
| <p>* Type Codes & Criteria:</p> <ul style="list-style-type: none"> (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected) | | |

*Rec'd
2/13/10*

RO 2.1.a This JPM has the candidate determine a reactivity Balance Calculation needed to change power from 20% to 70%, at 3%/min, BOL conditions, on Unit 1. The JPM has been updated to current core load data and is designed to have the computer unavailable to make the calculation thus the candidate will use the guidance in 0-SO-62-7, Appendix E. This JPM can be performed in the simulator or classroom.

RO 2.1.b This JPM has the candidate determine the stay time in containment based on the formaldehyde concentration and determine the respiratory protection requirements. This is a Bank JPM that can be performed in the simulator or classroom.

RO 2.2 This JPM has the candidate determine the Reactor Coolant System Water inventory (leak rate). This is a Modified Bank JPM that will be performed in the classroom without the plant computer.

RO 2.4 This JPM has the candidate determine the allowable Reactor Vessel head venting time to prevent CNMT Hydrogen from exceeding 3% per EA-0-7. This is a New JPM that can be performed in the classroom.

*Rec'd
2/3/10*

| Facility: <u>Sequoyah 1 & 2</u> | | Date of Examination: <u>2/16/2010</u> |
|---|------------|--|
| Examination Level: RO <input type="checkbox"/> SRO <input checked="" type="checkbox"/> | | Operating Test Number: 2010301 |
| Administrative Topic (see Note) | Type Code* | Describe activity to be performed |
| Conduct of Operations | M, R | 2.1.1 Knowledge of conduct of operations requirements. (3.8/4.2) Determine Maintenance of License Active Status (JPM A.1.1) |
| Conduct of Operations | D, R | 2.1.26 Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen. (3.4/3.6) Containment Formaldehyde Stay Time Calculation (JPM 123) |
| Equipment Control | D, R | 2.2.12 Knowledge of surveillance procedures Review a Surveillance for approval (3.7/4.1) (JPM 410-1) |
| Radiation Control | M, R, P | 2.3.6 Ability to approve release permits Approval of a Waste Gas Decay tank Release (2.0/3.8) (JPM A-3) |
| Emergency Procedures/Plan | N, R | 2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. (2.4/4.4) Classify Rep: LOCA with Significant Fuel Failure (JPM 019 AP3) |
| <p>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.</p> | | |
| <p>* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)</p> | | |

*Rec'd
2/23/10*

SRO 2.1.a This JPM has the candidate review the work history for 4 SROs and determine which has performed the required activities necessary to maintain their license in an active status. This is a modified bank JPM that can be performed in the classroom.

SRO 2.1.b This JPM has the candidate determine the stay time in containment based on the formaldehyde concentration and determine the respiratory protection requirements. This is an updated Bank JPM that can be performed in the simulator or classroom.

SRO 2.2 This JPM has the candidate review a surveillance test for determining whether or not to adjust RCP seal injection supply controlled leakage. The data will be outside acceptable limits and require entry into Tech Specs as well as performing sect 6.3 of procedure to adjust the seal leak-off flows. This is a Bank JPM that can be performed on the simulator or in the classroom.

SRO 2.3 This JPM has the candidate review a radioactive gas decay tank release to determine if release permit is accurate and can take place as written. The candidate will determine who needs to approve the permit. This is a modified Bank JPM that can be performed in the simulator or in the classroom. This JPM is a Repeat from the 2009 NRC exam, which has been modified with a new critical task added and was randomly selected from a group of Radiation Control JPMs.

SRO 2.4 This JPM has the candidate determine the correct Emergency Classification based on the data provided and make the initial contacts. The JPM has the candidate determine that a SAE exists. This is a time critical, New JPM that can be performed in the simulator or in the classroom.

*Reid
2/3/10*

Facility: Sequoyah Nuclear Station Date of Examination: 02/16/2010

Exam Level: RO SRO-I SRO-U Operating Test No.: 2010301

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. 005 Inoperable/Stuck Control Rod (AA2.03 3.5/4.4) 001AP-1 Emergency Boration (Stuck Rods) | D, S, A, L | 1 |
| b. 011 Large Break LOCA (EA1.11 4.2/4.2) 013AP1 Transfer to Hot Leg Recirc. | D, S, A | 3 |
| c. 004 Chemical and Volume Control System (A4.06 3.6/3.1) JPM-2 Remove Excess Letdown from service. | N, S | 2 |
| d. 005 Residual Heat Removal System (A4.01 3.6/3.4) 152-1 Swap RHR pumps (B train to A train) with level in the PZR. | M, S, L | 4P |
| e. WE05 Loss of Secondary Heat Sink (EA2.1 3.4/4.4) 034-1 Establish MFW per EA-2-2 | N, S | 4S |
| f. 103 Containment System (A1.01 3.7/4.1) 065-1 Re-establishment of CNMT pressure | D, S | 5 |
| g. 064 Emergency Diesel Generators (A4.06 3.9/3.9) 077-1AP Perform DG load test on 1B-B DG (with high crankcase pressure) | D, S, A | 6 |
| h. 015 Nuclear Instrumentation System (A2.02 3.1/3.5) 021-1A Respond to a failure of N-41 | M, S | 7 |

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

| | | |
|--|---------|----|
| i. 059 Accidental Liquid Radioactive Waste Release (AA1.01 3.5/3.5) 189AP Radiation Monitor 0-RE-90-122 Flushing After Hi Radiation Signal Isolation of Release | D, R, A | 9 |
| j. 025 Residual Heat Removal System (AA1.10 3.1/2.9) 044 Venting A-A RHR pump due to cavitation | D, E, R | 4P |
| k. 068 AC Electrical Distribution System (AA1.21 3.9/4.1) 091-1 Transfer Controls to Aux Mode per AOP-C.04, Att 3 | D, E, A | 8 |

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.

*Mid
2/16/10*

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

- JPM A. Candidate has to determine that emergency boration is required due to 2 stuck rods following a Rx trip, with the normal emergency boration valve failing to open, requiring the candidate to align alternate boration through the charging pump suction. This is a Bank, Low Power, Alternate path, JPM.
- JPM B. Candidate is directed to make alignment change for Transfer to Hot Leg Recirculation per ES-1.4 following a trip due to large break LOCA. The Hot Leg Recirculation valve will fail to open requiring RHR to be aligned to Cold Leg injection with High head pumps aligned to Hot Legs. This is a Bank, Low Power, Alternate path, JPM.
- JPM C. Candidate will be required to remove Excess Letdown from service using normal operating procedures. The normal letdown system has been placed in service following a malfunction and excess letdown is required to be removed and placed in standby. This is a New JPM.
- JPM D. Plant is in Mode 4, and Candidate is directed to transfer RHR pumps and heat exchangers from B train to A train. This is a Modified Bank, Low Power JPM. Original JPM was to transfer from Train A to B.
- JPM E. Candidate is directed to establish a Secondary Heat Sink using Main Feed Water System following a Rx Trip. MFW will be required due to a failure of all AFW pumps. This is a New JPM.
- JPM F. Candidate is directed to vent excess pressure from CNMT. This is a Bank JPM.
- JPM G. Candidate is to perform a quick start of EDG A-A and load the EDG. Prior to closing the EDG breaker, a high crankcase condition will develop requiring a manual emergency trip of the EDG. This is a Bank, Alternate Path JPM.
- JPM H. Candidate will respond to failed Nuclear Instrument (N41) High. Control Rods will be stepping in at maximum rate, Candidate will take Rod bank selector switch to Manual and proceed to remove failed channel from service. This is a Modified Bank JPM. Original JPM (021) had N-41 failing low from ~45%, this JPM has N-41 failing High, requiring immediate manual action to stop control rod movement prior to removing channel from service.
- JPM I. Candidate is to locate and flush the radwaste effluent monitor to clear the high alarm condition. After the local flush, the JPM is complete. This a Bank, Alternate path, JPM performed in the RCA.
- JPM J. Candidate is directed to vent the 1A-A RHR pump due to pump cavitating during mid-loop operation. This venting is done locally and is required to be performed to return the RHR pump to service. This is a Bank JPM and is performed in the RCA.
- JPM K. Candidate is directed to perform checklist 3 of AOP-C.04 Shutdown from Auxiliary Control Room, following an event which requires Control Room Abandonment. This a Bank JPM.

rec'd
2/3/10

Facility: Sequoyah Nuclear Plant Date of Examination: 02/16/2010
 Exam Level: RO SRO-I SRO-U Operating Test No.: 2010301

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. 005 Inoperable/Stuck Control Rod (AA2.03 3.5/4.4) 001 AP-1 Emergency Boration (Stuck Rods) | D, S, A, L | 1 |
| b. 011 Large Break LOCA (EA1.11 4.2/4.2) 013AP1 Transfer to Hot Leg Recirc. | D, S, A | 3 |
| c. 004 Chemical and Volume Control System (A4.06 3.6/3.1) JPM-2 Remove Excess Letdown from service. | N, S | 2 |
| d. 005 Residual Heat Removal System (A4.01 3.6/3.4) 152 Swap RHR pumps (A train to B train) with level in the PZR. | M, S, L | 4P |
| e. WE05 Loss of Secondary Heat Sink (EA2.1 3.4/4.4) 034-1 Establish MFW per EA-2-2 | N, S | 4S |
| f. | | |
| g. 064 Emergency Diesel Generators (A4.06 3.9/3.9) 077-1AP Perform DG load test on 1B-B DG (with high crankcase pressure) | D, S, A | 6 |
| h. 015 Nuclear Instrumentation System (A2.02 3.1/3.5) 021 AP Respond to a failure of N-41 | D, S | 7 |

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

| | | |
|---|---------|----|
| i. 059 Accidental Liquid Radioactive Waste Release (AA1.01 3.5/3.5) 189AP Radiation Monitor 0-RE-90-122 Flushing After Hi Radiation Signal Isolation of Release. | D, R, A | 9 |
| j. 005 Residual Heat Removal System 044 Venting A-A RHR pump due to cavitation | D, E, R | 4P |
| k. 062 AC Electrical Distribution System 091-1 Transfer Controls to Aux Mode per AOP-C.04, Att 3 | D, E, A | 8 |

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

*Rec'd
2/2/10*

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

- JPM A. Candidate has to determine that emergency boration is required due to 2 stuck rods following a Rx trip, with the normal emergency boration valve failing to open, requiring the candidate to align alternate boration through the charging pump suction. This is a Bank, Low Power, Alternate path, JPM.
- JPM B. Candidate is directed to make alignment change for Transfer to Hot Leg Recirculation per ES-1.4 following a trip due to large break LOCA. The Hot Leg Recirculation valve will fail to open requiring RHR to be aligned to Cold Leg injection with High head pumps aligned to Hot Legs. This is a Bank, Low Power, Alternate path, JPM.
- JPM C. Candidate will be required to respond to failed PZR pressure instrument which causes the PZR spray valves to open with one valve sticking open. With a PZR spray valve failing to close, candidate will follow actions of AOP-I.4 and trip the RX and trip at least two RCPs to stop mitigate the depressurization to prevent SI actuation. This is a Modified Bank, Alternate Path JPM. Original JPM
- JPM D. Plant is in Mode 4, and Candidate is directed to transfer RHR pumps from B train to A train. This is a Bank, Low Power JPM.
- JPM E. Candidate is directed to establish a Secondary Heat Sink using Main Feed Water System following a Rx Trip. MFW will be required due to a failure of all AFW pumps. This is a New JPM.
- JPM G. Candidate is to perform a quick start of EDG A-A and load the EDG. Prior to closing the EDG breaker, a high crankcase condition will develop requiring a manual emergency trip of the EDG. This is a Bank, Alternate Path JPM.
- JPM H. Candidate will respond to failed Nuclear Instrument (N41) High. Control Rods will be stepping in at maximum rate, Candidate will take Rod bank selector switch to Manual and proceed to remove failed channel from service. This is a Modified Bank JPM. Original JPM (021) had N-41 failing low from ~45%, this JPM has N-41 failing High, requiring immediate manual action to stop control rod movement prior to removing channel from service.
- JPM I. Candidate is to locate and flush the radwaste effluent monitor to clear the high alarm condition. After the local flush, the JPM is complete. This is a Bank, Alternate Path, JPM performed in the RCA.
- JPM J. Candidate is directed to vent the 1A-A RHR pump due to pump cavitating during mid-loop operation. This venting is done locally and is required to be performed to return the RHR pump to service. This is a Bank JPM and is performed in the RCA.
- JPM K. Candidate is directed to perform checklist 3 of AOP-C.04 Shutdown from Auxiliary Control Room, following an event which requires Control Room Abandonment. This is a Bank JPM.

Handwritten:
 Rec'd
 2/2/10

| | | | | | |
|---|---|---|--------------------|----|------------|
| Facility: Sequoyah Date of Examination: 02/16/2010 Operating Test Number: 2010301 | | | | | |
| 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). | | JTB | NY | JBU |
| b. | There is no day-to-day repetition between this and other operating tests to be administered during this examination. | | JTB | NY | JBU |
| c. | The operating test shall not duplicate items from the applicants' audit test(s). (see Section D.1.a.) | | JTB | NY | JBU |
| d. | Overlap with the written examination and between different parts of the operating test is within acceptable limits. | | JTB | NY | JBU |
| e. | It appears that the operating test will differentiate between competent and less-than-competent applicants at the designated license level. | | JTB | NY | JBU |
| 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 | | JTB | NY | JBU N-1 |
| 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. | | JTB | NY | JBU N-1 |
| 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. | | | JTB | NY | JBU |
| a. | Author | Printed Name / Signature Mike Buckner <i>Michael Buckner</i> | Date 12/10/2009 | | |
| b. | Facility Reviewer(*) | Van Ford <i>Van Ford</i> | 12/11/09 | | |
| c. | NRC Chief Examiner (#) | BRUNO CABALLERO / <i>B. Caballero</i> | 2/9/10 | | |
| d. | NRC Supervisor | MALCOLM T. WIDRMAN / <i>Malcolm Widman</i> | 02/09/10 | | |
| NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required. | | | | | |

N-1: The licensee's operating test submittal was outside the acceptable quality range required by NUREG 1021 because 15 of 15 JPMs required either significant modification or replacement, (see attached for details) After rework, the JPMs now meet the checklist criteria.

Rec'd 2/11/10

Caballero, Bruno

From: Caballero, Bruno
Sent: Friday, February 05, 2010 10:15 AM
To: 'svsmith0@tva.gov'
Cc: Widmann, Malcolm; 'Picchiottino, Bradley D'
Subject: Draft Operating Test submittal

Steve,

This email does NOT contain exam security information.

As we discussed earlier, the draft operating test submittal was outside the acceptable quality range expected by the NRC because the 15 JPMs required significant modification and/or replacement due to the following issues:

- Incorrect simulator setup conditions
- Incorrect valve/component numbers listed
- Poorly defined standards (the "answer key") for procedure steps; i.e., adequate pass/fail criteria not established for critical steps, including tolerance bands on parameters
- Initial conditions were either missing important detail, poorly defined, or included cues. In some cases, the initiating cue statements included items that were actually initial conditions.
- Initiating cue statements were either cumbersome (because they contained initial conditions) or poorly defined to elicit the required knowledge being tested by the JPM
- No difference between expected knowledge for an SRO applicant versus RO applicant for some SRO-only JPMs
- JPM Steps either inappropriately designated as "critical" or should have been designated as "critical"
- Proposed procedures which were provided to applicants were not marked up according to plant protocols for placekeeping, etc.
- Excessive typographical errors (do not usually comment on this "administrivia"; but the level of errors was unacceptable and misleading to the examiners)
- When suggestions for enhancements and/or replacements were addressed, the subsequent JPM packages were missing procedures and/or data

If necessary, we can provide specifics; however, due to exam security reasons, this is all we can provide via email. Don't hesitate to call if you have questions or concerns.

We look forward to working with you and your staff during the exam.

Bruno Caballero
Operations Engineer - Region 2
bruno.caballero@nrc.gov
404-562-4608

| Facility: Sequoyah 1&2 Date of Exam: 2/16/2010 Scenario Numbers: 1/2/3/4 Operating Test No.: 2010301 | | | | |
|---|-------------------|-----|-----|-----|
| 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. | JTB | WT | BAL | |
| 2. The scenarios consist mostly of related events. | JTB | WT | BAL | |
| 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) | JTB | WT | BAL | |
| 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. | JTB | WT | BAL | |
| 5. The events are valid with regard to physics and thermodynamics. | JTB | WT | BAL | |
| 6. Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives. | JTB | WT | BAL | |
| 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. | NA | N/A | N/A | |
| 8. The simulator modeling is not altered. | JTB | WT | BAL | |
| 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. | JTB | WT | BAL | |
| 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. | JTB | WT | BAL | |
| 11. All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios). | JTB | WT | BAL | |
| 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). | JTB | WT | BAL | |
| 13. The level of difficulty is appropriate to support licensing decisions for each crew position. | JTB | WT | BAL | |
| Target Quantitative Attributes (Per Scenario; See Section D.5.d) | Actual Attributes | | | |
| 1. Total malfunctions (5-8) | 6 / 7 / 8 / 6 | JTB | WT | BAL |
| 2. Malfunctions after EOP entry (1-2) | 2 / 3 / 3 / 1 | JTB | WT | BAL |
| 3. Abnormal events (2-4) | 4 / 4 / 3 / 4 | JTB | WT | BAL |
| 4. Major transients (1-2) | 2 / 1 / 2 / 1 | JTB | WT | BAL |
| 5. EOPs entered/requiring substantive actions (1-2) | 3 / 3 / 3 / 2 | JTB | WT | BAL |
| 6. EOP contingencies requiring substantive actions (0-2) | 2 / 2 / 2 / 1 | JTB | WT | BAL |
| 7. Critical tasks (2-3) | 2 / 2 / 3 / 2 / 1 | JTB | WT | BAL |

BAL

2/16/2010
JTB

Facility: **Sequoyah Nuclear Plant** Date of Exam: **02/16/2010** Operating Test No.: 2010301

| 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 (*) | | |
|---|---|--|-------------|-------------|--|-------------|---------------|--|-------------|-------------|--|-------------|-------------|-----------------------|--|---|---|
| | | 1 | | | 2 | | | 3 | | | 4 | | | | R | I | U |
| | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | | | | |
| | | 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 | | | | |
| RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> | RX | 5 | | | 1 | | | | | | | | | 2 | 1 | 1 | 0 |
| | NOR | | | | 4 | | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | 1,2,3, 4,9,10 | | | 2, 4 | | | | | | | | | 8 | 4 | 4 | 2 |
| | MAJ | 8 | | | 5 | | | | | | | | | 2 | 2 | 2 | 1 |
| | TS | 1, 7 | | | | | | | | | | | | 2 | 0 | 2 | 2 |
| RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | 5 | | 1 | | | | | | | | | 2 | 1 | 1 | 0 |
| | NOR | | | | 4 | | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | 1, 3, 10 | | 2,3,4, 7,8,9 | | | | | | | | | 9 | 4 | 4 | 2 |
| | MAJ | | 8 | | 5 | | | | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | 2, 3 | | | | | | | | | 2 | 0 | 2 | 2 |
| RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | 5 | | | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | | 1,4 | | | | | | | 2 | 1 | 1 | 1 |
| | I/C | | 1, 3, 10 | | | | 3,4,7, 8,9 | | | | | | | 8 | 4 | 4 | 2 |
| | MAJ | | 8 | | | | 5 | | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | | | 4 | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | 1 | | | | | | | | | 1 | 1 | 1 | 1 |
| | I/C | | | 2,4, 9 | 2, 4 | | | | | | | | | 5 | 4 | 4 | 2 |
| | MAJ | | | 8 | 5 | | | | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

*Mid
2/3/10*

Facility: **Sequoyah Nuclear Plant** Date of Exam: **02/16/2010** Operating Test No.: 2010301

| 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(*) | | |
|--|---|--|-------------|-------------|--|-------------|-------------|--|--------------|-------------|--|-------------|-------------|-----------------------|------------------------------------|---|---|
| | | 1 | | | 2 | | | 3 | | | 4 | | | | R | I | U |
| | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | | | | |
| | | 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 | | | | |
| RO <input type="checkbox"/> | RX | 5 | | | | | | 1 | | | | | | 2 | 1 | 1 | 0 |
| SRO-I <input checked="" type="checkbox"/> | NOR | | | | | | | | | | | | | 0 | 1 | 1 | 1 |
| SRO-U <input checked="" type="checkbox"/> | I/C | 1,2,3, 4,9,10 | | | | | | 2,5,9 | | | | | | 9 | 4 | 4 | 2 |
| SRO-U <input type="checkbox"/> | MAJ | 8 | | | | | | 6 | | | | | | 2 | 2 | 2 | 1 |
| | TS | 1, 7 | | | | | | | | | | | | 2 | 0 | 2 | 2 |
| RO <input type="checkbox"/> | RX | | 5 | | | | | | | | | | | 1 | 1 | 1 | 0 |
| SRO-I <input checked="" type="checkbox"/> | NOR | | | | | | | 1 | | | | | | 1 | 1 | 1 | 1 |
| SRO-U <input checked="" type="checkbox"/> | I/C | | 1, 3, 10 | | | | | 2,3,4, 5,8,9, 10 | | | | | | 10 | 4 | 4 | 2 |
| SRO-U <input type="checkbox"/> | MAJ | | 8 | | | | | 6 | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | 2,4,5 | | | | | | 3 | 0 | 2 | 2 |
| RO <input checked="" type="checkbox"/> | RX | | 5 | | | | | | | | | | | 1 | 1 | 1 | 0 |
| SRO-I <input type="checkbox"/> | NOR | | | | | | | | 1 | | | | | 1 | 1 | 1 | 1 |
| SRO-U <input type="checkbox"/> | I/C | | 1, 3, 10 | | | | | | 3,4, 8,10 | | | | | 7 | 4 | 4 | 2 |
| SRO-U <input type="checkbox"/> | MAJ | | 8 | | | | | | 6 | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO <input checked="" type="checkbox"/> | RX | | | | | | | 1 | | | | | | 1 | 1 | 1 | 0 |
| SRO-I <input type="checkbox"/> | NOR | | | 5 | | | | | | | | | | 1 | 1 | 1 | 1 |
| SRO-U <input type="checkbox"/> | I/C | | | 2,4,9 | | | | 2,5,9 | | | | | | 6 | 4 | 4 | 2 |
| SRO-U <input type="checkbox"/> | MAJ | | | 8 | | | | 6 | | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |

Instructions:

- Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
- Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
- Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

Rec'd
2/12/10

Facility: **Sequoyah Nuclear Plant** Date of Exam: **02/16/2010** Operating Test No.: 2010301

| 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 (*) | | |
|---|---|--|-------------|-------------|--|-------------|-------------|--|----------------------|-------------|--|-------------|-------------|-----------------------|--|---|---|
| | | 1 | | | 2 | | | 3 | | | 4 | | | | R | I | U |
| | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | | | | |
| | | 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 | | | | |
| RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | | | | 1 | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | 4 | | | 1 | | | | | 2 | 1 | 1 | 1 |
| | I/C | | | | | 2, 4 | | | 2,3,4, 5,9, 10 | | | | | 8 | 4 | 4 | 2 |
| | MAJ | | | | | 5 | | | 6 | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | 2,4,5 | | | | | 3 | 0 | 2 | 2 |
| RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | | | 1 | | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | 4 | | | | 1 | | | | | 2 | 1 | 1 | 1 |
| | I/C | | | | 2,3,4, 7,8,9 | | | | 2,5,9 | | | | | 9 | 4 | 4 | 2 |
| | MAJ | | | | 5 | | | | 6 | | | | | 2 | 2 | 2 | 1 |
| | TS | | | | 2, 3 | | | | | | | | | 2 | 0 | 2 | 2 |
| RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | | | | | | | 1 | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | | | 1,4 | | | | | | 2 | 1 | 1 | 1 |
| | I/C | | | | | | | 3,4,7, 8,9 | | 2,5,9 | | | | 8 | 4 | 4 | 2 |
| | MAJ | | | | | | | 5 | | 6 | | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |
| RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | RX | | | | | 1 | | | | | | | | 1 | 1 | 1 | 0 |
| | NOR | | | | | 4 | | | | | 1 | | | 2 | 1 | 1 | 1 |
| | I/C | | | | | 2, 4 | | | | | 3,4, 10 | | | 5 | 4 | 4 | 2 |
| | MAJ | | | | | 5 | | | | | 6 | | | 2 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | 0 | 0 | 2 | 2 |

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

*Rec'd
2/23/10*

Facility: **Sequoyah Nuclear Plant** Date of Exam: **02/16/2010** Operating Test No.:

| 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 (*) | | |
|---|---|--|-------------|-------------|--|-------------|-------------|--|-------------|-------------|--|-------------|-------------|-----------------------|--|---|---|
| | | SPARE | | | 2 | | | 3 | | | 4 | | | | R | I | U |
| | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | C R E W P O S I T I O N | | | | | | |
| | | 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 | | | | |
| RO <input type="checkbox"/> | RX | | | | | | | | | | | | | | 1 | 1 | 0 |
| SRO-I X <input type="checkbox"/> | NOR | 1 | | | | | | | | | | | | 1 | 1 | 1 | 1 |
| SRO-U <input type="checkbox"/> | I/C | 2,3,4, 5,8 | | | | | | | | | | | | 5 | 4 | 4 | 2 |
| | MAJ | 7 | | | | | | | | | | | | 1 | 2 | 2 | 1 |
| | TS | 4,6 | | | | | | | | | | | | 2 | 0 | 2 | 2 |
| RO X <input type="checkbox"/> | RX | | 1 | | | | | | | | | | | 1 | 1 | 1 | 0 |
| SRO-I <input type="checkbox"/> | NOR | | 6 | | | | | | | | | | | 1 | 1 | 1 | 1 |
| SRO-U <input type="checkbox"/> | I/C | | 2,4,5 | | | | | | | | | | | 3 | 4 | 4 | 2 |
| | MAJ | | 7 | | | | | | | | | | | 1 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 2 | 2 |
| RO X <input type="checkbox"/> | RX | | | | | | | | | | | | | | 1 | 1 | 0 |
| SRO-I <input type="checkbox"/> | NOR | | | 1 | | | | | | | | | | 1 | 1 | 1 | 1 |
| SRO-U <input type="checkbox"/> | I/C | | | 3,5,8 | | | | | | | | | | 3 | 4 | 4 | 2 |
| | MAJ | | | 7 | | | | | | | | | | 1 | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 2 | 2 |
| RO <input type="checkbox"/> | RX | | | | | | | | | | | | | | 1 | 1 | 0 |
| SRO-I <input type="checkbox"/> | NOR | | | | | | | | | | | | | | 1 | 1 | 1 |
| SRO-U <input type="checkbox"/> | I/C | | | | | | | | | | | | | | 4 | 4 | 2 |
| | MAJ | | | | | | | | | | | | | | 2 | 2 | 1 |
| | TS | | | | | | | | | | | | | | 0 | 2 | 2 |

Instructions:

1. Check the applicant level and enter the operating test number and Form ES-D-1 event numbers for each event type; TS are not applicable for RO applicants. ROs must serve in both the "at-the-controls (ATC)" and "balance-of-plant (BOP)" positions; Instant SROs must serve in both the SRO and the ATC positions, including at least two instrument or component (I/C) malfunctions and one major transient, in the ATC position. If an Instant SRO *additionally* serves in the BOP position, one I/C malfunction can be credited toward the two I/C malfunctions required for the ATC position.
2. Reactivity manipulations may be conducted under normal or *controlled* abnormal conditions (refer to Section D.5.d) but must be significant per Section C.2.a of Appendix D. (*) Reactivity and normal evolutions may be replaced with additional instrument or component malfunctions on a 1-for-1 basis.
3. Whenever practical, both instrument and component malfunctions should be included; only those that require verifiable actions that provide insight to the applicant's competence count toward the minimum requirements specified for the applicant's license level in the right-hand columns.

*Rec'd
2/2/10*

Facility: Sequoyah 1 & 2 Date of Examination: 2/16/2010 Operating Test No.: 2010301

| Competencies | APPLICANTS | | | | | | | | | | | | | | | |
|--|--|--------------------|---------------------|------------------|--|-----|--------|-----|---|---|---|---|---|---|---|---|
| | RO <input checked="" type="checkbox"/> X SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | | | | RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> X SRO-U <input type="checkbox"/> | | | | RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | | | | RO <input type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/> | | | |
| | SCENARIO | | | | SCENARIO | | | | SCENARIO | | | | SCENARIO | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Interpret/Diagnose Events and Conditions | 1,2, 3,4, 5,7, 9,10 | 2,3, 4,5, 6,8, 9 | 2,3, 4,5, 6,8, 9,10 | 2,3, 4,5, 6,8 | All | All | All | All | | | | | | | | |
| Comply With and Use Procedures (1) | 1,3, 4,5, 6 | 1,2, 3,4, 7,8, 9 | 1,2, 3,4, 5,6, 8 | 1,2, 3,4, 6,7, 8 | All | All | All | All | | | | | | | | |
| Operate Control Boards (2) | 1,2, 3,4, 8,9, 10 | 1,2, 3,4, 5,7, 8,9 | 1,2, 3,4, 5,8, 9,10 | 1,2, 3,4, 6,8 | | | | | | | | | | | | |
| Communicate and Interact | All | All | All | All | All | All | All | All | | | | | | | | |
| Demonstrate Supervisory Ability (3) | | | | | All | All | All | All | | | | | | | | |
| Comply With and Use Tech. Specs. (3) | | | | | 1,7 | 2,3 | 2,4, 5 | 4,6 | | | | | | | | |

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.

*Rec'd
2/3/10*

| Facility: Sequoyah | | Date of Exam: 2010 | | | | | | | | | | | | | | | |
|---|-------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|----|----|-------|----|
| 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 | 3 | 3 | 3 | N/A | | | 3 | 3 | N/A | | | 3 | 18 | 3 | 3 | 6 |
| | 2 | 1 | 2 | 1 | N/A | | | 2 | 2 | N/A | | | 1 | 9 | 2 | 2 | 4 |
| | Tier Totals | 4 | 5 | 4 | N/A | | | 5 | 5 | N/A | | | 4 | 27 | 5 | 5 | 10 |
| 2. Plant Systems | 1 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 28 | 3 | 2 | 5 | |
| | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 | 2 | 1 | 3 | |
| | Tier Totals | 3 | 4 | 2 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 38 | 5 | 3 | 8 | |
| 3. Generic Knowledge and Abilities Categories | | 1 | | 2 | | 3 | | 4 | | 10 | | 1 | 2 | 3 | 4 | 7 | |
| | | 3 | | 2 | | 3 | | 2 | | | | 2 | 2 | 1 | 2 | | |

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).
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.
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 that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.
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.
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.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
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.
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.
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.

| ES-401 | | PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO/SRO) | | | | | | Form ES-401-2 | |
|---|--------|--|--------|--------|--------|---|--------------------|---------------|------|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G | K/A Topic(s) | IR | # |
| 000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1 | | | | R | | | 007 EA1.10 | 3.7 | |
| 000008 Pressurizer Vapor Space Accident / 3 | | | | | | | — | | |
| 000009 Small Break LOCA / 3 | R | | | | | | 009 EK1.01 | 4.2 | |
| 000011 Large Break LOCA / 3 | | R | | | | | 011 EK2.02 | 2.6 | |
| 000015/17 RCP Malfunctions / 4 | R | | | | | | 015 AK1.01 | 4.4 | |
| 000022 Loss of Rx Coolant Makeup / 2 | | | | R | | | 022 AA1.07 | 2.8 | |
| 000025 Loss of RHR System / 4 | | | R | | | | 025 AK3.02 | 3.3 | |
| 000026 Loss of Component Cooling Water / 8 | | | | | | | — | | |
| 000027 Pressurizer Pressure Control System Malfunction / 3 | | | | R | | | 027 AA1.03 | 3.6 | |
| 000029 ATWS / 1 | | R | | | | | 029 EK2.06 | 2.9 | |
| 000038 Steam Gen. Tube Rupture / 3 | | | | | R | | 038 EA2.06 | 3.8 | |
| 000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4 | R | | | | | | 040 AK1.04 | 3.2 | |
| 000054 (GE/E06) Loss of Main Feedwater / 4 | | | | | | R | 054 AG2.1.31 | 4.6 | |
| 000055 Station Blackout / 6 | | | | | | | — | | |
| 000056 Loss of Off-site Power / 6 | | | R | | | | 056 AK3.01 | 3.5 | |
| 000057 Loss of Vital AC Inst. Bus / 6 | | | | | R | | 057 AA2.16 | 3.0 | |
| 000058 Loss of DC Power / 6 | | | | | | | — | | |
| 000062 Loss of Nuclear Svc Water / 4 | | | | | | R | 062 AG2.4.9 | 3.8 | |
| 000065 Loss of Instrument Air / 8 | | | R | | | | 065 AK3.04 | 3.0 | |
| W/E04 LOCA Outside Containment / 3 | | | | | R | | WE04 EA2.2 | 3.6 | |
| W/E11 Loss of Emergency Coolant Recirc. / 4 | | | | | | | | | |
| BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4 | R | | | | | | WE05 EK2.2 | 3.9 | |
| 000077 Generator Voltage and Electric Grid Disturbances / 6 | | | | | | R | 077 AG2.2.4A | 4.2 | |
| K/A Category Totals: | 3 | 3 | 3 | 3 | 3 | 3 | Group Point Total: | | 18/6 |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|-------------|---|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 007EA1.10 | Reactor Trip - Stabilization - Recovery / 1 | 3.7 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | S/G pressure |
| 009EK1.01 | Small Break LOCA / 3 | 4.2 | 4.7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Natural circulation and cooling, including reflux boiling |
| 011EK2.02 | Large Break LOCA / 3 | 2.6 | 2.7 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Pumps |
| 015AK1.01 | RCP Malfunctions / 4 | 4.4 | 4.6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Natural circulation in a nuclear reactor power plant |
| 022AA1.07 | Loss of Rx Coolant Makeup / 2 | 2.8 | 2.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Excess letdown containment isolation valve switches and indicators |
| 025AK3.02 | Loss of RHR System / 4 | 3.3 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Isolation of RHR low-pressure piping prior to pressure increase above specified level |
| 027AA1.03 | Pressurizer Pressure Control System Malfunction / 3 | 3.6 | 3.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Pressure control when on a steam bubble |
| 029EK2.06 | ATWS / 1 | 2.9 | 3.1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Breakers, relays, and disconnects. |
| 038EA2.06 | Steam Gen. Tube Rupture / 3 | 3.8 | 4.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Shutdown margins and required boron concentrations |
| 040AK1.04 | Steam Line Rupture - Excessive Heat Transfer / 4 | 3.2 | 3.6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Nil ductility temperature |
| 054AG2.1.31 | Loss of Main Feedwater / 4 | 4.6 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to locate control room switches, controls and indications and to determine that they are correctly reflecting the desired plant lineup. |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|-------------|--|-----|-----|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 056AK3.01 | Loss of Off-site Power / 6 | 3.5 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Order and time to initiation of power for the load sequencer |
| 057AA2.16 | Loss of Vital AC Inst. Bus / 6 | 3 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Normal and abnormal PZR level for various modes of plant operation |
| 062AG2.4.9 | Loss of Nuclear Svc Water / 4 | 3.8 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies. |
| 065AK3.04 | Loss of Instrument Air / 8 | 3 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Cross-over to backup air supplies |
| 077AG2.2.44 | Generator Voltage and Electric Grid Disturbances / 6 | 4.2 | 4.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 |
| WE04EA2.2 | LOCA Outside Containment / 3 | 3.6 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments. |
| WE05EK2.2 | Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4 | 3.9 | 4.2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility. |

| ES-401 | PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO) (SRQ) | | | | | | | Form ES-401-2 | |
|--|--|--------|--------|--------|--------|---|--------------------|---------------|-----|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G | K/A Topic(s) | IR | # |
| 000001 Continuous Rod Withdrawal / 1 | | | | | | | | | |
| 000003 Dropped Control Rod / 1 | | | | | | | | | |
| 000005 Inoperable/Stuck Control Rod / 1 | | | | | | | | | |
| 000024 Emergency Boration / 1 | | | | | | | | | |
| 000028 Pressurizer Level Malfunction / 2 | | R | | | | | 028 AK2.02 | 2.6 | |
| 000032 Loss of Source Range NI / 7 | | R | | | | | 032 AK2.01 | 2.7 | |
| 000033 Loss of Intermediate Range NI / 7 | | | | R | | | 033 AA2.12 | 2.5 | |
| 000036 (BW/A08) Fuel Handling Accident / 8 | | | | | | G | 036 AG2.4.35 | 3.2 | |
| 000037 Steam Generator Tube Leak / 3 | | | | R | | | 037 AA1.04 | 3.6 | |
| 000051 Loss of Condenser Vacuum / 4 | | | | | | | | | |
| 000059 Accidental Liquid RadWaste Rel. / 9 | | | | | | | | | |
| 000060 Accidental Gaseous Radwaste Rel. / 9 | | | | | | | | | |
| 000061 ARM System Alarms / 7 | | | | | | | | | |
| 000067 Plant Fire On-site / 8 | | | | | | | | | |
| 000068 (BW/A06) Control Room Evac. / 8 | | | R | | | | 068 AK3.12 | 4.1 | |
| 000069 (W/E14) Loss of CTMT Integrity / 5 | | | | | | | | | |
| 000074 (W/E06&E07) Inad. Core Cooling / 4 | | | | | | | | | |
| 000076 High Reactor Coolant Activity / 9 | | | | | | | | | |
| W/E01 & E02 Rediagnosis & SI Termination / 3 | | | | | | | | | |
| W/E13 Steam Generator Over-pressure / 4 | | | | | | | | | |
| W/E15 Containment Flooding / 5 | | | | | | | | | |
| W/E16 High Containment Radiation / 9 | | | | | | | | | |
| BW/A01 Plant Runback / 1 | | | | | | | | | |
| BW/A02&A03 Loss of NNI-X/Y / 7 | | | | | | | | | |
| BW/A04 Turbine Trip / 4 | | | | | | | | | |
| BW/A05 Emergency Diesel Actuation / 6 | | | | | | | | | |
| BW/A07 Flooding / 8 | | | | | | | | | |
| BW/E03 Inadequate Subcooling Margin / 4 | | | | | | | | | |
| BW/E08; W/E03 LOCA Cooldown - Depress. / 4 | | | | | R | | WE03 EA2.1 | 3.4 | |
| BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4 | | | | R | | | WE10 EA1.3 | 3.4 | |
| BW/E13&E14 EOP Rules and Enclosures | | | | | | | | | |
| CE/A11; W/E08 RCS Overcooling - PTS / 4 | | R | | | | | WE08 EK1.1 | 3.5 | |
| CE/A16 Excess RCS Leakage / 2 | | | | | | | | | |
| CE/E09 Functional Recovery | | | | | | | | | |
| K/A Category Point Totals: | 1 | 2 | 1 | 2 | 2 | 1 | Group Point Total: | | 9/4 |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|-------------|-----------------------------------|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 028AK2.02 | Pressurizer Level Malfunction / 2 | 2.6 | 2.7 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sensors and detectors |
| 032AK2.01 | Loss of Source Range NI / 7 | 2.7 | 3.1 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Power supplies, including proper switch positions |
| 033AA2.12 | Loss of Intermediate Range NI / 7 | 2.5 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Maximum allowable channel disagreement |
| 036AG2.4.35 | Fuel Handling Accident / 8 | 3.8 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects |
| 037AA1.04 | Steam Generator Tube Leak / 3 | 3.6 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Condensate air ejector exhaust radiation monitor and failure indicator |
| 068AK3.12 | Control Room Evac. / 8 | 4.1 | 4.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Required sequence of actions for emergency evacuation of control room |
| WE03EA2.1 | LOCA Cooldown - Depress. / 4 | 3.4 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Facility conditions and selection of appropriate procedures during abnormal and emergency operations. |
| WE08EK1.1 | RCS Overcooling - PTS / 4 | 3.5 | 3.8 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Components, capacity, and function of emergency systems. |
| WE10EA1.3 | Natural Circ. With Seam Void/ 4 | 3.4 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Desired operating results during abnormal and emergency situations. |

| ES-401 | PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO / SRG) | | | | | | | | | | | | | Form ES-401-2 | |
|--|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|------------------------|------------|---------------|--|
| 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 | # | |
| 003 Reactor Coolant Pump | | | | | R | | | | | | | 003 K5.01 | 3.3 | | |
| 004 Chemical and Volume Control | | | | | | | | | R | R | | 004 A3.05 004 A4.13 | 3.9 3.3 | | |
| 005 Residual Heat Removal | | | | | R | | | | | | | 005 K5.05 | 2.7 | | |
| 006 Emergency Core Cooling | | | | | | | R | | | | | 006 A1.14 | 3.6 | | |
| 007 Pressurizer Relief/Quench Tank | R | | | | | | | | | | | 007 K1.03 | 3.0 | | |
| 008 Component Cooling Water | | | | | | | R | R | | | | 008 A1.04, A2.03 | 3.1 3.0 | | |
| 010 Pressurizer Pressure Control | | | | R | | | | | | | | 010 K4.02 | 3.0 | | |
| 012 Reactor Protection | | R | | | | | R | | | | | 012 A1.01, K2.01 | 3.9 3.3 | | |
| 013 Engineered Safety Features Actuation | | R | | | | R | | | | | | 013 K2.01 013 K6.01 | 3.6 2.7 | | |
| 022 Containment Cooling | R | | | | | | | | | | | 022 K1.01 | 3.5 | | |
| 025 Ice Condenser | | | | R | | | | | | | | 025 K4.02 | 2.8 | | |
| 026 Containment Spray | | | R | | | | | | | | | 026 K3.02 | 4.2 | | |
| 039 Main and Reheat Steam | | | | | | | | | | R | | 039 G2.1.7 | 4.4 | | |
| 059 Main Feedwater | | | R | | | | | | | | | 059 K3.02 | 3.6 | | |
| 061 Auxiliary/Emergency Feedwater | | | | | | | | | | R | | 061 G2.1.20 | 4.6 | | |
| 062 AC Electrical Distribution | | | | R | | | | | | | | 062 K4.02 | 2.5 | | |
| 063 DC Electrical Distribution | | | | | | | | R | | | | 063 A2.01 | 2.5 | | |
| 064 Emergency Diesel Generator | | | | | | R | | | | R | | 064 A4.12, K6.08 | 3.2 3.2 | | |
| 073 Process Radiation Monitoring | | | | | | | | | | R | | 073 A4.02 | 3.7 | | |
| 076 Service Water | | | | | | | | | R | | | 076 A3.02 | 3.9 | | |
| 078 Instrument Air | | R | | | | | | | | | | 078 K2.02 | 3.3 | | |
| 103 Containment | | | | | | | R | R | | | | 103 A2.04, A3.01 | 3.9 | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| K/A Category Point Totals: | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | Group Point Total: | | 28/5 | |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|----------|--------------------------------|-----|-----|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--|
| | | RO | SRO | | | | | | | | | | | |
| 003K5.01 | Reactor Coolant Pump | 3.3 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | The relationship between the RCPS flow rate and the nuclear reactor core operating parameters (quadrant power tilt, imbalance, DNB rate, local power density, difference in loop T-hot pressure) |
| 004A3.05 | Chemical and Volume Control | 3.9 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | RCS pressure and temperature |
| 004A4.13 | Chemical and Volume Control | 3.3 | 2.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | VCT level control and pressure control |
| 005K5.05 | Residual Heat Removal | 2.7 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Plant response during "solid plant": pressure change due to the relative incompressibility of water |
| 006A1.14 | Emergency Core Cooling | 3.6 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Reactor vessel level |
| 007K1.03 | Pressurizer Relief/Quench Tank | 3.0 | 3.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | RCS |
| 008A1.04 | Component Cooling Water | 3.1 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Surge tank level |
| 008A2.03 | Component Cooling Water | 3.0 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | High/low CCW temperature |
| 010K4.02 | Pressurizer Pressure Control | 3.0 | 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Prevention of uncovering PZR heaters |
| 012A1.01 | Reactor Protection | 2.9 | 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Trip setpoint adjustment |
| 012K2.01 | Reactor Protection | 3.3 | 3.7 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | RPS channels, components and interconnections |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|------------|--------------------------------------|-----|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--|
| | | RO | SRO | | | | | | | | | | | |
| 013K2.01 | Engineered Safety Features Actuation | 3.6 | 3.8 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ESFAS/safeguards equipment control |
| 013K6.01 | Engineered Safety Features Actuation | 2.7 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sensors and detectors |
| 022K1.01 | Containment Cooling | 3.5 | 3.7 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | SWS/cooling system |
| 025K4.02 | Ice Condenser | 2.8 | 3.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | System control |
| 026K3.02 | Containment Spray | 4.2 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Recirculation spray system |
| 039G2.1.7 | Main and Reheat Steam | 4.4 | 4.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation. |
| 059K3.02 | Main Feedwater | 3.6 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | AFW system |
| 061G2.1.20 | Auxiliary/Emergency Feedwater | 4.6 | 4.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to execute procedure steps. |
| 062K4.02 | AC Electrical Distribution | 2.5 | 2.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Circuit breaker automatic trips |
| 063A2.01 | DC Electrical Distribution | 2.5 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Grounds |
| 064A4.12 | Emergency Diesel Generator | 2.7 | 2.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Synchroscope |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|----------|------------------------------|-----|-----|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 064K6.08 | Emergency Diesel Generator | 3.2 | 3.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Fuel oil storage tanks |
| 073A4.02 | Process Radiation Monitoring | 3.7 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Radiation monitoring system control panel |
| 076A3.02 | Service Water | 3.7 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Emergency heat loads |
| 078K2.02 | Instrument Air | 3.3 | 3.5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Emergency air compressor |
| 103A2.04 | Containment | 3.5 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Containment evacuation (including recognition of the alarm) |
| 103A3.01 | Containment | 3.9 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Containment isolation |

| ES-401 | | PWR Examination Outline Plant Systems - Tier 2/Group 2((RO) SRØ) | | | | | | | | | | | Form ES-401-2 | |
|--|--------|---|--------|--------|--------|--------|--------|--------|--------|--------|---|--------------|--------------------|------|
| 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 | # |
| 001 Control Rod Drive | | R | | | | | | | | | | 001 K2.05 | 3.1 | |
| 002 Reactor Coolant | | | | | | | | | | | | | | |
| 011 Pressurizer Level Control | | | | | | | | | | | | | | |
| 014 Rod Position Indication | | | | | | | | | | R | | 014 A4.01 | 3.3 | |
| 015 Nuclear Instrumentation | | | | | | | | | R | | | 015 A3.05 | 2.6 | |
| 016 Non-nuclear Instrumentation | | | | | R | | | | | | | 016 K5.01 | 2.7 | |
| 017 In-core Temperature Monitor | | | | | | | | R | | | | 017 A2.01 | 3.1 | |
| 027 Containment Iodine Removal | | | | | | | | | | | | | | |
| 028 Hydrogen Recombiner and Purge Control | | | | | | | | | | | | | | |
| 029 Containment Purge | | | | | | | R | | | | | 029 A1.02 | 3.4 | |
| 033 Spent Fuel Pool Cooling | | | | | | | | | | | R | 033 G 2.4.21 | 4.0 | |
| 034 Fuel Handling Equipment | | | | | | R | | | | | | 034 K6.02 | 2.6 | |
| 035 Steam Generator | | | | R | | | | | | | | 035 K4.01 | 3.6 | |
| 041 Steam Dump/Turbine Bypass Control | | | | | | | | | | | | | | |
| 045 Main Turbine Generator | | | | | | | | | | | | | | |
| 055 Condenser Air Removal | | | | | | | | | | | | | | |
| 056 Condensate | | R | | | | | | | | | | 056 K1.03 | 2.6 | |
| 068 Liquid Radwaste | | | | | | | | | | | | | | |
| 071 Waste Gas Disposal | | | | | | | | | | | | | | |
| 072 Area Radiation Monitoring | | | | | | | | | | | | | | |
| 075 Circulating Water | | | | | | | | | | | | | | |
| 079 Station Air | | | | | | | | | | | | | | |
| 086 Fire Protection | | | | | | | | | | | | | | |
| K/A Category Point Totals: | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | Group Point Total: | 10/3 |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|------------|-----------------------------|-----|-----|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 001K2.05 | Control Rod Drive | 3.1 | 3.5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | M/G sets |
| 014A4.01 | Rod Position Indication | 3.3 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Rod selection control |
| 015A3.05 | Nuclear Instrumentation | 2.6 | 2.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Recognition of audio output expected for a given plant condition |
| 016K5.01 | Non-nuclear Instrumentation | 2.7 | 2.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Separation of control and protection circuits |
| 017A2.01 | In-core Temperature Monitor | 3.1 | 3.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Thermocouple open and short circuits |
| 029A1.02 | Containment Purge | 3.4 | 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Radiation levels |
| 033G2.4.21 | Spent Fuel Pool Cooling | 4.0 | 4.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Knowledge of the parameters and logic used to assess the status of safety functions |
| 034K6.02 | Fuel Handling Equipment | 2.6 | 3.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Radiation monitoring systems |
| 035K4.01 | Steam Generator | 3.6 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | S/G level control |
| 056K1.03 | Condensate | 2.6 | 2.6 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | MFW |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|---------|----------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--|
| | | | | | | | | | | | | | | |
| G2.1.19 | Conduct of operations | 3.9 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to use plant computer to evaluate system or component status. |
| G2.1.32 | Conduct of operations | 3.8 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to explain and apply all system limits and precautions. |
| G2.1.40 | Conduct of operations | 2.8 | 3.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of refueling administrative requirements |
| G2.2.40 | Equipment Control | 3.4 | 4.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to apply technical specifications for a system. |
| G2.2.6 | Equipment Control | 3.0 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the process for making changes to procedures |
| G2.3.12 | Radiation Control | 3.2 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of radiological safety principles pertaining to licensed operator duties |
| G2.3.5 | Radiation Control | 2.9 | 2.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to use radiation monitoring systems |
| G2.3.7 | Radiation Control | 3.5 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to comply with radiation work permit requirements during normal or abnormal conditions |
| G2.4.28 | Emergency Procedures/Plans | 3.2 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of procedures relating to emergency response to sabotage. |
| G2.4.46 | Emergency Procedures/Plans | 4.2 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to verify that the alarms are consistent with the plant conditions. |

| ES-401 | | PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1 (RO/SRO) | | | | | | Form ES-401-2 | |
|---|--------|--|--------|--------|--------|---|--------------------|---------------|------|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G | K/A Topic(s) | IR | # |
| 000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1 | | | | | S | | 007 EA 2.04 | 4.6 | |
| 000008 Pressurizer Vapor Space Accident / 3 | | | | | | | | | |
| 000009 Small Break LOCA / 3 | | | | | | S | 009 G 2 4.20 | 4.3 | |
| 000011 Large Break LOCA / 3 | | | | | S | | 011 EA 2.04 | 3.4 | |
| 000015/17 RCP Malfunctions / 4 | | | | | | | | | |
| 000022 Loss of Rx Coolant Makeup / 2 | | | | | | | | | |
| 000025 Loss of RHR System / 4 | | | | | | | | | |
| 000026 Loss of Component Cooling Water / 8 | | | | | S | | 026 AA 2.02 | 3.6 | |
| 000027 Pressurizer Pressure Control System Malfunction / 3 | | | | | | | | | |
| 000029 ATWS / 1 | | | | | | | | | |
| 000038 Steam Gen. Tube Rupture / 3 | | | | | | | | | |
| 000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4 | | | | | | | | | |
| 000054 (CE/E06) Loss of Main Feedwater / 4 | | | | | | | | | |
| 000055 Station Blackout / 6 | | | | | | | | | |
| 000056 Loss of Off-site Power / 6 | | | | | | S | 056 AG 2.1.19 | 3.8 | |
| 000057 Loss of Vital AC Inst. Bus / 6 | | | | | | | | | |
| 000058 Loss of DC Power / 6 | | | | | | | | | |
| 000062 Loss of Nuclear Svc Water / 4 | | | | | | | | | |
| 000065 Loss of Instrument Air / 8 | | | | | | | | | |
| W/E04 LOCA Outside Containment / 3 | | | | | | | | | |
| W/E11 Loss of Emergency Coolant Recirc. / 4 | | | | | | | | | |
| BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4 | | | | | | | | | |
| 000077 Generator Voltage and Electric Grid Disturbances / 6 | | | | | | S | 077 AG 2.2.44 | 4.4 | |
| K/A Category Totals: | | | | | | | | | |
| | | | | 3 | 3 | | Group Point Total: | | 18/6 |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|-------------|--|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 007EA2.04 | Reactor Trip - Stabilization - Recovery / 1 | 4.6 | 4.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | If reactor should have tripped but has not done so, manually trip the reactor and carry out actions in ATWS EOP |
| 009EG2.4.20 | Small Break LOCA / 3 | 3.8 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of operational implications of EOP warnings, cautions and notes. |
| 011EA2.07 | Large Break LOCA / 3 | 3.2 | 3.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | That equipment necessary for functioning of critical pump water seals is operable |
| 026AA2.02 | Loss of Component Cooling Water / 8 | 2.9 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | The cause of possible CCW loss |
| 056AG2.1.19 | Loss of Off-site Power / 6 | 3.9 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to use plant computer to evaluate system or component status. |
| 077AG2.2.44 | Generator Voltage and Electric Grid Disturbances / 6 | 4.2 | 4.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 |

| ES-401 | PWR Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2 (RO/SRO) | | | | | | | Form ES-401-2 | |
|--|--|--------|--------|--------|--------|----|--------------------|---------------|-----|
| E/APE # / Name / Safety Function | K 1 | K 2 | K 3 | A 1 | A 2 | G | K/A Topic(s) | IR | # |
| 000001 Continuous Rod Withdrawal / 1 | | | | | | | | | |
| 000003 Dropped Control Rod / 1 | | | | | | | | | |
| 000005 Inoperable/Stuck Control Rod / 1 | | | | | | 5 | 005 AG 2.4.35 | 4.0 | |
| 000024 Emergency Boration / 1 | | | | | | 5 | 024 AAD.01 | 4.1 | |
| 000028 Pressurizer Level Malfunction / 2 | | | | | | | | | |
| 000032 Loss of Source Range NI / 7 | | | | | | | | | |
| 000033 Loss of Intermediate Range NI / 7 | | | | | | 5 | 033 AAD.03 | 3.1 | |
| 000036 (BW/A08) Fuel Handling Accident / 8 | | | | | | | | | |
| 000037 Steam Generator Tube Leak / 3 | | | | | | | | | |
| 000051 Loss of Condenser Vacuum / 4 | | | | | | | | | |
| 000059 Accidental Liquid RadWaste Rel. / 9 | | | | | | | | | |
| 000060 Accidental Gaseous Radwaste Rel. / 9 | | | | | | | | | |
| 000061 ARM System Alarms / 7 | | | | | | | | | |
| 000067 Plant Fire On-site / 8 | | | | | | | | | |
| 000068 (BW/A06) Control Room Evac. / 8 | | | | | | | | | |
| 000069 (W/E14) Loss of CTMT Integrity / 5 | | | | | | | | | |
| 000074 (W/E06&E07) Inad. Core Cooling / 4 | | | | | | 5 | 074 FG 2.2.34 | 4.4 | |
| 000076 High Reactor Coolant Activity / 9 | | | | | | | | | |
| W/E01 & E02 Rediagnosis & SI Termination / 3 | | | | | | | | | |
| W/E13 Steam Generator Over-pressure / 4 | | | | | | | | | |
| W/E15 Containment Flooding / 5 | | | | | | | | | |
| W/E16 High Containment Radiation / 9 | | | | | | | | | |
| BW/A01 Plant Runback / 1 | | | | | | | | | |
| BW/A02&A03 Loss of NNI-X/Y / 7 | | | | | | | | | |
| BW/A04 Turbine Trip / 4 | | | | | | | | | |
| BW/A05 Emergency Diesel Actuation / 6 | | | | | | | | | |
| BW/A07 Flooding / 8 | | | | | | | | | |
| BW/E03 Inadequate Subcooling Margin / 4 | | | | | | | | | |
| BW/E08; W/E03 LOCA Cooldown - Depress. / 4 | | | | | | | | | |
| BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4 | | | | | | | | | |
| BW/E13&E14 EOP Rules and Enclosures | | | | | | | | | |
| CE/A11; W/E08 RCS Overcooling - PTS / 4 | | | | | | | | | |
| CE/A16 Excess RCS Leakage / 2 | | | | | | | | | |
| CE/E09 Functional Recovery | | | | | | | | | |
| K/A Category Point Totals: | | | | | | 22 | Group Point Total: | | 9/4 |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|-------------|-----------------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 005AG2.4.35 | Inoperable/Stuck Control Rod / 1 | 3.8 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of local auxiliary operator tasks during emergency and the resultant operational effects |
| 024AA2.01 | Emergency Boration / 1 | 3.8 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Whether boron flow and/or MOVs are malfunctioning from plant conditions |
| 033AA2.03 | Loss of Intermediate Range NI / 7 | 2.8 | 3.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Indication of blown fuse |
| 074EG2.2.44 | Inad. Core Cooling / 4 | 4.2 | 4.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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 |

| ES-401 | PWR Examination Outline Plant Systems - Tier 2/Group 1 (RO/SRO) | | | | | | | | | | | Form ES-401-2 | | |
|--|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|--------------------|------|---|
| 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 | # |
| 003 Reactor Coolant Pump | | | | | | | | | | | | | | |
| 004 Chemical and Volume Control | | | | | | | | | | | | | | |
| 005 Residual Heat Removal | | | | | | | | | | | S | 005 S 7.2 40 | 4.7 | |
| 006 Emergency Core Cooling | | | | | | | | | | | | | | |
| 007 Pressurizer Relief/Quench Tank | | | | | | | | | | | | | | |
| 008 Component Cooling Water | | | | | | | | | | | | | | |
| 010 Pressurizer Pressure Control | | | | | | | | | | | | | | |
| 012 Reactor Protection | | | | | | | | | | | S | 012 S 3 4 11 | 4.2 | |
| 013 Engineered Safety Features Actuation | | | | | | | | | | | | | | |
| 022 Containment Cooling | | | | | | | | | | | | | | |
| 025 Ice Condenser | | | | | | | | | | | | | | |
| 026 Containment Spray | | | | | | | | | | | | | | |
| 039 Main and Reheat Steam | | | | | | | | S | | | | 039 A 2.02 | 2.7 | |
| 059 Main Feedwater | | | | | | | | | | | | | | |
| 061 Auxiliary/Emergency Feedwater | | | | | | | | | | | | | | |
| 062 AC Electrical Distribution | | | | | | | | | | | | | | |
| 063 DC Electrical Distribution | | | | | | | | | | | | | | |
| 064 Emergency Diesel Generator | | | | | | | | S | | | | 064 A 2.16 | 3.7 | |
| 073 Process Radiation Monitoring | | | | | | | | S | | | | 073 A 2.02 | 2.2 | |
| 076 Service Water | | | | | | | | | | | | | | |
| 078 Instrument Air | | | | | | | | | | | | | | |
| 103 Containment | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| K/A Category Point Totals: | | | | | | | | 3 | | | 2 | Group Point Total: | 28/5 | |

| KA | NAME / SAFETY FUNCTION: | IR | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|------------|------------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|---|
| | | RO | SRO | | | | | | | | | | | |
| 005G2.2.40 | Residual Heat Removal | 3.4 | 4.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to apply technical specifications for a system. |
| 012G2.4.11 | Reactor Protection | 4.0 | 4.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of abnormal condition procedures. |
| 039A2.02 | Main and Reheat Steam | 2.4 | 2.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Decrease in turbine load as it relates to steam escaping from relief valves |
| 064A2.16 | Emergency Diesel Generator | 3.3 | 3.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Loss of offsite power during full-load testing of ED/G |
| 073A2.02 | Process Radiation Monitoring | 2.7 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Detector failure |

| ES-401 | PWR Examination Outline Plant Systems - Tier 2/Group 2 (RO/SRO) | | | | | | | | | | | Form ES-401-2 | | |
|---|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|--------------------|----|------|
| 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 | # |
| 001 Control Rod Drive | | | | | | | | | | | | | | |
| 002 Reactor Coolant | | | | | | | | | | | | | | |
| 011 Pressurizer Level Control | | | | | | | | | | | | | | |
| 014 Rod Position Indication | | | | | | | | | | | | | | |
| 015 Nuclear Instrumentation | | | | | | | | | | | | | | |
| 016 Non-nuclear Instrumentation | | | | | | | | | | | | | | |
| 017 In-core Temperature Monitor | | | | | | | | | | | | | | |
| 027 Containment Iodine Removal | | | | | | | | | | | | | | |
| 028 Hydrogen Recombiner and Purge Control | | | | | | | | \$ | | | | 028 A 2.03 | 40 | |
| 029 Containment Purge | | | | | | | | | | | | | | |
| 033 Spent Fuel Pool Cooling | | | | | | | | | | | | | | |
| 034 Fuel Handling Equipment | | | | | | | | | | | | | | |
| 035 Steam Generator | | | | | | | | | | | | | | |
| 041 Steam Dump/Turbine Bypass Control | | | | | | | | | | | | | | |
| 045 Main Turbine Generator | | | | | | | | | | | | | | |
| 055 Condenser Air Removal | | | | | | | | | | | \$ | 055 G 2.20 | 32 | |
| 056 Condensate | | | | | | | | | | | | | | |
| 068 Liquid Radwaste | | | | | | | | | | | | | | |
| 071 Waste Gas Disposal | | | | | | | | | | | | | | |
| 072 Area Radiation Monitoring | | | | | | | | | | | | | | |
| 075 Circulating Water | | | | | | | | \$ | | | | 075 A 2.01 | 32 | |
| 079 Station Air | | | | | | | | | | | | | | |
| 086 Fire Protection | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| K/A Category Point Totals: | | | | | | | 2 | | | | 1 | Group Point Total: | | 10/3 |

| KA | NAME / SAFETY FUNCTION: | IR | | K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G | | | | | | | | | | | TOPIC: | |
|------------|---------------------------------------|-----|-----|---------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--|
| | | RO | SRO | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> |
| 028A2.03 | Hydrogen Recombiner and Purge Control | 3.4 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | The hydrogen air concentration in excess of limit flame propagation or detonation with resulting equipment damage in containment |
| 055G2.1.20 | Condenser Air Removal | 4.6 | 4.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to execute procedure steps. |
| 075A2.01 | Circulating Water | 3.0 | 3.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Loss of intake structure |

| Facility: <i>SDN (SRD Exam)</i> Date of Exam: <i>Feb 2010</i> | | | | | | |
|---|----------|--|------------|------------|----------|---|
| Category | K/A # | Topic | RO | | SRO-Only | |
| | | | IR | # | IR | # |
| 1. Conduct of Operations | 2.1.26 | <i>Safety procedures (hazards, etc.)</i> | <i>N/A</i> | <i>N/A</i> | 3.6 | |
| | 2.1.29 | <i>System Lineups (NVS, KRIS, SWI-L)</i> | | | 4.0 | |
| | 2.1. | | | | | |
| | 2.1. | | | | | |
| | 2.1. | | | | | |
| | 2.1. | | | | | |
| | Subtotal | | | | | 2 |
| 2. Equipment Control | 2.2.18 | <i>Surveillance procedures</i> | | | 4.1 | |
| | 2.2.19 | <i>Process for managing maintenance</i> | | | 3.8 | |
| | 2.2. | | | | | |
| | 2.2. | | | | | |
| | 2.2. | | | | | |
| | 2.2. | | | | | |
| Subtotal | | | | | 2 | |
| 3. Radiation Control | 2.3.5 | <i>Acc rad mon g systems</i> | | | 2.9 | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| Subtotal | | | | | 1 | |
| 4. Emergency Procedures / Plan | 2.4.6 | <i>Symptom based EOP mitigation strategies</i> | | | 4.7 | |
| | 2.4.12 | <i>Local responsibilities during emergency</i> | | | 4.3 | |
| | 2.4. | | | | | |
| | 2.4. | | | | | |
| | 2.4. | | | | | |
| | 2.4. | | | | | |
| | 2.4. | | | | | |
| Subtotal | | | | | 2 | |
| Tier 3 Point Total | | | | 10 | 7 | 7 |

| KA | NAME / SAFETY FUNCTION: | IR | | K1 | K2 | K3 | K4 | K5 | K6 | A1 | A2 | A3 | A4 | G | TOPIC: |
|---------|----------------------------|-----|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--|
| | | RO | SRO | | | | | | | | | | | | |
| G2.1.26 | Conduct of operations | 3.4 | 3.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen). |
| G2.1.29 | Conduct of operations | 4.1 | 4.0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc. |
| G2.2.12 | Equipment Control | 3.7 | 4.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of surveillance procedures. |
| G2.2.17 | Equipment Control | 2.6 | 3.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of the process for managing maintenance activities during power operations. |
| G2.3.5 | Radiation Control | 2.9 | 2.9 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Ability to use radiation monitoring systems |
| G2.4.12 | Emergency Procedures/Plans | 4.0 | 4.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge of general operating crew responsibilities during emergency operations. |
| G2.4.6 | Emergency Procedures/Plans | 3.7 | 4.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Knowledge symptom based EOP mitigation strategies. |

| Facility: <i>SLN (PO Exam)</i> Date of Exam: <i>Feb 2010</i> | | | | | | |
|--|----------|---|-----|----|----------|-----|
| Category | K/A # | Topic | RO | | SRO-Only | |
| | | | IR | # | IR | # |
| 1. Conduct of Operations | 2.1.19 | <i>Use plant Computer to evaluate</i> | 3.9 | | N/A | N/A |
| | 2.1.30 | <i>Explain & apply system P&L's</i> | 3.8 | | | |
| | 2.1.40 | <i>Producing Admin. Reg's</i> | 2.8 | | | |
| | 2.1. | | | | | |
| | 2.1. | | | | | |
| | 2.1. | | | | | |
| | Subtotal | | | 3 | | |
| 2. Equipment Control | 2.2.6 | <i>Procedures for making correct to prod's</i> | 3.0 | | | |
| | 2.2.40 | <i>Apply Tech Specs</i> | 3.1 | | | |
| | 2.2. | | | | | |
| | 2.2. | | | | | |
| | 2.2. | | | | | |
| | 2.2. | | | | | |
| | Subtotal | | | 2 | | |
| 3. Radiation Control | 2.3.5 | <i>Use radiation monitoring systems</i> | 3.9 | | | |
| | 2.3.7 | <i>Interplay of test rates manual/automatic</i> | 3.5 | | | |
| | 2.3.10 | <i>Intermittent entry Reg's. Test handle, pipes</i> | 3.2 | | | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | 2.3. | | | | | |
| | Subtotal | | | 3 | | |
| 4. Emergency Procedures / Plan | 2.4.28 | <i>Procedures for response to sabotage</i> | 3.2 | | | |
| | 2.4.46 | <i>Verify alarms transient out of plant cond's</i> | 4.2 | | | |
| | 2.4. | | | | | |
| | 2.4. | | | | | |
| | 2.4. | | | | N/A | |
| | 2.4. | | | | | N/A |
| | Subtotal | | | 2 | | |
| Tier 3 Point Total | | | 10 | 10 | | 7 |

| Tier / Group | Randomly Selected K/A | Reason for Rejection |
|--------------|-----------------------|---|
| 1/1 (RO) | 077 AG2.2.22 | Chief Examiner: For an RO applicant, the Grid Instability topic does not lend itself to generic K/A for LCOs and safety limits. Randomly re-selected 077AG2.2.44 [Interpret CR indications] |
| 2/1 (RO) | 010 K6.04 | Chief Examiner: K/A required impact of PRT malfunction on Pzr Pressure Control ...which excessively overlaps with another Tier 2 Group 1 K/A 007K1.03 [physical connections/cause-effect relationship of PRT and RCS. Randomly re-selected K4.02 [Prevent Uncovering Pzr Heaters] |
| 2/1 (RO) | 022 K1.04 | Chief Examiner: SQN does not use chilled water for containment cooling. Randomly re-selected K1.01 [SWS/Cooling System]. |
| 2/2 (RO) | 079 K4.01 | Chief Examiner: K/A required knowledge of cross-connect between Service Air and Instrument air ...which excessively overlaps with Tier 1 Group 1 K/A [loss of instrument air and cross-over to backup air supplies] at SQN. Randomly re-selected 035 K4.01 [S/G Level Control] |
| 3 (RO) | G2.1.9 | Chief Examiner: Pure generic K/A required test item related to directing personnel activities inside the control room. This K/A is not conducive to a discriminating question at the RO level. Randomly re-selected G2.1.32 [Explain/apply System P&Ls] |
| 1/2(SRO) | 074 EG2.2.36 | Chief Examiner: The Inadequate Core Cooling topic does not lend itself to generic K/A topic of maintenance activities and LCO status. Randomly re-selected G2.2.44 [Interpret CR indications] |
| 2/1(SRO) | 064 A2.09 | Chief Examiner: K/A required test item related to synchronization of the EDG w/ other electric power supplies...which excessively overlaps w/ RO T2G1 064A4.12 [synchronization of EDG]. Randomly re-selected A2.16 [LOOP during full EDG load testing] |
| 1/2(SRO) | 005AG2.4.35 | Licensee: Could not write a discriminating question at the SRO level (due to generic knowledge associated with local AO tasks); Chief Examiner randomly selected G2.4.46 [10-13-09] |
| 1/1 (SRO) | 056 AG2.1.19 | Licensee: Could not write a question to test SRO applicant's ability to use the plant computer as it relates to LOOP, e.g., off site power sources not a "live" screen, no actions in ECA-0.0 requiring plant computer displays, etc. Chief Examiner randomly selected 056 2.1.23 |
| | | |

| Facility: Sequoyah 1 & 2 | | Date of Exam: 3/03/2010 | | Exam Level: RO X SRO X | |
|---|---------|---|---------|--------------------------------------|--|
| Item Description | Initial | | | | |
| | a | b* | c# | | |
| 1. Questions and answers are technically accurate and applicable to the facility. | JAB | NY | BN | | |
| 2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available. | JAB | NY | BN | | |
| 3. SRO questions are appropriate in accordance with Section D.2.d of ES-401 | JAB | NY | BN | | |
| 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). | | | BN | | |
| 5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: <input type="checkbox"/> the audit exam was systematically and randomly developed; or <input type="checkbox"/> the audit exam was completed before the license exam was started; or <input type="checkbox"/> the examinations were developed independently; or <input checked="" type="checkbox"/> the licensee certifies that there is no duplication; or <input type="checkbox"/> other (explain) | JAB | NY | BN | | |
| 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 | | |
| | 35 / 2 | 11 / 6 | 29 / 17 | | |
| 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 | | | |
| | 35 / 9 | 40 / 16 | | | |
| 8. References/handouts provided do not give away answers or aid in the elimination of distractors. | JAB | NY | BN | | |
| 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. | JAB | NY | BN | | |
| 10. Question psychometric quality and format meet the guidelines in ES Appendix B. | JAB | NY | BN | | |
| 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. | JAB | NY | BN | | |
| a. Author <u>Mike Buckner</u> <i>Michael Buckner</i> b. Facility Reviewer (*) <u>Van Ford</u> <i>Van Ford</i> c. NRC Chief Examiner (#) <u>BRUNO CABALLERO / B. Caballero</u> d. NRC Regional Supervisor <u>MALCOLM T. WIDMAN</u> <i>Malcolm T. Widman</i> | | Date 2/24/2010 2/24/10 2/25/10 02/25/10 | | | |
| 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. | | | | | |

x Percentages →

| | | |
|-------------|-------------|-------------|
| Bank | MOD | New |
| 46.9% / 89% | 14.6% / 24% | 38.6% / 68% |

| | |
|-------------|-------------|
| mem | C/A |
| 46.6% / 86% | 53.3% / 64% |

Rec'd 2/25/10

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.
 - The distractors are not credible; single implausible distractors should be repaired, more than one is unacceptable.
 - 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. Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
7. Based on the reviewer's judgment, is the question as written (U)nsatisfactory (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
8. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

ES-401

2

Form ES-401-9

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 1 | H | 2 | | | | | | | | | | | x | | N | E | <p>007 EA1.10</p> <p>1. Cred Dist: "A" and "D" are not plausible because the Tavgr mode cannot be operated manually. (borderline)</p> <p>2. Q=K/A: This question is supposed to target the emergency abnormal Tier 1 category. The choices seem to test the applicants' knowledge of the Tier 2 aspect (normal system operation) of the Steam Dumps. (borderline)</p> <p>Suggest the following:</p> <p><i>Unit 2 is starting up at 2% power with the Steam Dump Control System operating as follows:</i></p> <p><i>Steam Dump Mode Selector Switch (HS-1-103D): STEAM PRESS</i></p> <p><i>Steam Dump Pressure Controller (PIC-1-33): AUTO</i></p> <p><i>A spurious reactor trip occurs; however, the "B" reactor trip breaker fails to open.</i></p> <p><i>WOOTF identifies the steam generator pressure setpoint BEFORE the crew transitions to ES-0.1, Reactor Trip Response, and the required actions to manually control steam generator pressure AFTER ES-0.1 has been entered?</i></p> <p>A. <i>SG pressure corresponding to Tavgr of 547°F (~1005 psig) Use the lever at the bottom of the PIC-1-33 controller</i></p> <p>B. <i>SG pressure corresponding to Tavgr of 552°F (~1047 psig) Use the lever at the bottom of the PIC-1-33 controller</i></p> <p>C. <i>SG pressure corresponding to Tavgr of 547°F (~1005 psig) Use the setpoint up/down pushbuttons</i></p> <p>D. <i>SG pressure corresponding to Tavgr of 552°F (~ 1047 psig) Use the setpoint up/down pushbuttons</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 2 | H | 2 | x | | | | x | | | | | | | | B | E | <p>009 EK1.01</p> <p>1. Cred Dist: "C" is not plausible because the applicants know that SAMG criteria is not being tested.</p> <p>2. Stem Focus: The 6th bullet is not necessary to elicit the correct response.</p> <p>3. Stem Focus: The 1st and 5th bullets can be combined to streamline the question.</p> <p>Suggest the following:</p> <p><i>A small break LOCA has occurred and the RCPs have been tripped in accordance with the EOPs. The following conditions currently exist:</i></p> <ul style="list-style-type: none"> • <i>SI pumps failed to start</i> • <i>RCS Pressure is 1200 psig</i> • <i>RCS Hot Legs and the Reactor Vessel Head have voided</i> <p><i>WOOTF identifies one current method of core cooling and a note provided in ES-1.2, Post LOCA Cooldown and Depressurization?</i></p> <p>A. <i>Natural Circulation</i> <i>During RCS depressurization, pressurizer level indication may rapidly rise</i></p> <p>B. Reflux boiling <i>During RCS depressurization, pressurizer level indication may rapidly rise</i></p> <p>C. <i>Natural Circulation</i> <i>During RCS depressurization, pressurizer level indication may rapidly lower</i></p> <p>D. <i>Reflux boiling</i> <i>During RCS depressurization, pressurizer level indication may rapidly lower</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 3 | H | 2 | x | | | | x | | | | | | | | B | E | 011 EK2.02 1. Cred Dist: "A" is not plausible because it states to "do nothing different that you were planning on doing." In other words, the stem already states that 63-5 is ready to be closed and "A" states to go ahead and close 63-5 with no other required actions even though an RHR Pump has just tripped. 2. Stem Focus: The 4 th bullet is not necessary to elicit the correct response. 3. Stem Focus: The word "correct" in the stem is not necessary to elicit the correct response 4. Stem Focus: Whenever applicable, ensure the phrase " <i>in accordance with....</i> " Is pasted after the stem question. This ensures that there is only one correct answer. In all procedure related questions, ensure that the stem question includes " <i>in accordance with ...[procedure name]</i> " See suggestion on the following row: |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|----------------------|----------|---------|---------|----------|-------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | | | | SRO Only |
| 3 | H | 2 | x | | | x | | | | | | | | B | E | <p>Suggest the following:</p> <p><i>A large break LOCA occurred on Unit 1 and the crew is currently implementing ES-1.3, Transfer to Containment Sump. The following conditions currently exist:</i></p> <ul style="list-style-type: none"> • <i>Both RHR Pumps are running aligned to the Containment Sump and RWST</i> • <i>The charging pump suction from the RWST has been manually isolated</i> • <i>The crew is ready to close 1-FCV-63-5, SI Pump Suction from RWST</i> • <i>RHR Pump 1A-A subsequently trips</i> <p><i>WOOTF identifies the expected Charging Injection Header Flow Indication (CCPIT) and the required "response not obtained (RNO)" actions for the following continuous monitoring step in accordance with ES-1.3?</i></p> <p style="text-align: center;"><i>"14. Monitor Both RHR Pumps Running"</i></p> <p>A. Greater than zero; <i>Ensure 1B-B CCP and 1B-B SI Pumps are running and then place the 1A-A CCP and 1A-A SI Pumps control switches to the pull-to-lock (P-T-L) position</i></p> <p>B. Greater than zero; <i>Close 1-FCV-63-72, Train A Containment Sump Valve</i></p> <p>C. Zero; <i>Ensure 1B-B CCP and 1B-B SI Pumps are running and then place the 1A-A CCP and 1A-A SI Pumps control switches to the pull-to-lock (P-T-L) position</i></p> <p>D. Zero; <i>Close 1-FCV-63-72, Train A Containment Sump Valve</i></p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 4 | H | 2 | x | | | x | | | | | | | | B | E | 015 AK1.01 1. Cred Dist: Because the choices aren't parallel; i.e., "B" is the only choice which states that forced circulation is the heat removal mechanism, this makes "B" not plausible. 2. Stem Focus: The 3 rd and 5 th sub-bullet has two different fonts Suggest writing a 2-part question to test the applicants' knowledge of 1) one natural circ indication [Tcold at saturation temperature for SG pressure (vs. Thot at saturation temperature for SG pressure)] AND 2) one implication of a natural circ cooldown [emergency boration is required (vs not required)] Both of these items are fundamental knowledge items; therefore, the question can be classified as fundamental knowledge. |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 5 | H | 2 | x | x | | | | | | | | | x | | N | U | 022 AA.1.07 1. Q=K/A: This is a tough K/A to hit because it requires a loss of reactor coolant makeup. The question (as proposed) does not involve a loss of reactor coolant makeup. It involves a loss of letdown, requiring excess letdown to be placed in service. Discuss alternatives with the licensee; Chief Examiner may need to replace the K/A. 2. Cues: Choices "A", "B", and "D" include the cue of a containment isolation signal. Suggest the following choices: <i>A. 62-59 will automatically divert to the RCDT. 62-61 and 62-63 will NOT auto-close.</i> <i>B. 62-61 and 62-63 will auto-close; Seal Return Relief Valve will open to the PRT</i> <i>C. No automatic actions occur at this time. At 1.5 psig, 62-61 and 62-63 will auto-close; Seal Return Relief Valve will open to the PRT</i> <i>D. No automatic actions occur at this time. At 2.81 psig, 62-61 and 62-63 will auto-close; Seal Return Relief Valve will open to the PRT</i> 3. Stem Focus: The 1 st four bullets should all be past tense. The only bullet with present tense should be the last bullet. 4. Stem Focus: The stem question should be targeted to elicit the response from the choices provided, i.e., the stem question as proposed asks the applicants to describe how flow will be affected whereas each choice presents an automatic actuation sequence. The stem question can be more appropriately worded as "WOOTF predicts the status of the Excess Letdown Valves?" |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 6 | F | 2 | | | | | | x | | | | | x | | N | E | <p>025 AK3.02</p> <p>1. Job Link: Presumably the reason that the 1A-A RHR Pump trips is to meet the K/A [Loss of RHR]; however, tripping of the pump is directed by AOP-R.03 when RCS pressure continues to rise. The ARP for the high pressure condition requires to the operator to first attempt to adjust charging/letdown to remedy the high pressure condition. An applicant can potentially argue that this question is not operationally relevant because the stem doesn't follow the required actions listed in the ARP and AOP; therefore, the question may be deleted from the exam.</p> <p>2. Q=K/A: Because the 1st portions of each choice are unique, the applicants are not being tested on the "reason" (2nd) portion of the K/A statement.</p> <p>Suggest the following:</p> <p><i>Unit 1 is in Mode 5 with the pressurizer solid. Train "A" is operating in Shutdown Cooling. The following alarm is received:</i></p> <p>FCV-74-1/2 TROUBLE OR RHR PRESS HI (M6-6, E-7)</p> <p><i>The operator attempted to adjust letdown and charging; however, the alarm condition did not clear and RCS pressure continued to slowly rise. The operator subsequently manually tripped the 1A-A RHR Pump and noted that RCS Pressure was still slowly rising.</i></p> <p><i>WOOTF identifies the RCS Pressure at which the operator is directed to manually close FCV-1 and -2 in accordance with AOP-R.03, RHR System Malfunction, including the reason for this required action?</i></p> <ul style="list-style-type: none"> A. 380 psig; prevent inventory loss B. 380 psig; prevent over pressurization of the PRT C. 450 psig; prevent inventory loss D. 450 psig; prevent over pressurization of the PRT <p>3. Verify no overlap w/ RO Q#31</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 7 | H | 2 | | | | x | | | | x | | | | B | U | <p>027 AA1.03</p> <p>1. Use the EXACT wording engraved on Pressurizer Pressure HI (LO) Alarm Window (also specified in ARP) followed by parentheses containing the shortest possible abbreviated window location designation that the applicants are familiar with. This ensures no misunderstanding as to the alarm being referenced.</p> <p>2. Cred Dist: "A" is not plausible because IF the 68-340A "sees" actual pressure rising, (HI alarm) THEN the 2nd part (pressure will rise) is not plausible.</p> <p>3. Cred Dist: "D" is not plausible because IF the 68-340A "sees" actual pressure lowering, (LO alarm) THEN the 2nd part (pressure will lower) is not plausible.</p> <p>2. #/units: Include the controller numbers, i.e., PIC-68-340A, etc. in the stem.</p> <p>Suggest the following:</p> <p><i>The unit is operating at 85% power and both Pressurizer Spray Valve Controllers (#ID) are in MANUAL with their output set to "0."</i></p> <p><i>WOOTF predicts the plant response if the Pressurizer Master Pressure Controller (#ID) output signal fails to 100%?</i></p> <p>A. <i>PS-68-340F/G PRESSURIZER PRESS ABOVE REF SET POINT (M5-A, B-3) will alarm; Actual pressure will remain the same.</i></p> <p>B. <i>PS-68-340F/G PRESSURIZER PRESS ABOVE REF SET POINT (M5-A, B-3) will alarm; Actual pressure will lower.</i></p> <p>C. <i>PS-68-340G/F PRESSURIZER PRESSURE LOW BACKUP HTRS ON (M5-A, D-4) will alarm; Actual pressure will rise</i></p> <p>D. <i>PS-68-340G/F PRESSURIZER PRESSURE LOW BACKUP HTRS ON (M5-A, D-4) will alarm; Actual pressure will remain the same.</i></p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 8 | H | 2 | | | | | | | | | x | x | | M | U | <p>029 EK2.06</p> <p>1. Q=K/A: The question does not meet the Tier 1 aspects, i.e., doesn't test applicants' knowledge of the abnormal control room indications or emergency procedures for an ATWS as it relates to the trip breakers. The proposed question is testing the applicants' knowledge of the reactor trip breakers from a systems perspective, i.e., Tier 2. See 012, RPS, K6.03, Trip logic circuits and A2.06, Failure of RPS signal to trip the reactor. The 3rd bullet is provided to the applicants even though the K/A requires</p> <p>Suggest testing the applicants' knowledge of FR-S.1 required actions and the local manipulations that must be taken at the breaker cubicle(s).</p> <p>2. Backwards: The question (as written) asks the applicants to decide which malfunction "would have contributed" to the past failure. Typically, the NRC exam questions ask the applicant to predict the impact of a failure on the plant, i.e., how an event affects the plant. The question (as written) asks the applicants to look back at an event and then predict what could have caused it.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 9 | H | 2 | x | | | x | | x | | | | | | N | E | <p>038 EA2.06</p> <p>1. Cred Dist: "B" is not plausible because it is the only choice that does not provide an action to take.</p> <p>2. Stem Focus: "B" and "C" also include "reasons" even though the stem question does not ask for a reason; therefore these two choices may not be plausible.</p> <p>3. Job-link: Step 4.d in ES-3.1 requires the operator to perform 0-SI-NUC-000-038 to determine the required RCS boron concentration required for cold shutdown. The K/A requires testing the applicants' ability to determine the boron concentration OR to interpret the required boron concentration. Ask the licensee when ROs perform this SI.</p> <p>4. Stem Focus: Re-word the stem question as follows: <i>"WOOTF identifies an action that is required to be performed BEFORE a cooldown can be commenced and the reason why the cooldown should be promptly initiated at a rate near 100°F/hr in accordance with ES-3.1?"</i></p> <p>A. <i>Borate the RCS > 35 gpm from the BAT; Inadvertent criticality could occur during for a slower cooldown rate</i></p> <p>B. <i>Inject Boric Acid into the Secondary side of #2 SG using AFW; longer operation of the RCPs is permitted</i></p> <p>C. <i>Borate the RCS > 35 gpm from the BAT; longer operation of the RCPs is permitted</i></p> <p>D. <i>Inject Boric Acid into the Secondary side of #2 SG using AFW; Inadvertent criticality could occur during for a slower cooldown rate</i></p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 10 | F | 1 | | | | x | x | | | | | | x | | B | E | <p>040 AK1.04</p> <p>1. Q=K/A: The choices are testing Generic Fundamentals Knowledge; i.e., the plant specific portion of the question (Left of Limit A on Curve 2) is not necessary to choose the correct answer because all the answers have a "bad" thing occurring. The question should test a <i>plant specific</i> knowledge.</p> <p>2. Partial: An applicant can also argue "C" as correct. Whenever applicable, ensure the phrase "<i>in accordance with....</i>" is pasted after the stem question. This ensures that there is only one correct answer. In all procedure related questions, ensure that the stem question includes "<i>in accordance with ...[procedure name]</i>"</p> <p>3. Cred Dist: "A" is not plausible because of the word "fatigue" (i.e., "cyclic") since this does not occur during a rapid cool down. (GFES knowledge).</p> <p>4. Cred Dist: "D" is not plausible because it is the only choice that contains a "reason." This choice is not psychometrically balanced with the other choices.</p> <p>Suggest the following:</p> <p><i>A steam line rupture has occurred on Unit 2.</i></p> <p><i>WOOTF points indicates a Pressurized Thermal Shock condition and identifies how this condition affects the reactor vessel in accordance with FR-P.1, Pressurized Thermal Shock, and EPM-3-FR-P1, Basis Document for FR-P.1?</i></p> <p>A. To the LEFT of Limit A on Curve 2; an existing flaw could propagate</p> <p><i>B. To the RIGHT of Limit A on Curve 2; new flaw can develop</i></p> <p><i>C. To the LEFT of Limit B on Curve 2; an existing flaw could propagate</i></p> <p><i>D. To the RIGHT of Limit B on Curve 2; new flaw can develop</i></p> <p>Alternatively, test the applicants' knowledge of mitigation activities associated with a faulted SG in FR-P.1</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 11 | H | 2 | x | x | | | | x | | | | | x | | M | U | <p>054 AG2.1.31</p> <p>1. Job-Link: This question will be targeted to ONLY Unit 1 because DCS Modification D22239A replaces the SGWLC System Main Control Room components on Unit 2. The NRC Operator Licenses will be issued on both units, contingent on the applicants' successful completion of their training and evaluation for this modification.</p> <p>2. Q=K/A: The generic K/A requires testing the applicants' knowledge of the control room switches, controls, and indications. The question (as proposed) tests the applicants' knowledge of the required position (closed) following a FWI signal. This generic K/A as applied to the stem question would require testing the applicants' knowledge for <u>the expected indications on the 1-LIC-3-35, -48, -90, -103 controllers</u> following a loss of main feed water. In other words, the question should test the applicants' knowledge of what the controller looks like following a FWI signal.</p> <p>Suggest providing a picture of the controller and test the applicants knowledge of the expected indications such as AUTO/MAN lamps, bar graph indication, and/or set point line indicator.</p> <p>3. Cue: The 5th bullet in the stem cues the applicant that an isolation signal has occurred. Suggest providing an actual FWI signal in the stem, i.e., Hi-Hi SG level, SI, or Rx Trip/Lo Tavg.</p> <p>4. Stem Focus: Re-word the stem question and eliminate the words "would be" in each choice. <i>"WOOTF predicts the position of the MFW Byp Valves and the expected SG level trend?"</i></p> <p style="margin-left: 40px;">A. closed; rising</p> <p style="margin-left: 40px;">B. open; lowering....etc.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 12 | H | 3 | x | x | | | | | | | | | x | | B | U | 056 AK3.01 1. Cue: The 2 nd portion of the stem is a cue because of the words "...following the SI signal.?" This phrase cues the applicants that choices "A" and "B" are incorrect because they occur after the shutdown board voltage is restored. This phrase is not needed to elicit the correct response. 2. Q=K/A: The K/A requires testing the applicants' knowledge of the <u>reasons</u> for the order/time sequencing. The question (as proposed) does not test the applicants' knowledge of the reasons. 2. Stem Focus: The words "due to blackout" are redundant to all four choices and are not needed to elicit the correct response. 3. Stem Focus: The words "...Assuming all equipment operates as designed.." is not needed to elicit the correct response. 4. Stem Focus: The LOCA event can be concisely worded (at time 13.5 seconds) as "Valid Safety Injection (SI) Signal" |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 15 | F | 2 | | | | | x | | | | | | x | | N | E | <p>065 AK3.04</p> <p>1. Q=K/A: The 2nd part of the question (reason for the actuation) is not being tested because each of the 1st parts is unique. In other words, an applicant only needs to know the actuation set point and he/she can get the correct answer without knowing the reason.</p> <p>2. Partial: An applicant can potentially argue that there is no correct answer because the "reason" listed in Choice "A" does not exactly match the lesson plan. Whenever applicable, ensure the phrase "in accordance with...." is pasted after the stem question. This ensures that there is only one correct answer. In all procedure related questions, ensure that the stem question includes "in accordance with ...[procedure name]".</p> <p>The reason listed in OPT200.CSA for why the 0-FCV-32-85 isolates was.. "to isolate the non-essential portion from essential air portion during a degraded non-essential air pressure below 69 psig." The lesson plan is normally not referenced in NRC test questions. Is there an FSAR section that identifies the reason for the isolation? If not, then the exact wording from the lesson plan must be used.</p> |
| 16 | F | 2 | | x | | x | | | | | | | | | N | E | <p>077 AG2.2.44</p> <p>1. Cues: The proposed question does not test the applicants ability to interpret control room indications because the stem provides cues such as "the generator voltage regulator is taken to manual.." and "WOOTF identifies the max generator voltage allowed.." These items cue the applicant as to what the alarm [GEN EXCITER FIELD OVERCURRENT] means.</p> <p>Suggest keeping the alarm ..but providing the applicant with pictures of control board meter indications for VARS and MW and then testing the applicants' ability to determine whether these indications exceed GOI-6 limits and the required operator actions, including any new limits when regulator is in Manual.</p> <p>2. Cred Dist: "C" and "D" are not plausible because it is never wrong to notify the SELD.</p> <p>Ensure no overlap w/ SRO Q#81</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 17 | F | 2 | x | | | | | | | | | | | B | E | <p>WE04 EA2.2</p> <p>1. Stem Focus: The first 3 bullets can be streamlined or eliminated as follows:</p> <p><i>Following a reactor trip, abnormal radiation was noted in the Aux Building due to a loss of RCS inventory outside containment.</i></p> <p><i>WOOTF identifies a required action and the subsequent check used to determine whether or not the leak is isolated in accordance with ECA-1.2, LOCA Outside Containment?</i></p> |
| 18 | F | 2 | x | | | | | | | | | | | M | E | <p>WE05 EK2.2</p> <ol style="list-style-type: none"> 1. Stem Focus: The word "Intact" is provided in all 4 choices; therefore it is not necessary to elicit the correct response. 2. Stem Focus: The order of the two parts of the stem question is confusing because they don't flow logically, i.e., one would first determine which SG to use and THEN determine what feed water source was available. <p>Suggest the following:</p> <p><i>WOOTF identifies the preference for restoring a SG as a heat sink and the order in which the feed water sources are attempted in accordance with FR-H.1, Loss of Secondary Heat Sink?</i></p> <ol style="list-style-type: none"> <i>A. Feed a ruptured SG before feeding a faulted SG TDAFW, MFW, Condensate, MDAFW using ERCW</i> <i>B. Feed a ruptured SG before feeding a faulted SG MDAFW, TDAFW, MFW, Condensate</i> <i>C. Feed a faulted SG before feeding a ruptured SG TDAFW, MFW, Condensate, MDAFW using ERCW</i> <i>D. Feed a faulted SG before feeding a ruptured SG MDAFW, TDAFW, MFW, Condensate</i> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 19 | H | 3 | | | | | | x | | | | | | B | S | 028 AK2.02 1. Job-Link: Discuss the simulator validation times (i.e., the times until a reactor trip occurs for each of the four transmitter failures) with the licensee. Consider listing these times in the distractor analysis for each level transmitter failure. |
| 20 | F | 2 | | | | x | | x | | | | x | | B | E | 032 AK2.01 1. Cred Dist: "B" is not plausible because the stem states that N-32 has failed; therefore, placing the audio CR selector switch to a broken channel does not make sense. 2. Job-Link: Did M-4B, A-2 also alarm? [SOURCE/INTERMED RANGE CH II TROUBLE]. If so, then provide this alarm (and all associated alarms) in the stem. This is needed in order for the applicant to diagnose the problem. 3. Q=K/A: How is the proposed question testing the applicants' knowledge of power supplies? Suggest failing a vital instrument board and provide ALL associated alarms in the stem and then test applicants' knowledge of required switch positions to recover a SRM feature. Note: The power loss involves essentially the same board as Q#13 and Q#38. |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 21 | H | 2 | x | | | | | x | | x | | | | N | E | <p>033 AA2.12</p> <p>1. #/units: The readings provided in the stem do not match the units provided on the M-4 indicators for the N-35 and N-36 meters [1-XI-92-5003A and -5004A]. The meters read out in powers of 10; therefore, the stem should provide the same units as the applicants' would encounter on panel M-4. For example, at 0800, the reading would be 10¹ (instead of 10%). Also, the meter numbers should also be provided in the stem so that the applicant knows these readings were obtained at panel M-4.</p> <p>2. Job Link: Discuss required actions if the indicators at Panel M-4 exceed the max allowable deviation at the same time that the IR drawer indications are correct. Is there an LCO? TRM? (just for the M-4 indicators?) Note 27 (in 1-SI-OPS-000-002.0) states that "readings on both channels will provide evidence that the instruments are operable." Is this all that's required for operability? Are both indicators inoperable or just one?</p> <p>2. Stem Focus: The words "control board readings" in the stem question should exactly match the words in 1-SI-OPS-000-002.0, Note 27, i.e., "control board indicators"</p> <p>3. Reference Provided: Ask the licensee how much of 1-SI-OPS-000-002.0 is being provided to the applicants. All pages? Only one page?</p> <p>4. Stem Focus: <i>WOOTF identifies the correct status of the M-4 meter indications for N-35 and N-36, in accordance with 1-SI-OPS-000-002.0, Shift Log?</i></p> <p>A. 5003A and 5004A are both operable B. 5003A and 5004A are BOTH inoperable C. ONLY 5003A is inoperable; 5004A remains operable D. ONLY 5004A is inoperable; 5003A remains operable</p> |
| 22 | H | 2 | | | | x | | | | | | | | N | U | <p>036 AG2.4.35</p> <p>1. Cred Dist: "A" and "B" are not plausible because with any "leak" in progress, one always closes or isolates components instead of opening them. Suggest testing the RO applicants' knowledge of the hand wheel location for the 78-610 wafer valve and how this will affect the lowering cavity level (in the event of a reactor cavity seal leak.)</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 23 | H | 1 | | | | | | | | | | | x | | N | U | <p>037 AA1.04</p> <p>1. Q=K/A: In the context of a SGTL, the K/A should be testing the applicants' ability to monitor the alarm limits for CVE radiation monitors, including after chemistry has calculated 90-119 or 90-99 alarm limits for primary to secondary leakage. The question (as proposed) renders "B" and "D" as not plausible because the stem states that 90-99 went "offscale high" with no change in PZR level or Charging flow. The K/A statement (failure indicator) may be referring to a warning light on the 90-99 -119 drawer; however, in the context of a SGTL, this phrase is most likely referring to a <i>tube</i> failure indicator based on alarm limits for CVE radiation monitors.</p> <p>2. Cred Dist: "C" is not plausible because IF the CVP discharge filter was plugged, the rad monitor would not rapidly rise and go offscale high.</p> <p>3. LOD=1: This question will not provide any discriminatory value on the exam because of Items #1 and #2 above.</p> <p>4. May be able to use Q#51 to meet this K/A; ensure no overlap</p> |
| 24 | F | 2 | | | | | | x | | | | | | | N | E | <p>068 AK3.12</p> <p>The sequence being tested must be an actual sequence specified in the AOP-C.04. Also, testing the applicants' knowledge of which step is listed before another may result in appeals from the applicants because the sequence on the printed page may not have a basis.</p> <p>1. Job-Link: "A" is not operationally valid because the procedure doesn't specify (<i>require</i>) that the reactor vessel head vent fuses are pulled before the MSIV bypass valve fuses, even though these steps are listed in this order. This sequence requirement does not exist.</p> <p>2. Job-Link: "D" is not operationally valid because the procedure does not require normal letdown in service (only excess letdown). This AOP action does not exist.</p> <p>Some alternative items to test include: 1) There is a requirement to place only one CCP in P-T-L <i>before</i> leaving the control room. 2) There is a requirement to trip 0-HS-13-204 and -205 <i>before</i> leaving the control room. 3) There is a time requirement to pull fuses within <u>30 minutes</u>. Any of these items are valid "sequences" specified in the AOP, and lend themselves to testing applicants' knowledge of the reasons for the actions.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 25 | H | 2 | | | | | x | | | | | | x | | N | E | <p>WE03 EA2.1</p> <ol style="list-style-type: none"> Q=K/A: This question (as proposed) tests the applicants' knowledge of the same prerequisites for shutdown cooling as 0-SO-74-1, i.e., RCS pressure < 380 psig and RCS temperature < 350 deg F AND the max (allowed) cooldown rate (100 deg/hr). Because this is a Tier 1 K/A (emergency/abnormal), then the item should not <i>only</i> test normal prerequisites required for shutdown cooling. Partial: "C" can also be argued as correct because the containment pressure (following the LOCA) is not specified in the stem. Therefore, an applicant can reasonably assume that adverse containment values are required in ES-1.2, which do not meet the req'ts of less than <u>300 psig</u> RCS Pressure in Step 37. <p>Suggest including containment pressure in the stem, which requires applicants' to know the difference between normal shutdown cooling prerequisites and LOCA shutdown cooling prerequisites. (which are different based on adverse containment conditions). The selection of adverse containment conditions can meet the intent of the K/A for assessment of facility conditions and selection of procedures.</p> <p>Alternatively, test another knowledge item in ES-1.2.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 26 | H | 2 | x | | | x | | | | | | x | | | N | E | <p>WE08 EK1.01</p> <ol style="list-style-type: none"> 1. Stem Focus: The 1st sub-bullet should be Tcold (vs RCS temperature) 2. Cred Dist: "A" is not plausible because the flowpath is not provided like "C" and "D." 3. Backward Logic: All of the plant conditions should normally be provided in the stem and then the applicant should be tested based on those initial conditions. The question (as proposed) relies on providing an "additional" condition in each of the four choices. This may be acceptable depending on the final outcome of the question. <p>Suggest the following:</p> <p><i>WOOTF identifies an additional condition that is the largest contributor to the pressurized thermal shock, including the required action to mitigate in accordance with FR-P.1? (Consider each condition separately)</i></p> <ol style="list-style-type: none"> A. Total AFW flow to the intact SGs is 300 gpm; Raise AFW flow to greater than 440 gpm B. Total AFW flow to the intact SGs is 300 gpm; Minimize AFW flow to no greater than 50 gpm per SG C. One CCP is injecting via the CCPIT; Reset SI and stop the CCP D. One CCP is injecting via the CCPIT; Reset SI and isolate the CCPIT |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 27 | H | 2 | x | | | | | | | | | | | B | S | <p>WE10 EA1.3</p> <p>Note to Examiner: The operator should be aware that the pressurizer will not respond in the normal manner if a void is present. If letdown is greater than charging, the pressurizer pressure will decrease, the vessel void will grow and the pressurizer level will increase. In the same way when charging is greater than letdown, the pressurizer pressure will increase, the vessel void will shrink, and the level will decrease.</p> <ol style="list-style-type: none"> 1. Stem Focus: Modify the 3rd bullet to state "A depressurization is being performed and PZR pressure is 785 psig and being lowered by auxiliary spray." 2. Stem Focus: Modify the stem question as follows: "Assuming NO additional operator action, WOOTF predicts the expected RVLIS and PZR Level trends as the depressurization continues?" 3. Stem Focus: Modify the title of the 2nd column to "PZR Level" |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 28 | F | 2 | | | | | | x | | | | | | B | E | <p>003 K5.01</p> <p>1. Licensee provided Farley 2009 exam question</p> <p>2. Job-Link: The operational implication (limit is exceeded) may be a result of the low flow; however, the effect on plant operations is that, if not already tripped, the unit must exit Mode 1 as a result of the DNB parameter.</p> <p>Suggest the following:</p> <p><i>WOOTF completes both statements in accordance with Tech Spec 3.4.1, Reactor Coolant Loops and Coolant Recirculation?</i></p> <p><i>The plant is designed to operate with all reactor coolant loops in operation, which maintains _____ above the safety analysis limit during all normal operations and anticipated transients.</i></p> <p><i>With one reactor coolant loop not in operation, the plant is required to be _____ within 1 hour.</i></p> <p>A. QPTR; less than or equal to 5%</p> <p>B. QPTR; in Hot Standby</p> <p>C. DNB; less than or equal to 5%</p> <p>D. DNB; in Hot Standby</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 29 | H | 2 | x | | | | x | | | | | | x | | B | E | <p>004 A3.05</p> <p>1. Cred Dist: "C" is not plausible because of the word AUTO; i.e., the crew normally never receives an AUTO makeup. IF an AUTO makeup occurred, then there is most likely a leak, and this is not something intended to be introduced to the question.</p> <p>2. Stem Focus: The stem does not include the status of the RCS pressure control parameters, i.e., spray valve position, control heaters, etc. This can contribute to an applicant arguing no correct answer or the another answer is correct. Provide RCS pressure value and status of the spray valves and controlling heaters.</p> <p>3. Stem Focus: The word "could" in the stem question is vague and can lead to partially correct answers. (Depends on the meaning of the word "could"). Re-word the stem question as: "WOOTF conditions will result in these conditions?"</p> <p>4. Q=K/A: What automatic function of the CVCS system is being monitored? Discuss K/A match w/ licensee. May be acceptable.</p> |
| 30 | H | 2 | x | x | | | | | | | | | | | B | E | <p>004 A4.13</p> <p>1. Cue: The ONLY choice with an operator manual answer is also the correct choice, i.e., "C". Consider including what would happen if the operator did not intervene, i.e., VCT level would continue to lower until charging pumps lose suction.</p> <p>2. Stem Focus: WOOTF predicts the plant response assuming no operator action?</p> <p>3. Stem Focus: Follow the alarm window with parentheses containing the shortest possible abbreviated window location designation that the applicants are familiar with; i.e., M-6C, A-3.</p> |
| 31 | H | 2 | x | | | | | | | | | | | | B | E | <p>005 K5.05</p> <p>1. Verify no overlap with RO Q#6</p> <p>2. Stem Focus: Combine the 4th bullet with the stem question as follows: "WOOTF choices completes the following choices IF the 1A-A RHR Pump subsequently trips?" The RCS pressure will initially _____ because 1-PCV-62-81 will automatically throttle _____ when the pump trips..</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 32 | H | 2 | | | | | x | | | | | | | B | S | 006 A1.14 1. Partial: Ask the licensee why an applicant couldn't successfully argue that "C" is also correct in the strictest sense of the wording, i.e., uncovering will eventually happen and raising ECCS flow is always a good thing. |
| 33 | H | 2 | | | | | x | | | | | | | B | E | 007 K1.03 1. Partial: "D" can be argued as correct since the normal flowpath is "isolated." |
| 34 | F | 2 | x | | | | | | | | | | | N | E | 008 A1.04 1. Stem Focus: add "in accordance with 0-SO-70-1, Component Cooling Water System "B" Train?" to the stem question. |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 35 | F | 2 | x | | | | | x | | | | | | N | E | <p>008 A2.03</p> <p>1. Job-Link: The alarm procedure states device 1-TS-70-157 triggers the RHR HX A OUTLET TEMP HI alarm at 115 def F and rising. Is this temperature switch monitoring CCS temperature or RHR (primary) temperature?</p> <p>Discuss w/ the licensee, because the wording of the fill-in-the-blank statement must align with the wording in the alarm response procedure. In other words, the guidance listed in the alarm response procedure tries to adjust temperature of RHR water (not CCS water).</p> <p>2. Stem Focus: Re-word the 2nd bullet as follows: RHR HX A OUTLET TEMPERATURE HIGH (M27-B-A, E-6) in alarm</p> <p>3. Stem Focus: The 3rd bullet has two different fonts</p> <p>4. Stem Focus: Split the fill-in-the-blank statement into two sentences as follows:</p> <p><i>WOOTF choices completes both statement in accordance with the annunciator procedure?</i></p> <p><i>"It is _____ to exceed the alarm setpoint when Shutdown Cooling is in service."</i></p> <p><i>"In order to maintain the RHR heat exchanger outlet temperature less than 145 deg F, _____."</i></p> <p>A. <i>allowed; Throttle open 1-FCV-70-156 and/or Lower RHR Flow through the heat exchanger by throttling open 1-FCV-74-32. Throttling closed 1-FCV-74-16 is NOT permitted.</i></p> <p>B. allowed; Throttle open 1-FCV-70-156 OR Lower RHR Flow through the heat exchanger by throttling open 1-FCV-74-32 and/or throttling open 1-FCV-74-16.</p> <p>C. <i>NOT allowed; Throttle open 1-FCV-70-156 and/or Lower RHR Flow through the heat exchanger by throttling open 1-FCV-74-32. Throttling closed 1-FCV-74-16 is NOT permitted.</i></p> <p>D. <i>NOT allowed; Throttle open 1-FCV-70-156 OR Lower RHR Flow through the heat exchanger by throttling open 1-FCV-74-32 and/or throttling open 1-FCV-74-16.</i></p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 36 | H | 2 | x | | | x | | | | | | | | B | E | <p>010 K4.02</p> <p>1. Stem Focus: The 1st bullet provides a value of reactor pressure (2235 psig) , which conflicts with the 3rd bullet which states "currently." The 1st bullet should become the 1st sentence (no need for Given the following phrase); i.e.,</p> <p><i>Unit 1 was in Mode 3, Tav_g 547 deg F, PZR pressure 2235 psig.</i></p> <p><i>A malfunction subsequently occurred which caused PZR pressure to drop to 2050 psig and PZR level to drop to 15%. Currently, PZR pressure is 2100 psig and PZR level is 30%.</i></p> <p><i>Assuming no operator action, WOOTF predicts the current status of the PZR heaters?</i></p> <p>2. Cred Dist: "D" is not plausible because it does not mention Backup Heater Bank "C." What is the proposed status of "C" Backup Heater Bank? On or off?</p> |
| 37 | H | 2 | x | | | | | | | | | | | B | E | <p>012 A1.01</p> <p>1. Stem Focus: To be more precise (and avoid confusion) use the words "trip setpoint value" (instead of "setpoint").</p> <p>2. Stem Focus: Modify the stem question to ask:</p> <p><i>"WOOTF identifies how the actual RPS trip setpoint value will change if Tav_g decreases by 1 deg F? Assume AFD remains constant.</i></p> <p><i>A. Both OTΔT and OPΔT trip setpoint values will decrease.</i></p> <p><i>B. OTΔT trip setpoint value will increase and OPΔT trip setpoint value will decrease.</i></p> <p><i>C. OTΔT trip setpoint value will increase and OPΔT trip setpoint value will remain the same.</i></p> <p><i>D. OTΔT trip setpoint value will remain the same and OPΔT trip setpoint value will decrease.</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 38 | H | 2 | x | | | | | | | | | x | | | B | E | <p>012 K2.01</p> <p>1. This question overlaps with Q#13 (U1) and Q# 20 (U2)T because this question also involves essentially the same Vital Instrument Board. Discuss w/ licensee.</p> <p>2. This question overlaps with Q#84 because it involves essentially the same knowledge associated with how the high flux reactor trip output feature is affected by a loss of control power. Discuss w/ licensee.</p> <p>3. Backwards Logic: The question presents a startup condition with a loss of VIPB 1-II and then requires the applicants' to go back in time and predict how different switch positions would have affected a reactor trip.</p> <p>3. Stem Focus: Suggest the following</p> <p><i>A reactor startup is in progress on Unit 1 with reactor power at 5×10^8 % on the Intermediate Range.</i></p> <p><i>WOOTF predicts whether a reactor trip will occur for the following Source Range Monitor N-32 Trip Bypass Switch positions if 120VAC Instrument Power Board 1-II subsequently de-energizes?</i></p> <p><u>IF Switch was in "NORMAL"</u> <u>If Switch was in "Bypass"</u></p> |
| 39 | H | 2 | x | x | | | | | | | | | | | B | E | <p>013 K2.01</p> <p>1. Cue: The 1st bullet provides a cue to the applicants that a reactor trip will occur following a loss of VIPB 1-I. IF this is the case (Main Feedwater Pumps go to minimum??), THEN the applicant should be able to deduce a reactor trip occurred without the information in this bullet. How does the loss of VIPB1-I cause a reactor trip?</p> <p>2. Stem Focus: WOOTF predicts how SSPS and ECCS will respond?</p> <p>3. Stem Focus: Re-word the choices to eliminate the word "would" and replace with "will."</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 40 | H | 2 | x | | | x | | | | | | | | N | E | <p>013 K6.01</p> <p>1. Cred Dist: The first part of choice "B" should be the same as "A" to make the question psychometrically balanced. Pick whichever Train A(B) is most plausible and change both choices so that the 1st portion matches.</p> <p>2. Stem Focus: "WOOTF identifies the availability of the swapover logic and the required actions in accordance with Tech Spec 3.3.2.1, Engineered Safety Feature Actuation System Instrumentation?"</p> <p><u>Swapover Logic Status</u> <u>Required Action</u></p> <p>3. Stem Focus: Make the 2nd part of each choice mirror the words in Action 18 as closely as possible, i.e., "<i>Place the 1-LI-63-50 channel in the BYPASSED condition</i>" or "<i>Place the 1-LI-63-50 channel in the TRIPPED condition</i>"</p> <p>4. Verify w/ the licensee's Operations Management that the 2nd part of the question is fair for an RO applicant.</p> |
| 41 | H | 1 | x | | | | | | | | | x | | B | E | <p>022 K1.01</p> <p>1. LOD=1: This question will not discriminate on the exam because without cooling water, any cooler won't work.</p> <p>2. Q=K/A: The K/A match is interesting; however, it is not the normal way to hit the K/A. For example, the applicants' could be tested on their knowledge of how the loss of one train of ERCW would affect the containment cooling system, etc. Testing the applicants' knowledge of whether or not a Tech Spec LCO is met is a different knowledge than a K1 systems knowledge.</p> <p>3. Stem Focus: For choices "C" and "D", identify which valves are isolated by name and #.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 42 | F | 2 | x | | | | | | | | | | | B | E | 025 K4.02 1. Stem Focus: Suggest the following: <i>WOOTF describes how the Ice Condenser Glycol Containment Isolation Valves prevent over pressurization of the piping that penetrates containment when glycol trapped between the valves expands?</i> A. <i>The penetration's INSIDE containment isolation valve disks are modified with a drilled hole.</i> B. <i>The penetrations's OUTSIDE containment isolation valve disks are modified with a drilled hole.</i> C. <i>The penetration's INSIDE containment isolation valve has a bypass line and check valve arrangement</i> D. <i>The penetration's OUTSIDE containment isolation valve has a bypass line and check valve arrangement.</i> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 43 | H | 2 | x | | | | | | | x | | | x | | M | E | <p>026 K3.02</p> <p>1. Stem Focus: Why is the unit only at 10% power initially?</p> <p>2. Stem Focus: The 2nd bullet indicates that 1A-A started, does this mean <i>automatically</i> started?</p> <p>3. #/units: The exact noun name for 72-39 should be used.</p> <p>4. Q=K/A: The question (as proposed) tests the applicants knowledge of when RHR Recirc Spray is removed from service; the K/A requires testing the effects of a loss of CS on RHR Recirc Spray.</p> <p>Suggest the following:</p> <p><i>WOOTF identifies the minimum required Containment Spray flow rate (per train) and one of the required prerequisite conditions for establishing RHR Recirculation Spray Operation in accordance with FR-Z.1, High Containment Pressure?</i></p> <p>A. <i>At least 5000 gpm; At least 1 hour has elapsed since the beginning of the accident</i></p> <p>B. <i>At least 4750 gpm; Containment pressure at least 10 psig</i></p> <p>C. <i>At least 5000 gpm; Containment pressure at least 10 psig</i></p> <p>D. <i>At least 4750 gpm; At least 1 hour has elapsed since the beginning of the accident.</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 44 | H | 2 | x | | | | | | | | | | | M | E | <p>039 G2.1.7</p> <p>1. Stem Focus: In the 1st part of the stem question, re-define "largest reactivity excursion" [to better match the K/A] by providing the plant specific indication that indicates a large reactivity excursion is occurring; i.e., "most rod movement" (if in AUTO) or "Tavg/Tref deviation."</p> <p>2. Stem Focus: In the 2nd part of the stem question, re-word to eliminate the word "would", i.e., WOOTF identifies both 2) ... a condition which requires a manual reactor trip in accordance with AOP-S.05?</p> <p>3. Stem Focus: For choices "A" and "C", re-define "steam leak in excess of 3% power [to better match the K/A] by providing the statement "Final Reactor power is 65%"</p> <p>4. Does current Core Operating Limits Report reflect moderator temperature coefficient much more negative at EOL? (Reference material not provided.) Verify current core on both units.</p> |
| 45 | H | 2 | | | | | | | | | | | | N | U | <p>059 K3.02</p> <p>1. Q=K/A: The correct choice can be determined solely by knowing the MDAFW pump power supply and the AFW flow paths. Because each choice already involves AFW feeding, the applicant is NOT being tested on how AFW is affected by a loss of MFW. Discuss w/ licensee.</p> |
| 46 | H | 2 | x | | | | | | | | | | | B | E | <p>061 G2.1.20</p> <p>1. Stem Focus: The 1st and 2nd bullets can be combined. "Unit 1 was initially operating at 100% power and a reactor trip occurred." (not necessary to specify E-0 in this bullet)</p> <p>2. Stem Focus: " WOOTF identifies the EARLIEST time that AFW can be reset and throttled to less than 440 gpm in accordance with E-0, Reactor Trip or Safety Injection?"</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 47 | F | 2 | x | | | | | | | | | | | M | E | <p>062 K4.02</p> <p>1. Stem Focus: Is it 300 seconds from the time that voltage dipped below 6456v or 300 seconds from the time that the alarms were received? The reference material (OPT200.DG, page 44 of 83) implies that the breaker will trip 300 seconds from the time that the 2/3 relays "see" 6456v. If this is the case, then the choices are not defined well enough. Suggest modifying the question to test applicants knowledge of when the clock starts for the 300 seconds, including the setpoint for sustained degraded voltage.</p> <p>2. Stem Focus: The 2nd and 3rd bullets are somewhat redundant, except for the 30 second delay. Is it necessary to include both bullets?</p> <p>3. IF alarms provided, then put (M26-B, C-7) after the name of the alarm window.</p> <p>4. Stem Focus: Eliminate the word "would" in the stem question and replace with "will."</p> <p>5. Higher or Lower Cog question? Seems lower cog. Discuss w/ licensee.</p> <p><i>Unit 1 & 2 are operating at 100% power.</i></p> <p><i>WOOTF identifies the <u>degraded</u> voltage set point that will automatically trip open the 1B-B 6.9KV Shutdown Board Normal Feeder Breaker?</i></p> <p><i>A. Voltage remains at 93.5% of nominal voltage for at least 30 seconds</i></p> <p><i>B. Voltage remains at 80% of nominal voltage for at least 30 seconds</i></p> <p><i>C. Voltage remains at 93.5% of nominal voltage for at least 5 minutes</i></p> <p><i>D. Voltage remains at 80% of nominal voltage for at least 5 minutes</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 48 | H | 3 | x | | | | | | | | | | | B | E | <p>063 A2.01</p> <p>1. Stem Focus: Choices "A" and "C" are not psychometrically balanced with "B" and "D"; i.e., A and C should have the same 1st portion instead of undervoltage and overvoltage, respectively.</p> <p>2. Stem Focus: The word "correct" (in the stem question) is not necessary to elicit the correct response.</p> <p>3. The 2nd bullet should have parenthesis after the words with (M1-C, A-5)</p> <p><i>Unit 1 is operating at 100% power and the following alarm is received:</i></p> <p>125V DC VITAL BAT BD 1 ABNORMAL (M1-C, A-5)</p> <p><i>WOOTF identifies the reason for this alarm and an expected indication OR required operator action in accordance with the annunciator procedure?</i></p> <p>A. <i>Charger has tripped; EI-57-92 indicates steady current flow below zero</i></p> <p>B. <i>Charger has tripped; EI-57-92 indicates steady current flow above zero</i></p> <p>C. Ground exists; Locally adjust red flag set point to clear the control room alarm</p> <p>D. <i>Ground exists; Sequentially open breakers (one at a time) on the battery board to locate the ground.</i></p> |
| 49 | H | 1 | | | | | | | | | | | | B | U | <p>064 A4.12</p> <p>1. LOD=1: The proposed question can be answered solely using GFES knowledge without having plant specific knowledge. This portion of the exam is the plant specific portion; therefore, the test item should require the applicants' to know some plant specific knowledge.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 50 | F | 2 | | | | | | | | | | | x | | B | E | <p>064 K6.08</p> <p>1. Q=K/A: The K/A requires the applicant to have knowledge of how a loss of the fuel oil tanks will affect the EDG. The proposed question tells the applicants how the EDG is affected; i.e., it will be declared inoperable.</p> <p><i>WOOTF identifies the MINIMUM required 7-Day Fuel Oil Tank Level on 0-LI-16-38 and the required actions if actual level is less than the minimum required level in accordance with Tech Specs?</i></p> <p>[Reference Provided]</p> <p>A. 4.8 feet; Perform Breaker Surveillance within 1 hour</p> <p>B. 4.3 feet; Restore level to greater than minimum within 1 hour</p> <p>C. 4.8 feet; Restore level to greater than minimum within 1 hour</p> <p>D. 4.3 feet; Perform Breaker Surveillance within 1 hour</p> |
| 51 | H | 2 | x | | | x | | | | | | | | | N | U | <p>1. Ensure no overlap with Q#23</p> <p>2. Cred Dist: "A" and "C" are not plausible because of the 2nd portion (isolation valves must be closed to allow chemistry to take a sample). Common sense dictates that a valve must be opened to obtain a sample.</p> <p>Suggest keeping the 1st portion of the question and revising the 2nd portion to test the applicants' knowledge of how to open the SGBD isolation valves (i.e., what switch position or prerequisite's required to open these valves). If it's simply a switch going to the OPEN position, then test the applicants' knowledge of a rad monitor decision step in E3.</p> <p>3. Stem Focus: The valve numbers are missing from the 2nd portion of the stem question (FCV-1-181?)</p> <p>4. Stem Focus: Replace the word "would" (in the 2nd part of the stem question) with "are required to"</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 52 | F | 2 | x | | | | | | | | | | | B | E | <p>076 A3.02</p> <p>1. Stem Focus: The choices are cumbersome to read and are not psychometrically balanced. Verify w/ licensee that FCV-151 does not ever receive an auto-open SI signal and that Unit 2 SI signal is the same as Unit 1. Suggest the following:</p> <p><i>Unit 2 is operating at 100% power and a valid SI signal is received. WOOTF predicts the automatic response of the following ERCW System Valves?</i></p> <ul style="list-style-type: none"> • 0-FCV-151, CCS OB1 Heat Exchanger Discharge to Header A • 0-FCV-152, CCS OB2 Heat Exchanger Discharge to Header B <p>A. FCV-151 automatically closes FCV-152 automatically throttles to 35% open</p> <p>B. FCV-151 remains as is FCV-152 automatically travels to 100% open</p> <p>C. FCV-151 remains as is FCV-152 automatically throttles</p> <p>D. FCV-151 automatically opens FCV-152 automatically throttles to 35% open</p> <p>2. Verify w/ licensee that IF OPEN, FCV-151 does not ever receive auto closure signal from SI.</p> |
| 53 | F | 2 | | | | | | | | | | | | M | S | 078 K2.02 |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 54 | F | 2 | | | | x | x | | | | | | | | U | <p>103 A2.04</p> <p>1. Cred Dist: "A" and "C" are not plausible because they imply that it's okay to leave people in containment after an irradiated bundle was dropped w/ rad levels rising.</p> <p>2. Partial: An applicant can argue "D" as correct during an appeal because the "immediate area" is not defined well enough to preclude it meaning containment. The 2nd portion can be argued as correct because it's missing the word "automatically", i.e., applicant could argue that the word "verify" means manual actuation.</p> <p>Suggest the following:</p> <p><i>An irradiated fuel assembly has been dropped in containment during a refueling outage.</i></p> <p><i>WOOTF identifies the MINIMUM required areas to be evacuated and a MINIMUM required actions in accordance with AOP-M.04, Refueling Malfunctions?</i></p> <p>A. All personnel inside containment must be evacuated; however, personnel on elevation 734' in the Aux Building are NOT required to be evacuated.</p> <p><i>At least ONE door must be closed in both upper and lower containment air locks.</i></p> <p>B. All personnel inside containment AND on elevation 734 in the Aux Building are required to be evacuated.</p> <p><i>BOTH doors must be closed in both upper and lower containment air locks.</i></p> <p>C. All personnel inside containment must be evacuated; however, personnel on elevation 734' in the Aux Building are NOT required to be evacuated</p> <p><i>BOTH doors must be closed in both upper and lower containment air locks.</i></p> <p>D. All personnel inside containment AND on elevation 734 in the Aux Building are required to be evacuated.</p> <p><i>At least ONE door must be closed in both upper and lower containment air locks.</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 55 | H | 2 | | | | | | | | | | x | | | B | E | <p>103 A3.01</p> <p>1. Backwards Logic: The proposed question presents a series of events and requires the applicants' to look back to determine whether the events were correct. Ideally, the question should present the applicants with a set of plant conditions and then test the applicants' ability to predict (forward thinking) what will happen (versus what should have happened.)</p> <p><i>A manual Safety Injection (SI) signal was initiated on Unit 2. The following plant conditions currently exist:</i></p> <p><i>Containment Purge Rad Monitors:</i></p> <ul style="list-style-type: none"> ▪ 2-RM-90-130: HI alarm ▪ 2-RM-90-131: not in alarm <p><i>Phase A signal: RESET</i> <i>SI Signal: NOT RESET</i></p> <p><i>WOOTF predicts how the Containment Ventilation Isolation (CVI) System will respond and how the CVI signal must be reset?</i></p> <p>A. ONLY an "A" Train isolation will occur; The CVI signal can be reset with the SI signal present</p> <p>B. ONLY an "A" Train isolation will occur; The SI signal MUST be reset FIRST before the CVI signal can be reset</p> <p>C. Both "A" and "B" Trains will isolate; The CVI signal can be reset with the SI signal present</p> <p>D. Both "A" and "B" Trains will isolate; The SI signal MUST be reset FIRST before the CVI signal can be reset</p> |
| 56 | H | 2 | | | | | | | | | | | | | B | S | <p>001 K2.05</p> <p>1. Ask the licensee whether the phrase "by relay operation" has a significant meaning to this question.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 57 | F | 2 | | | | | | | | | | | x | | B | E | <p>014 A4.01</p> <p>1. Q=K/A: The proposed questions tests the applicants' <i>knowledge</i> of the <i>reason</i> for adjusting the Control Bank D group 2 step counter to zero steps before withdrawing a dropped rod. The question should test the applicants' <i>ability</i> to operate or monitor the rod selection controls.</p> <p>For example, Suggest a 2-part question which tests the applicants 1) knowledge of what was required prior to withdrawing the rod (adjust group step counter for all control bank D group 2 rods to zero {versus adjusting all except H-8} AND 2) ability to withdraw the rod place the bank control selector switch to Bank D {versus some other plausible distractor}.)</p> <p>2. Ensure no overlap with scenarios or JPMs</p> |
| 58 | F | 2 | | | | x | | | | | | | | | | E | <p>015 A3.05</p> <p>1. Cred Dist: "C" and "D" are not plausible because these actions are manually performed. Suggest keeping "A" and "B" and converting to a 2-part question. Alternatively, suggest the following; <i>WOOTF identifies how the Control Room Audio Count Rate sound occurs following a reactor trip?</i></p> <p>A. Sound is AUTOMATICALLY triggered only after both N-35 & N-36 are less than 10⁻⁴ % power.</p> <p>B. Sound is AUTOMATICALLY triggered only after 3 out of 4 of the Power Range detectors are less than 10%</p> <p>C. Sound is MANUALLY initiated only after the Level Trip Bypass Switches are placed in the NORMAL position.</p> <p>D. Sound is MANUALLY initiated only after SRM Trip Reset Block Switches are placed to the RESET position.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 59 | F | 2 | | | | x | x | | | | | | | B | E | <p>016 K5.01</p> <p>1. Partial: "C" can also be argued as correct; especially since none of the training reference materials describe the purpose of the isolation amplifier. Is this description provided in an I&C lesson plan? Ask licensee to provide reference that describes purpose and function of isolation amplifier to ensure "C" is incorrect. If reference not available, then re-work question.</p> <p>2. Cred Dist: "B" is not plausible because the word Isolation Amplifier cannot mean that containment pressures are protected. Suggest testing the logic diagram associated with ¼ pressurizer pressure channels used for SI versus all 4 pressurizer channels used for control and work into the question the separation of control and protection circuits.</p> <p>3. IF the isolation amplifier is inoperable, does tech specs require declaring the channel inoperable?</p> |
| 60 | F | 2 | x | | | | | | | | | | | N | S | <p>017 A2.01</p> <p>1. Stem Focus: The 2nd part of each choice is confusing because it focuses the applicants on the "Train" instead of the "Quadrant." Since Tech Specs focuses on the requirements for each Quadrant, re-work the 2nd part of each choice to begin with Each Quadrant must have a minimum of</p> <p>2. Stem Focus: Provide the annunciator this way: INCORE TEMP MONITORING SYSTEM TROUBLE (M4-B, A-3)</p> <p>3. Licensee designated as higher order. Discuss whether this may qualify as lower cog since both parts of the question are fundamental knowledge items. (Seems like exam has many higher cog questions)</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 61 | H | 2 | x | | | | x | | | | | | | | B | E | <p>029 A1.02</p> <p>1. Cred Dist: "C" and "D" are not plausible because the 90-106 is not a purge rad monitor.</p> <p>2. Stem Focus: The 2 column format is confusing with the 90-106 heading. Suggest the following:</p> <p>3. Stem Focus: Provide a procedure section which is in effect for the purge activity.</p> <p><i>Unit 1 is operating at 100% power and a lower containment purge in in progress in accordance with 1-SO-??.</i></p> <p><i>WOOTF identifies:</i></p> <p><i>1) the minimum required logic to initiate an automatic containment ventilation isolation signal and</i></p> <p><i>2) whether the 1-RM-106, Lower Containment Radiation Monitor control board indication remains valid after the isolation signal?</i></p> <p><i>Note: 1-RM-90-130 & 131, Containment Purge Rad Monitors</i></p> <p><i>A. BOTH rad monitors (90-130 & -131) must reach the high setpoint for an automatic CVI; 1-RM-106 indication is still VALID after the CVI occurs</i></p> <p><i>B. BOTH rad monitors (90-130 & -131) must reach the high setpoint for an automatic CVI; 1-RM-106 indication is NOT valid after the CVI occurs</i></p> <p><i>C. ONLY one rad monitor (90-130 OR -131) reaching its high setpoint will result in an automatic CVI; 1-RM-106 indication is still VALID after the CVI occurs</i></p> <p><i>D. ONLY one rad monitor (90-130 OR -131) reaching its high setpoint will result in an automatic CVI; 1-RM-106 is NOT valid after the CVI occurs</i></p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 62 | F | 2 | | | | x | | | | | | | | B | E | <p>033 G2.4.21</p> <p>1. Tough K/A to hit, but achievable.</p> <p>2. Cred Dist: "C" and "D" are not plausible because there is no such thing as a minimum temperature for refueling.</p> <p>Suggest a 2-part question which tests the applicants' knowledge of 1) the temperature value associated with cavitation (i.e. the safety function status) and 2) the reason for the temperature limitation (cavitation)</p> <p><i>WOOTF completes the following statement in accordance with the caution listed in AOP-M.06, Loss of Spent Fuel Cooling?</i></p> <p><i>IF the spent fuel pit temperature is greater than _____, THEN _____ could occur.</i></p> <p>A. 192°F; excessive gassing from the SFP</p> <p>B. 192°F; SFP pump cavitation</p> <p>C. [another plausible temperature] °F; excessive gassing from the SFP</p> <p>D. [another plausible temperature] °F; SFP pump cavitation</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 63 | H | 3 | x | | | | | | | | | | x | | M | E | <p>034 K6.02</p> <p>1. Q=K/A: Because there are no rad monitoring systems whose loss or malfunction directly affects one of the fuel handling systems (grapple, polar crane, etc.), THEN this K/A is match is borderline, but is acceptable since the fuel handling activity depends on the operability of the control room rad monitors.</p> <p>2. Stem Focus: Because LCO typically means limiting condition of operation, technically the correct phrase should be "require entry to an action statement."</p> <p>3. Stem Focus: The 3rd bullet can be more precise by simply stating that the monitor had failed, i.e., "due to an instrument malfunction" may imply more that was intended.</p> <p>4. Stem Focus: Convert to 2 fill-in-the-blank statements.</p> <p><i>Given these conditions, WOOTF choices completes both statements?</i></p> <p><i>Unit 1 Tech Spec 3.3.3.1, Radiation Monitoring Instrumentation, contains an action statement that _____ to be entered.</i></p> <p><i>With the 0-RM-90-125 failed, irradiated fuel shuffles in the spent fuel pool _____.</i></p> <p>A. is required; may still continue</p> <p>B. is required; are not allowed</p> <p>C. is NOT required; may still continue</p> <p>D. is NOT required; are not allowed</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 64 | F | 2 | x | | | | | x | | | | | | M | E | <p>035 K4.01</p> <p>1. Stem Focus: The 1st portion of each choice inappropriately mixes the reason for the 33% setpoint value and the 44% setpoint value. The 1st part of the stem question asks the applicant for the design bases criteria for the entire level control program whereas the 1st part of each choice presents the applicants with the basis for both setpoints intermingled. This may cause confusion. Suggest testing either the basis for the 33% or 44% setpoint (not both); i.e., 33% is steam line break, 44% is shrink and swell accommodations.</p> <p>2. Stem Focus: The 2nd part of the stem question seems like it would be better as the 1st part, i.e., test applicants' knowledge of where the level control program setpoint is derived FIRST..and then test the basis for the setpoint.</p> <p>3. Stem Focus: The basis portion of the question is in accordance with what document?</p> <p>4. Q=K/A: Since the program level setpoint is a design feature, then this question hits the K/A. (No interlock is being tested>>okay)</p> <p>5. Job-Link: Will the Unit 2 modification still have the same basis for the SG program setpoint values? Discuss w/ licensee.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 65 | F | 2 | x | | | | | | | | | | x | | N | E | <p>056 K1.03</p> <p>1. Q=K/A & Stem Focus: The proposed question does not "directly" test the cause effect relationship of the <u>condensate system</u> to the MFW system even though seal injection taps off of the condensate system. Suggest the following to hit the 1st part of the K/A and also to streamline the question:</p> <p><i>WOOTF choices completes both statements?</i></p> <p><i>The Main Feedwater Pump Seal Water Injection System taps off of the condensate system _____.</i></p> <p><i>A sustained condition with low seal water _____ will cause a MFW Pump to automatically trip.</i></p> <p>A. between the condensate and condensate booster pumps injection pressure at 220 psig</p> <p>B. between the condensate and condensate booster pumps differential pressure at 10 psid</p> <p>C. downstream of the condensate booster pumps injection pressure at 220 psig</p> <p>D. downstream of the condensate booster pumps differential pressure at 10 psid</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 66 | H | 3 | | | | x | | | | | | | x | | | E | <p>G2.1.19</p> <ol style="list-style-type: none"> Q=K/A: Because the last part of the 3rd bullet tells the meaning of the alarm, the K/A is not being tested, i.e., the applicants must be tested on their ability to use the plant computer. IF the computer alarm is presented differently on the screen, THEN the question, as proposed, tests the applicants' knowledge of the AFD Tech Specs but doesn't test their ability to use the plant computer. Ask the licensee to show the computer screen being tested during prep week. Discuss whether or not all of the words in the 3rd bullet are provided in the computer alarm screen. Suggest either taking out the last part of the 3rd bullet OR providing them with a copy of the plant computer screen that provides the AFD alarm. Cred Dist: The plausibility analysis for "A" [no action required] states that the basis for this choice is if the applicant doesn't recognize that the ICS alarm indicates that at least 2 NIS AFD channels indicate > 50% RTP and outside the acceptable region even though the 3rd bullet already provides this information. |
| 67 | F | 2 | | x | | | | x | | | | | | | M | E | <p>G2.1.32</p> <ol style="list-style-type: none"> Cue: The last part of the 2nd bullet cues the applicant that the shorter time frames (i.e., choice "C", is not correct.) The reason for rolling the diesel is not required to elicit the correct response. Suggest modifying the 2nd bullet as: <i>"2A-A Diesel Generator is being rolled locally in accordance with 0-SO-82-3, Diesel Generator 2A-A prior to the performance of a monthly surveillance."</i> Job-Link: The last part of the 2nd bullet states that the reason for rolling the DG is to "check for water in the cylinders...." Precaution & Limitation O.4 states that rolling the diesel provides assurance that the cylinders are not cracked or do not have a gasket leak for 24 hours. These reasons appear to conflict. Discuss w/ licensee. |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 68 | F | 2 | x | | | x | | | | | | | | N | E | G2.1.40 1. Stem Focus: Ensure that a question is presented in the stem. Suggest the following: <i>WOOTF identifies the reason for this requirement in accordance with 0-GO-9, Refueling Procedure?</i> 2. Cred Dist: Modify one of the incorrect choices to include the words "adequate vent exists.." |
| 69 | H | 3 | x | | | | | | | | | | | B | S | G2.2.40 1. Stem Focus: <i>WOOTF identifies the required actions in accordance with Tech Spec 3.4.9.1, RCS Pressure and Temperature Limits or Tech Requirements Manual TRM 3.4.9.2, Pressurizer Temperature Limits?</i> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 70 | F | 2 | x | | | x | | | | | | | | B | E | <p>G2.2.6</p> <p>1. Stem Focus/Cred Dist: The 1st part of the proposed question is testing the applicants' knowledge of whether the procedure can be performed out of sequence; however, the 2nd part of the question is not solicited in the stem. Consequently, choices "A", "B", and "C" are not plausible because "D" is ALWAYS the right thing to do.</p> <p>Discuss w/ the licensee>> Is there ever a time at Sequoyah when performing procedure steps out-of-sequence is allowed? (other than startup/shutdown procedures) If so, then this situation/procedure needs to be incorporated. If not, then none of the incorrect choices are plausible. Discuss w/ licensee. For example:</p> <p><i>WOOTF identifies whether the procedure steps are allowed to be performed out-of-sequence, including the reason or other required actions?</i></p> <p>A. <i>The procedure steps are allowed to be performed out-of-sequence in this case because this is classified as a "Operator Burden" in accordance with OPDP-1, Conduct of Operations.</i></p> <p>B. <i>The procedure steps are allowed to be performed out-of-sequence in this case because this is classified as a "Operator Challenge" in accordance with OPDP-1, Conduct of Operations.</i></p> <p>C. <i>The procedure steps are NOT allowed to be performed out-of-sequence in this case. A temporary procedure change is required in accordance with SPP-2.2, Administration of Site Technical Procedures.</i></p> <p>D. <i>The procedure steps are NOT allowed to be performed out-of-sequence in this case. A permanent procedure revision is required in accordance with SPP-2.2, Administration of Site Technical Procedures.</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 71 | F | 2 | x | | | | | | | | | | | N | E | <p>G2.3.12</p> <p>1. Stem Focus: Reword the stem as follows:</p> <p><i>WOOTF identifies the incore flux detector requirements listed in 0-SI-OPS-000-011.0, Containment Access Control During Modes 1 – 4, for an entry into lower containment or the annulus?</i></p> <p><u>Required Incore Flux Detector Placement</u> <u>Tagged with a ...</u></p> |
| 72 | F | 2 | | | | x | x | | | | | | | B | U | <p>G2.3.5</p> <p>1. Cred Dist: "A", "B", and "C" are not plausible because the stem asks for the specific leaking SG and these choices each only have one rad monitor listed.</p> <p>2. Partial: An applicant can argue that "A", "B", and "C" are each partially correct because by the operator could use these rad monitors in conjunction with other available indications to determine the specific SG w/ the rupture.</p> <p>Suggest developing a question that tests the applicants knowledge of how a procedure uses a specific rad monitor, i.e., some question related to a threshold value and required action.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 73 | F | 2 | x | | | | | x | | | | | | B | E | <p>G2.3.7</p> <p>1. Stem Focus: The question can be simplified as follows: <i>WOOTF completes the following statement in accordance with the General Requirements in RCI-10, ALARA Program?</i></p> <p><i>The _____ shall approve all Containment Building Entries during periods which are outside the pre-determined Containment Building entry schedule. Approvals shall be documented on an Attachment 06, Containment Building Entry Request/Authorization.</i></p> <ul style="list-style-type: none"> A. <i>Plant Manager</i> B. <i>Radiation Operations Shift Supervisor</i> C. <i>Radiation Protection Manager</i> D. <i>Shift Manager</i> <p>[Question deals with the RWP Request Process for K/A match</p> <p>2. Job-Link: Verify w/ Sequoyah Operations Management that this is RO knowledge.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 74 | F | 2 | x | | | | | x | x | | | | | | N | E | <p>G2.4.28</p> <ol style="list-style-type: none"> Partial and/or Stem Focus: An applicant could argue choices "A" and "D" as potentially correct because these situations (hostile force and lack of security guards) could warrant a <u>conservative</u> implementation of the "2-Person-Line-of-Sight Rule." Since the stem of the question does not specify in accordance with any procedure and this opens up choices "A" and "D" to interpretation. Job-Link: Based on EPIP-8 (Personnel Accountability and Evacuation), Appendix D (Nuclear Security – Assembly and Accountability Actions), it appears that Security makes the call on whether the "2-Person-Line-of-Sight Rule" is required. Discuss w/ licensee. WHO makes the determination whether to implement the rule? IF Security makes the determination, then test the applicants' knowledge of what the "2-Person-Line-of-Sight Rule" means. The SPP-1.3 document was not provided on the reference disk. The one-page excerpt provided with the Draft Written submittal package provides additional guidance listed in the document; however, unable to research w/o the reference. Suggest writing a fill-in-the-blank question format: <i>WOOTF completes both of the following statements in accordance with EPIP-8, Personnel Accountability & Evacuation?</i> <i>During a _____, the "2-Person-Line-of-Sight Rule" is required.</i> <i>The "2-Person-Line-of-Sight Rule" requires that _____.</i> <ol style="list-style-type: none"> <i>Radiological Emergency; all persons in vital areas must remain in visual contact with another person and the two persons also must possess similar skills or knowledge</i> <i>Radiological Emergency; all persons in vital areas must remain in visual contact with another person but the two persons do NOT have to possess similar skills or knowledge.</i> <i>Credible Insider Threat; ditto "A"</i> <i>Credible Insider Threat; ditto "B"</i> [Verify w/ licensee that 2-Person-Line-of-Sight Rule is never applicable during only a radiological emergency.] |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 75 | H | 2 | x | x | | x | | | | | | | | M | E | <p>G2.4.46 075</p> <ol style="list-style-type: none"> 1. Cred Dist: "C" and "D" are not plausible because stem asks for the correct operator response and the 2nd parts of these choices don't provide any response ("monitor" is not a response). 2. Cue: The word "remain" in the 6th bullet is a cue that something has failed to re-position. 3. Stem Focus: The word "correct" in the stem question should be "required." <p>Suggest developing a 2 part question that tests 1) the applicants knowledge of the M6-E, E-4 alarm setpoint and 2) a CNTMT Sump alarm which is consistent with the required conditions for the auto-swapover logic to occur.</p> <ol style="list-style-type: none"> 4. Verify no overlap exists with SRO Q#78. |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 76 | H | 2 | x | | | | | | | | | | | M | E | <p>007 EA2.04</p> <ol style="list-style-type: none"> 1. Stem Focus: The choices ("A", "B", "C" & "D") seem unbalanced. "A" and "B" have an action. The correct answer ("C") includes a contingent portion [<i>"if conditions remain the same"</i>] which is confusing. See suggestion below. 2. Stem Focus: The stem question does not ask the applicant to determine the "reason" for the response even though choices "A" and "B" include a reason. Either provide a reason for all choices or eliminate the reasons provided in "A" and "B." 2. Stem Focus: 1st bullet should say Unit 2 WAS operating at 100% power with the TDAFW Pump tagged out of service. 3. Stem Focus: 2nd bullet is missing an "s" after the word "attempt" and the word unsuccessful is misspelled. Additionally, the 2nd bullet is missing the word "trip" after the word manually. 4. Stem Focus: Add the words "and stable" to the RCS pressure <p><i>Unit 2 was operating at 100% with the TDAFW Pump tagged out when a valid trip signal occurred; however, the reactor did not trip. All attempts to manually trip the reactor from the MCR were unsuccessful. The crew entered E-0 and the immediate operator actions of FR-S.1, Nuclear Power Generation/ATWS, have been completed. The following plant conditions currently exist:</i></p> <ul style="list-style-type: none"> • Maximum available AFW flows: 195, 220, 0, 0 • NR SG Levels: 0%, 0%, 0%, 0% • RCS Pressure: 2285 psig and stable • Emergency Boration Flow: 45 gpm from the BAT • Reactor Power: 19% <p><i>"Given the above conditions, WOOTF identifies the required actions, in accordance with FR-S.1, Nuclear Power Generation/ATWS?</i></p> <p><i>A. Do NOT perform the actions of FR-H.1; RCPs are allowed to be tripped</i></p> <p><i>B. Perform the actions of FR-H.1; RCPs are NOT allowed to be tripped</i></p> <p><i>C. Do NOT perform the actions of FR-H.1; RCPs are NOT allowed to be tripped</i></p> <p><i>D. Perform the actions of FR-H.1; RCPs are allowed to be tripped</i></p> <p>[SRO-only: Procedure Selection]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 77 | H | 2 | x | | | | | x | x | | | | | | M | E | <p>009 EG2.4.20</p> <p>1. Job-Link/Minutia: The premise of the question is for the applicants' to <i>infer</i> that pressurizer level and subcooling will lower [during the RCP startup] based on the wording of the NOTE preceding another step that commences depressurization. [NOTE: Upper head voiding may occur during RCS depressurization if no RCPs are running. This may result in rapidly <i>rising</i> pressurizer level.]</p> <p>This note doesn't state that pressurizer level will <i>decrease</i> when the RCP is started. Verify exact conditions in the stem on the simulator yield lowering level during a RCP startup. What pressure ranges [on the simulator] show a lowering level when the RCP is started after a depressurization? Is this documented? Need to discuss w/ licensee to ensure that this question has a correct answer.</p> <p>2. Stem Focus: The 1st phrase ["Given the following:"] and 1st bullet can be streamlined, i.e., suggest combining into "A small break LOCA has occurred on Unit 1 and the following conditions currently exist." Also, the stem question is cumbersome because it is a lengthy 2 part question.</p> <p>3. Stem Focus: Also, the wording of the P&L listed in the normal system operating procedure should align with the [incorrect] choices "B" and "D."</p> <p>Suggest the following:</p> <p>WOOTF identifies the next required procedure and the operational implication of a NOTE in this procedure prior to starting an RCP?</p> <p>A. ES-1.1; A steam bubble is required in the Pressurizer to minimize the pressure transient when cold water injected by the charging pump is circulated in the RCS during the RCP startup</p> <p>B. ES-1.1; A steam bubble may exist in the Reactor Vessel Upper Head which could result in lowering Pressurizer level indication and lowering subcooling margin during the RCP startup</p> <p>C. ES-1.2; A steam bubble is required in the Pressurizer to minimize the pressure transient when cold water injected by the charging pump is circulated in the RCS during the RCP startup</p> <p>D. ES-1.2; A steam bubble may exist in the Reactor Vessel Upper Head which could result in lowering Pressurizer level indication and lowering subcooling margin during the RCP startup</p> <p>[SRO-only: Procedure Selection]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 78 | F | 2 | x | | | | | | | | | | | N | E | <p>011 EA2.07</p> <p>1. Stem Focus: The annunciator should be for the "B-B" Pump, this may be a typo.</p> <p>2. Stem Focus: The first five bullets can be combined as follows:</p> <p>3. Stem Focus: The 2nd part of each choice is confusing because of the implied sequence of procedures. Suggest the following:</p> <p><i>Unit 2 was operating at 100% power with the 2A-A RHR Pump out of service when a LOCA occurred. The reactor was tripped and a safety injection was actuated.</i></p> <p><i>WOOTF identifies how a loss of CCS cooling to the 2B-B RHR Pump seal water heat exchanger will affect continued pump operation and the required procedure for these plant conditions when RWST level lowers to 27%?</i></p> <p>Note:</p> <p><i>ES-1.3, Transfer to RHR Containment Sump</i></p> <p><i>ECA-1.1, Loss of RHR Sump Recirculation</i></p> <p>A. 2B-B RHR Pump can run indefinitely; ES-1.3</p> <p>B. 2B-B RHR Pump must be immediately removed from service; ES-1.3</p> <p>C. 2B-B RHR Pump can run indefinitely; ECA-1.1</p> <p>D. 2B-B RHR Pump must be immediately removed from service; ECA-1.1</p> <p>[SRO-only: Procedure Selection]</p> <p>Note: Ensure that placing 27% in the stem does not provide a cue to another test item on the RO or SRO exam. Verify no overlap w/ RO Q#75.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 79 | H | 2 | x | | | | | | | | | | x | N | E | <p>026 AA2.02</p> <p>1. SRO-only: The 2nd portion of the choices doesn't meet the "procedure selection" requirement of 10CFR55.43(b) for SRO applicants because all choices say "appropriate section of 0-SO-70-1, CCWS "B" Train". The 2nd portion of the choices should ideally require the applicants' to pick a procedure section. 0-SO-70-1, Precaution & Limitation "M" states that the C-S Pump throw over switch alignment to the Train A power supply eliminates the load shedding features thus rendering the DG inoperable; therefore, an RO applicant can deduce that "A" and "C" are not correct. [RO's are responsible for P&Ls] Furthermore, the "B" choice can be eliminated solely by knowing the power supply to the C-S pump. "A", "B" and "C" can all be eliminated using RO knowledge. See Suggestion below.</p> <p>2. The Stem question is cumbersome because it is a lengthy 2 part question.</p> <p>Suggest the following:</p> <p><i>Both units are operating at 100% power with all equipment normally aligned.</i></p> <p><i>WOOTF identifies 1) the cause of a loss of CCS Train "B" on both units and 2) the required procedure to restore the Train B cooling in accordance with AOP M.03,</i></p> <p>A. 480 V SD Board 1A2-A; 0-SO-70-1, Section 8.6, Swapping C-S Pump Power Supplies</p> <p>B. 480 V SD Board 1A2-A; 0-SO-70-1, Section 8.7.1, Swapping 1B-B CCS Pump From "A" Train Service to "B" Train Service and Re-aligning 2B-B CCS Pump to Unit 2, "A" Train Service</p> <p>C. 480 V SD Board 2B2-B; 0-SO-70-1, Section 8.6, Swapping C-S Pump Power Supplies</p> <p>D. 0-SO-70-1, Section 8.7.1, Swapping 1B-B CCS Pump From "A" Train Service to "B" Train Service and Re-aligning 2B-B CCS Pump to Unit 2, "A" Train Service</p> <p>[SRO-only: Procedure Selection]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 80 | F | 2 | x | | | | | | | | | | x | | N | E | <p>056 AG2.1.19</p> <p>1. Q=K/A: This K/A was discussed per telecom on 11/2/09 because it seemed to be a difficult one to hit. Licensee explained that although a switchyard diagram on the plant computer existed, it wasn't "active" and couldn't be used to determine offsite power breaker position. Chief Examiner suggested to write question testing the SRO applicants' ability to use the process computer to determine <u>any</u> equipment's status following a LOOP.</p> <p>Licensee subsequently provided 2-part question to test SRO applicants' knowledge of 1) the Unit 1 & 2 plant computers availability following a dual unit trip (LOOP) and 2) the preferred source of offsite power IAW AOP-P.01.</p> <p>Neither of these items test the applicants' ability to <u>use</u> the plant computer to evaluate a system status; therefore, the K/A match is "soft."</p> <p>Suggest writing the question that involves a LOOP (similar to what is already proposed) and then require the applicants to <u>use a provided screen picture of a system , component, or parameter</u> to determine an E-plan or EOP procedure selection. Alternatively, test the applicants' knowledge of NRC reportability requirements following a LOOP, when the SRO applicant must use a provided screen picture of a system, component, or parameter.</p> <p>2. Stem Focus: The fifth bullet is not necessary to elicit the correct response.</p> <p>3. Stem Focus; The stem question is lengthy, consider the use of a fill-in-the-blank statement.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 81 | H | 2 | x | | | | x | | | | | | x | N | E | <p>077 AG2.2.44</p> <p>1. SRO-only: The question provides a <i>normal</i> 161KV voltage and then tests the applicants' ability to determine operability of the 161KV System. The question should provide at least one <u>ABNORMAL</u> condition and then test the SRO applicants' ability to determine operability of the 161 KV. This question does not seem operationally valid since the voltage is normal, i.e., why is the dispatcher calling to say a RED condition exists when everything is normal? Would he be normally providing the parameter of concern? Discuss w/ the licensee.</p> <p>Suggest providing switchyard voltage/VAR information and require the applicant to apply this information SECTION F of GOI-6 to determine operability and/or reportability per SPP-3.5.</p> <p>3. Stem Focus: For the 1st portion of the stem question, re-word as follows: "<i>WOOTF identifies the required procedure for the crew to implement and the immediate operability status of the offsite power source?</i>"</p> <p>4. Partial: Is it wrong for an applicant to pull out AOP-P.01 and refer to the procedure? IF the procedure was implemented, would any actions be taken based on the current plant conditions? An applicant may be able to argue "C" as correct.</p> <p>Ensure no overlap w/ RO Q#16</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 82 | H | 2 | | | | | | | | | | | x | N | E | <p>005 AG2.4.46</p> <p>1. SRO-only: The proposed test item is borderline with respect to linkage to 10CFR55.43(b) (5) [procedure selection]. The basis for the SRO-only tie is presumably the level of recall associated with when power is > or < 75% [step 10 in AOP-C.01]. Since ROs are normally responsible for all plant conditions that require an immediate reactor trip, then this question is borderline with respect to SRO-only. Additionally, the action to restore the rod is a 1 hour action statement in accordance with TS 3.1.3.1, which is RO knowledge.</p> <p>Suggest the following:</p> <p>Consider the following annunciator:</p> <p>COMPUTER ALARM ROD DEV & SEQ NIS PWR RANGE TILTS (M4-B, D-4)</p> <p>WOOTF identifies the 1) rod misalignment setpoint for the alarm and 2) the corresponding Tech Spec (TS) surveillance requirement(s) that require(s) this annunciator to be operable?</p> <p>Note: TS 3.2.1 Power Distribution Limits – Axial Flux Difference TS 3.2.4 Power Distribution Limits- Quadrant Power Tilt Ratio</p> <p>A. A MINIMUM of at least a 12 step difference between the actual rod position and the bank demand counter; Alarm function fulfills surveillance requirement ONLY for TS 3.2.1</p> <p>B. A MINIMUM of at least a 12 step difference between the actual rod position and the bank demand counter; Alarm function fulfills surveillance requirement for BOTH TS 3.2.1 and TS 3.2.4</p> <p>C. GREATER than a 12 step difference between the actual rod position and the bank demand counter; Alarm function fulfills surveillance requirement for BOTH TS 3.2.1 and TS 3.2.4</p> <p>D. GREATER than a 12 step difference between the actual rod position and the bank demand counter; Alarm function fulfills surveillance requirement ONLY for TS 3.2.1</p> <p>[SRO-only: Tech Specs]</p> <p>Note: Verify that this one alarm is linked to SR for both TS w/ licensee.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 83 | H | 2 | x | | | x | x | | | | | x | | x | M | U | <p>024 AA2.01</p> <p>1. This test question overlaps with the Simulator JPM [005 Inoperable/Stuck Control Rod [001 Emergency Boration (alt path)]. Either modify the test question or replace the JPM (safety function 1)</p> <p>2. SRO-only: The basis for the SRO-only tie is presumably the procedure selection associated with either Section 4.2 (BAT) or Section 4.3 (RWST); however, because these choices are linked to an RO knowledge associated with the <i>required minimum injection rate</i> for emergency boration, the SRO procedure selection aspect is actually not being tested, i.e., if he knows the minimum required injection rate for emergency boration, then he doesn't need to know what section of the procedure is required. [Knowing that switch has no seal-in feature is RO systems knowledge.]</p> <p>3. Partial: "A" and "B" are technically identical distracters.</p> <p>4. Cred Dist: IF the 1FCV-62-138 MOV breaker compartment does not have a thermal overload reset feature, THEN "A" and "B" are not plausible because a magnetic trip of the circuit breaker would remove the RED/GREEN indication.</p> <p>5. Stem Focus: The 3rd bullet should be more precisely worded (to ensure applicants' know that the switch wasn't held long enough) as follows: "After the OATC placed 1-HS-62-138A, Emergency Boration FCV, to the OPEN position, he immediately released the hand switch as soon as he observed flow on 1-FI-62-137A, Emergency Boration Flow Indicator."</p> <p>6. Backward: The words "would be" in choices "C" and "D" are futuristic and the question is asking the applicant to predict what happened in the past (valve stopped moving) instead of predicting the expected response.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 84 | H | 2 | X | | | | | x | | | | | | N | E | <p>033 AA2.03</p> <p>1. This question overlaps with Q#38 because it involves essentially the same knowledge associated with how the high flux reactor trip output feature is affected by a loss of control power.</p> <p>2. Cue: The 2nd part of the stem question cues the applicant that N35 is also required by TS 3.3.3.7. Plausibility of 7 day LCO (before plant shutdown required)</p> <p>3. Stem Focus: The word "would" [in the 1st portion of the stem question] is confusing. Also, the word MINIMUM should be incorporated to the stem question to add plausibility to "A" and "C" choices. Suggest the following:</p> <p><i>Unit 1 is at 40% power and NI-35 fails due to one blown fuse.</i></p> <p><i>WOOTF NI-35 drawer circuit indications prevents the high flux reactor trip output signal from being manually bypassed and identifies the MINIMUM required actions in accordance with Tech Specs?</i></p> <p>A. <i>Control Power light is dark; Power operation can continue indefinitely with NI-35 inoperable</i></p> <p>B. Control Power light is dark; NI-35 must be restored operable within 30 days or be in Hot Standby within the next 6 hours.</p> <p>C. <i>Instrument Power light is dark; Power operation can continue indefinitely with NI-35 inoperable</i></p> <p>D. <i>Instrument Power light is dark; NI-35 must be restored operable within 30 days or be in Hot Standby within the next 6 hours.</i></p> <p>[SRO-only: Tech Specs]</p> <p>Note: Ask the licensee to explain the fuse circuitry to assure that the high flux reactor trip output signal cannot be manually bypassed even though only one fuse is blown.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 85 | H | 3 | x | | | | | | | | | | | N | E | <p>074 EG2.2.44</p> <p>1. Stem Focus: To ensure that the applicants know that the SG levels dropped to < 10% during the depressurization, suggest the following changes:</p> <p><i>A LOCA occurred on Unit 1 and core exit T/C temperatures exceeded 1200 deg F. The crew has performed the following actions:</i></p> <ul style="list-style-type: none"> • RCPs #1 and #2 have been started • SG depressurization has been commenced <p><i>During the depressurization, the following conditions were noted:</i></p> <ul style="list-style-type: none"> • All SG NR levels dropped to < 10% • Core exit T/Cs indicate 1210 deg F and lowering <p><i>WOOTF choices completes both of the following statements in accordance with FR-C.1, Inadequate Core Cooling?</i></p> <p><i>The depressurization of the SGs _____ and the required action is to _____.</i></p> <p>A. is required to continue; enter SACRG-1, Severe Accident Control Room Guideline Initial Response</p> <p>B. is required to continue; remain in FR-C.1, Inadequate Core Cooling</p> <p>C. is NOT allowed to continue; enter SACRG-1, Severe Accident Control Room Guideline Initial Response</p> <p>D. is NOT allowed to continue; remain in FR-C.1, Inadequate Core Cooling</p> <p>[SRO-only: Procedure Selection]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 86 | H | 2 | x | | | | | | | | | | | M | E | <p>005 AG2.4.40</p> <p>1. Stem Focus: Ensure that the RCS temperature is Tav_g to comply with the modes definitions.</p> <p>2. Stem Focus: The 1st, 5th, and 6th bullets can be combined to streamline the chronology of events.</p> <p>3. Stem Focus: The 1st part of the stem question asks for the status of the LCO but the choices only provide action statements...suggest the following to also test applicants' knowledge of modes and LCO actions applicable to certain modes:</p> <p><i>Unit 1 is shutdown with Tav_g at 170 deg F with all RCS loops filled and all RCPs OFF.</i></p> <p><i>The 1A RHR Pump was initially in service; however the pump tripped and the crew subsequently placed Train B RHR in service. Current SG levels are:</i></p> <ul style="list-style-type: none"> • SG#1 at 8% WR • SG#2 at 15% WR • SG#3 at 9% WR • SG#4 at 6% WR <p><i>WOOTF identifies the MINIMUM required action (if any) in accordance with Tech Spec 3.4, Reactor Coolant System and also identifies the Tech Spec basis for the requirement that one RHR loop be in operation for this plant mode?</i></p> <p>A. No required action; Provides sufficient core decay heat removal in the event of a bank withdrawal accident</p> <p>B. No required action; Ensures that any reactivity changes associated with boron reduction are within the capability of operator recognition and control</p> <p>C. Immediately raise one SG level > 10% WR; Provides sufficient core decay heat removal in the event of a bank withdrawal accident</p> <p>D. Immediately raise one SG level > 10% WR; Ensures that any reactivity changes associated with boron reduction are within the capability of operator recognition and control</p> <p>[SRO-only: Tech Spec Bases]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 87 | H | 2 | x | | | | | | | | | | x | N | U | <p>012 G2.4.11</p> <p>1. SRO-only: The basis for the SRO-only tie is presumably the procedure selection associated with either selecting an appendix in the procedure or notifying MIG to evaluate the Eagle 21 lockup. However, the question can be answered solely using systems knowledge since there are no bistables lit (as stated in the stem); consequently, this is NOT a loop control processor failure. Extra info is contained in the second part of each answer choice allowing the question to be answered using RO knowledge.</p> <p>One area of SRO level knowledge is knowledge of the content of the procedure versus knowledge of the procedure's overall mitigative strategy or purpose. The proposed question does not provide for procedure selection and only tests the AOP-I.01's overall mitigative strategy (RO knowledge).</p> <p>Suggest modifying this question to keep the 1st part (which section of the AOP-I.01 is required) but also incorporate an instrument failure and test the SRO applicants' knowledge of the required Tech Spec 3.3.1 actions, not to overlap with any scenario event. Also...possible suggestion is:</p> <p>A. (1) same as original question (2) Implement Appendix in the AOP</p> <p>B. (1) same as original question (2) Notify MIG</p> <p>2. Stem Focus: If an annunciator(s) is referred to in any part of the question, use the EXACT wording engraved on Alarm Window (also specified in ARP) followed by parentheses containing the shortest possible abbreviated window location designation of which applicants are familiar. This ensures no misunderstanding as to the alarm being referenced. For example: (M-6A, C-3)</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 88 | H | 2 | x | x | | | | | | | | | | M | E | <p>039 A2.02</p> <p>2.Cue: The 2nd bullet provides a cue to the applicant regarding the required action per TS 3.7.1, i.e., "reduction in the PR high flux trip setpoint." This can be eliminated by stating that "all required actions in accordance with TS 3.7.1 have been taken."</p> <p>3. Stem Focus: Re-word the 2-part stem question as follows: <i>"WOOTF predicts the turbine load response to the relief valve leakage (prior to maintenance gagging activities) and identifies any additional required actions in accordance with TS 3.7.1?"</i></p> <p>4.Stem Focus: The first part of each choice (A thru D) should state either "turbine load will remain constant"....or "turbine load will lower", i.e., no need for the governor valve response portion in each choice.</p> <p>5. Stem Focus: The words "would be" in the 2nd part of each choice should be replaced with "no additional required actions for TS 3.7.1" or "the Power Range Neutron Flux High Setpoint must be adjusted."</p> <p>6. Stem Focus: The 3rd bullet is vague with respect to the slang term "leaking through." Try to use the words from the AOP, e.g., abnormal leakage, etc.</p> <p>7. Stem Focus: The fourth bullet is not necessary to elicit the correct response.</p> <p>8. Stem Focus: The 1st bullet is grammatically loose, i.e., <i>Unit 1 at .</i></p> <p>9. Stem Focus: The 2nd bullet should be past tense, i.e., "setpoint was reduced"</p> <p>[SRO-only: Tech Specs]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|----------------------|----------|---------|---------|----------|-------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | | | | SRO Only |
| 89 | H | 2 | x | | | x | | | | | | | | N | E | <p>064 A2.16</p> <p>1. References provided to applicant: Discuss providing the entire Section 1 of EPIP-1 to the applicants (instead of only providing page 21 of 47). By only providing one page, this may cue the applicant where to look for the answer to the E-plan classification. Discuss w/ licensee. The loss of power lasting greater than 15 minutes may be sufficient (without a reference) to elicit applicants' recall that a NOUE is required. Discuss w/ licensee.</p> <p>2. Cred Dist: "C" and "D" do not appear plausible because why would the engine trip following a over current relay actuation? More logical to assume that the engine would continue to run unloaded. Suggest modifying the 1st portion of each choice as follows:</p> <p style="padding-left: 40px;">A. <i>Bkr 1912 will trip open & re-close; Alert</i></p> <p style="padding-left: 40px;">B. <i>Bkr 1912 will trip open & re-close; NOUE</i></p> <p style="padding-left: 40px;">C. <i>Bkr 1912 will trip open & remain open; ALERT</i></p> <p style="padding-left: 40px;">D. <i>Bkr 1912 will trip open & remain open; NOUE</i></p> <p>3. Stem Focus: Include the name and number of the surveillance procedure being conducted in bullet #2.</p> <p>4. Need a combined U1/U2 electrical diagram of Sequoyah electrical distribution in the reference material. Does one exist?</p> <p>[SRO-only: Procedure selection E-Plan]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 90 | H | 4 | x | | | x | | | | | | | | N | E | <p>073 A2.02</p> <p>1. Cred Dist: "C" and "D" are not plausible because the 2nd part of these choices involves the ODCM requirements <i>even though there is no longer a release</i>, i.e., SGBD flow was re-routed to the Condensate System. In other words, an applicant knows that the only time the rad monitors are required operable is when releases are underway via the pathway. IF the SGBD was re-routed to the demineralizers, then the release would be terminated and determining the grab sample frequency is a moot point; therefore an applicant could eliminate "C" and "D" without knowing the parameter that determines grab sampling frequency.</p> <p>2. Stem Focus: The stem does not specify whether the 90-121 failed upscale or downscale. IF the rad monitor fails upscale, then is "D" correct?</p> <p>3. Stem Focus: Verify w/ the licensee that the releases may continue provided that grab samples are obtained either every 12 hours or 24 hours <i>dependent on the secondary coolant activity</i>.</p> <p>4. Stem Focus: If an annunciator(s) is referred to in any part of the question, use the EXACT wording engraved on Alarm Window (also specified in ARP) followed by parentheses containing the shortest possible abbreviated window location designation that the applicants are familiar with. This ensures no misunderstanding as to the alarm being referenced.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 91 | H | 3 | | | | | | x | | | | | x | N | E | <p>028 A2.03</p> <p>1. Job-Link: The 1st part of the stem question asks the applicants to determine whether the H2 RECOMBINER is allowed to be operated; however, FR-I.3, Step 19 targets the H2 IGNITERS. It appears that the 1st column in the choices should also be labeled "IGNITERS."</p> <p>2. SRO-only: The 2nd portion of the question only tests the applicants knowledge of when vessel venting is/is not allowed. [Not allowed when Containment hydrogen concentration is > 6%.] The question is not testing the SRO applicants' knowledge of procedure selection.</p> <p>One area of SRO level knowledge is knowledge of the content of the procedure versus knowledge of the procedure's overall mitigative strategy or purpose. The proposed question does not provide for procedure selection and only tests the FR-I.3 overall mitigative strategy (RO knowledge).</p> <p>Suggest the following:</p> <p><i>An accident has occurred on Unit 1 and the crew has entered FR-I.3, Voids in The Reactor. The crew has placed the Hydrogen Analyzers in service and the following conditions currently exist:</i></p> <ul style="list-style-type: none"> • RCS Subcooling > 90 deg F • Pzr Level > 90% • PRT pressure is 5 psig • Containment hydrogen concentration is 7% • Containment Ventilation is isolated and the upper and lower compartment coolers and CRDM fans are running <p><i>WOOTF identifies the required actions in accordance with FR-I.3?</i></p> <p>A. Do NOT place the Hydrogen Igniters in service and Do NOT vent the Reactor Vessel; Return to Procedure and Step in Effect</p> <p><i>B. Do NOT place the Hydrogen Igniters in service; Perform EA-0-7, Calculating Maximum Reactor Vessel Vent Time.</i></p> <p><i>C. Place the Hydrogen Igniters in service and then perform EA-0-7, Calculating Maximum Reactor Vessel Vent Time.</i></p> <p><i>D. Place the Hydrogen Igniters in service and then perform EA-268-1, Placing Hydrogen Recombiners in Service.</i></p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 92 | F | 2 | x | | | | | | | | | | x | x | N | U | <p>055 G2.1.20</p> <p>1. Q=K/A: The proposed test item does not meet the K/A because it targets the emergency/abnormal Tier 1 topic (i.e., SGTL event) instead of a Tier 2 aspect (normal condenser air removal operation). The proposed test item tests the applicants' ability to perform required actions from AOP-R.01 (emergency/abnormal topic) but does not test the applicants' ability to perform or interpret steps associated with the Condenser Air Removal system.</p> <p>2. SRO-only: Presumably the tie to the 55.43 is "procedure selection" based on the applicant having to recall steps of the procedure. SRO-level knowledge (with respect to prescribing or selecting procedures) is knowledge of the content of the procedure (SRO knowledge) versus <u>knowledge of the overall mitigative strategy of the procedure (RO knowledge)</u>. (this question may be borderline)</p> <p>Suggest writing a question to target the Condenser Vacuum System Charcoal Absorber System, including the SRO aspect of either ODCM 1 / 2.2.2.4 (Tech Specs) or procedure selection.</p> <p>Discuss how the Condenser Air Removal System topic can be tested at the SRO level with the licensee.</p> <p>3. Stem Focus: The choices can be boiled down to 1) how long do you have to shutdown the unit and 2) do you have to obtain a confirmatory chemistry sample before commencing the shutdown. The choices (as proposed) all have the words "without waiting" or "leak rate confirmed." Suggest streamlining answers into a 2-part choice and re-wording the stem question to closely match.</p> <p>4. Stem Focus: The 4th bullet is not necessary to elicit the correct response.</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 93 | H | 2 | x | | | x | x | | | | | | | | | E | <p>075 A2.01</p> <p>1. Per NUREG 1021, ES-401, Section D.2 (pg 6 of 33), it is acceptable to limit the scope of an A2 K/A statement to the (b) portion (only) IF it is not possible to test both aspects of the K/A statement without expending an inordinate amount of resources. In this question (as proposed), only the (b) portion of the K/A is being targeted. This is acceptable.</p> <p>2. Stem Focus: The stem question needs to be worded to eliminate the word "should." Consider incorporating the words "minimum required action" in the stem question.</p> <p>3. Cred Dist: "B" and "D" refer to a cooldown that was already in progress on Unit 1. Does the stem support this? In other words, the stem only states that Unit 1 is in Mode 4 w/ RCS at 340 deg F. Is Unit 1 cooling down? Because this information is missing from the stem, it makes "B" and "D" less plausible.</p> <p>4. Partial: An applicant could successfully argue that "C" is also correct based on the imminent nature of lake level.</p> <p>5. Stem Focus: Is the lake level stable? Suggest the following: <i>WOOTF completes both of the following statements in accordance with AOP-N.04, Break of Downstream Dam, and TS 3.7.5, Ultimate Heat Sink?</i> <i>Loss of condenser circulating water supply occurs when lake level drops to _____.</i> <i>The MINIMUM required action (s) at this time for Unit 2 is/are _____.</i></p> <p>A. 668 ' elevation; be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.</p> <p>B. 674 ' elevation; be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.</p> <p>C. 668 ' elevation; Initiate a plant shutdown to COLD Shutdown using AOP-C.03</p> <p>D. 674 ' elevation; Initiate a plant shutdown to COLD Shutdown using AOP-C.03</p> <p>[SRO-only: Procedure Selection and/or Tech Specs]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 94 | F | 2 | | | | x | x | | | | | | | N | E | <p>G2.1.26</p> <p>1. Cred Dist: Since the 1st part of each choice is unique, then the applicant doesn't need to know the answer to the 2nd part; i.e., the SRO portion. For example:</p> <p>A. orange; SPP-10.2</p> <p>B. blue; GO-5</p> <p>C. green; SPP-10.2</p> <p>D. red; GO-5</p> <p>2. Partial: Some applicants can argue that "A" is also correct because the stem does not specify which procedure requirement.</p> <p>Suggest copying an exact sentence from the SPP-10.2 appendix E and converting it into a fill-in-the-blank statement. For example:</p> <p><i>The procedure for clearing a 161 kV or 500 kV air blast power circuit breaker requires the breaker and its disconnects to be "opened" and then the breaker cycled at the direction of the transmission operator to <u>discharge any capacitors that may be in parallel with the contacts of the breaker.</u></i></p> <p>Plausible distracters can be "<u>to locally verify the correct breaker.</u>"</p> <p>To make SRO-only, include the TS required action for the 161 (or 500 KV) breaker being under clearance.</p> |

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|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|----------------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | | |
| 95 | F | 2 | x | | | | | | | | | x | x | | N | E | <p>G2.1.29</p> <ol style="list-style-type: none"> Q=K/A: In the 1st part of this question, the applicant is being tested on the required verification technique (RO knowledge). The 2nd part of the question (knowledge of TS 3.0.4) is <u>not</u> the intended topic to be tested at the SRO level. This situation is similar to Q#80; however, this is the second item on the SRO test like this. The problem is that the sampling of SRO knowledge on the sample plan topic may become skewed with too many of these type questions. Stem Focus: Include exact noun name for the manual valve (No. 1 System Start Motor Air supply Isolation Valve) in the 2nd bullet Backwards Logic: Reverse the situation such that the 3rd bullet is deleted and first test the applicant's knowledge of whether entry to Mode 4 can be made with the out-of-position valve. Secondly, test the applicants' knowledge of the required verification technique. <p>Consider the following two alternatives:</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 95 | F | 2 | x | | | | | | | | x | x | | N | E | <p>G2.1.29 (cont'd)</p> <p><i>WOOTF completes both statements in accordance with SPP-10.1, System Status Control?</i></p> <p><i>The LOWEST level of authority required to relax the status control of a system within a clearance boundary is the _____.</i></p> <p><i>An equipment alignment checklist _____ be documented as "complete" with a valve tagged out-of-position by another clearance.</i></p> <p>A. <i>Shift Manager; can NOT</i></p> <p>B. <i>Shift Manager; can still</i></p> <p>C. <i>Unit Supervisor; can NOT</i></p> <p>D. <i>Unit Supervisor; can still</i></p> <p>_____ OR _____</p> <p><i>Unit 2 is in Mode 5 preparing to enter Mode 4. An AUO performing a valve checklist discovers that the No. 1 System Start Motor Air Supply Isolation Valve (0-82-516-1A1) on the 1A EDG is closed even though the checklist requires the valve to be in the open position.</i></p> <p><i>WOOTF identifies whether Mode 4 can be entered with this valve in the closed position <u>and</u> the required verification method in accordance with 0-SO-82-5, Attachment 2, Diesel Generator 1A-A Support Systems Valve Checklist 0-82-5.02?</i></p> <p>[SRO-only: Procedure selection based on knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal procedures.]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | |
| 96 | F | 2 | x | | | | | | | | | | | N | E | <p>G2.2.12</p> <p>1. Stem Focus: This question (including the choices) are too cumbersome. Suggest the following revision:</p> <p><i>Unit 2 is operating at 100% power and the 2A-A Diesel Generator was declared inoperable at 08:00. According to Tech Spec 3.8.1.1, AC Sources, the AC Electrical Power Source Operability Verification (0-SI-082-007.W) is required to be performed within 1 hour.</i></p> <p><i>WOOTF choices completes both statements?</i></p> <p><i>The LATEST time that 0-SI-082-007.W is allowed to be completed is _____ in accordance with Tech Specs.</i></p> <p><i>IF the 0-SI-082-007.W is NOT performed by this time, THEN this event _____ required to be reported to the NRC in accordance with SPP-3.5, Regulatory Reporting Requirements.</i></p> <p>A. 09:00; IS</p> <p>B. 09:15; IS</p> <p>C. 09:00; IS NOT</p> <p>D. 09:15; IS NOT</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 97 | F | 2 | x | | | | | | | | | | | N | E | <p>G2.2.17</p> <ol style="list-style-type: none"> 1. Stem Focus: The clearance for this screen maintenance isn't well defined. Will the screen removal require the J-A and K-A pumps to be placed under clearance? If so, then include a statement in the stem stating that both of these pumps are tagged out. 2. Stem Focus: Streamline the stem question as follows: <i>WOOTF identifies the MINIMUM required risk level classification and operability status of the "A" Train ERCW Header in accordance with SPP-7.3, Work Activity Risk Management Process AND Tech Specs, respectively?</i> 3. Stem Focus: The column headings for the choices should be clarified as follows: <u>MINIMUM REQUIRED RISK LEVEL</u> <u>STATUS</u> <p>[SRO-only: Procedure selection based on knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal procedures.]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 98 | F | 2 | | x | | x | | | | | | | | B | E | <p>G2.3.5</p> <ol style="list-style-type: none"> 1. Cred Dist/Cues: "A" and "B" are not plausible because of the word "containment radiation monitors"; i.e., if an applicant was guessing, he could rule out "A" and "B" because the 1st portion of these choices does not include the word containment. 2. Partial: "D" could be argued as correct since pressure is related to temperature. 3. Stem Focus: The 2-part question flows better in reverse order, i.e., first test the applicants' knowledge of where in the E-plan network the monitors used and then HOW they're used. <p>Suggest the following:</p> <p><i>WOOTF completes the following statements as they pertain to the Upper Containment Radiation Monitors (1-RE-90-273 and 1-RE-90-274) in accordance with EPIP-1, Emergency Classification Matrix?</i></p> <p><i>The Upper Containment Rad Monitors are required to assess the integrity of _____ barriers in the Fission Product Barrier Matrix</i></p> <p><i>The Upper Containment Rad Monitors should only be used for trending until _____ has been stable for approximately 5 minutes after a steam line break or LOCA.</i></p> <p>A. 2; containment temperature</p> <p>B. all 3; excore nuclear instrumentation</p> <p>C. 2; containment temperature</p> <p>D. all 3; excore nuclear instrumentation</p> <p>[SRO-only: E-plan]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation | |
|----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|-----------|----------|----------|----------|----------|----------------|--|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Back-ward | Q=K/A | SRO Only | | | | |
| 99 | F | 2 | x | | | | | x | | | | | | | N | E | <p>G2.4.12</p> <p>1. Stem Focus: The question is targeting EPM-4, Shift Manager Responsibility (Item # 3.3.1.1) on the top of page 11 of 97. Rather than providing the lightning strike scenario, copy the Item and provide a fill-in-the-blank statement to test the applicants' knowledge of where the incident commander function is required to be located.</p> <p>2. Partial: The Item # 3.3.1.1 that this question is targeting in EPM-4 contains two words that can allow an applicant to argue that there is <u>no</u> correct answer. The words "may", "if", "should" can imply there is no right or wrong way to complete the incident commander function locally.</p> <p>Suggest the following:</p> <p><i>WOOTF completes the following statement in accordance with EPM-4, Users Guide, Section 3.3, Duties of the Operations Team?</i></p> <p><i>The local Incident Commander function _____ be performed remotely from the control room during a _____.</i></p> <p>A. may; fire when the Unit Supervisors are at the minimum crew staffing level</p> <p><i>B. may: medical emergency when the Auxiliary Unit Operators are at the minimum crew staffing level</i></p> <p><i>C. may NOT; fire even if the Unit Supervisors are at the minimum crew staffing level</i></p> <p><i>D. may NOT; medical emergency even if the Auxiliary Unit Operators are at the minimum crew staffing level</i></p> <p>[SRO-only: Knowledge of administrative procedures & SRO responsibilities]</p> |

| Q# | 1. LOK (F/H) | 2. LOD (1-5) | 3. Psychometric Flaws | | | | | 4. Job Content Flaws | | | | 5. Other | | 6. B/M/N | 7. U/E/S | 8. Explanation |
|-----|--------------|--------------|-----------------------|------|-----|-------------|---------|----------------------|---------|---------|----------|----------|----------|----------|----------|---|
| | | | Stem Focus | Cues | T/F | Cred. Dist. | Partial | Job-Link | Minutia | #/units | Backward | Q=K/A | SRO Only | | | |
| 100 | H | 2 | | | | | x | | | | | | | B | E | <p>G2.4.6</p> <ol style="list-style-type: none"> Partial: "B" and "D" are very similar; therefore, an applicant can potentially argue that "D" is correct. Backward: "B" and "D" are backwards logic because of the phrase "if the red path still exists." All of the required information should be in the stem of the question and then the applicants' should make their choice only based on the information in the stem. <p>Suggest the following:</p> <p><i>A LOCA occurred on Unit 1 and FR-C.2, Degraded Core Cooling has been entered and a depressurization of the steam generators is being performed.</i></p> <p><i>The STA subsequently reported a Red Path condition on FR-P.1, Pressurized Thermal Shock.</i></p> <p><i>WOOTF identifies the required depressurization rate in FR-C.2 and the required action in accordance with the Functional Restoration Procedures?</i></p> <ol style="list-style-type: none"> Less than 100 deg/hr; Suspend implementation of FR-P.1 Maximum achievable rate; Immediately transition to FR-P.1; Less than 100 deg/hr; Immediately transition to FR-P.1; Maximum achievable rate; Suspend implementation of FR-P.1 <p>[SRO-only: Procedure selection]</p> |

| Facility: <u>SEQUOYAH</u> | | Date of Exam: <u>3-3-10</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 | BLC | | |
| 2. Answer key changes and question deletions justified and documented | N/A | N/A | N/A | | |
| 3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations) | N/A | N/A | BLC | | |
| 4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail | N/A | N/A | N/A | | |
| 5. All other failing examinations checked to ensure that grades are justified | N/A | N/A | N/A | | |
| 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 | BN | | |
| Printed Name/Signature | | Date | | | |
| a. Grader | <u>MARK J. RICHES / Mark J. Riches</u> | | <u>03-11-10</u> | | |
| b. Facility Reviewer(*) | <u>N/A</u> | | <u> </u> | | |
| c. NRC Chief Examiner (*) | <u>BRUNO CABALLERO / Bruno Caballero</u> | | <u>3-22-10</u> | | |
| d. NRC Supervisor (*) | <u>MALCOLM T. WIDMANN / [Signature]</u> | | <u>03/22/10</u> | | |
| (*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required. | | | | | |

| Facility: <u>SEQUOYAH</u> | | Date of Exam: <u>3-3-10</u> | Exam Level: RO <input type="checkbox"/> | SRO <input checked="" type="checkbox"/> |
|--|--|-----------------------------|---|---|
| Item Description | Initials | | | |
| | a | b | c | |
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| 2. Answer key changes and question deletions justified and documented | N/A | N/A | N/A | |
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| 4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail | MJR | N/A | BKL | |
| 5. All other failing examinations checked to ensure that grades are justified | MJR | N/A | BKL | |
| 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 | BKL | |
| | Printed Name/Signature | Date | | |
| a. Grader | <u>MARK J. RICHES / Mark J. Riches</u> | <u>03-11-10</u> | | |
| b. Facility Reviewer(*) | <u>N/A</u> | | | |
| c. NRC Chief Examiner (*) | <u>BRUNO CABALLERO / Bruno Caballero</u> | <u>3-22-10</u> | | |
| d. NRC Supervisor (*) | <u>MALCOLM T. WIDMANN / Malcolm T. Widmann</u> | <u>03/22/10</u> | | |
| (*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required. | | | | |