ES-301 **Administrative Topics Outline** **Form ES-301-1**

ILT48

Facility: **Oconee**	Date of Examination: **12/02/2015**
Examination Level: RO [X] SRO [ ]	Operating Test Number: **1**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations [KA: GEN 2.1.37 (4.3/4.6)] (20 min)	M, R	**Admin-106, Calculate Run Time For Deborating Demineralizer** (Both)
Conduct of Operations [KA: GEN 2.1.4 (3.3/3.8)] (15 min)	D, R	**ADMIN-107, Determine If RO License Requirements Are Met** (RO Only)
Equipment Control [KA: GEN 2.2.12 (3.7/4.1)] (10 min)	D, R	**Admin-203, Perform NI Surveillance And Determine Any Required Actions** (RO Only)
Radiological Control [KA: GEN 2.3.4 (3.2/3.7)] (20 min)	N, R	**Admin-303, Calculate Maximum Permissible Stay Time** (Both)
Emergency Plan		**N/A**

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* 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)

ES-301 **Administrative Topics Outline** **Form ES-301-1**

ILT48

Facility: **Oconee** Date of Examination: **12/02/2015**

Examination Level: RO [ ] SRO [X] Operating Test Number: **1**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations [KA: GEN 2.1.37 (4.3/4.6)] (20 min)	M, R	**Admin-106, Calculate Run Time For Deborating Demineralizer** (Both)
Conduct of Operations [KA: GEN 2.1.13 (2.5/3.2)] (15 min)	D, R	**Admin-S106, Evaluate Items For Entry Into Containment** (SRO Only)
Equipment Control [KA GEN 2.2.12 (3.7/4.1)] (20 min)	D, R	**Admin-S202, Complete a Surveillance Evaluation** (SRO Only)
Radiological Control [KA: GEN 2.3.4 (3.2/3.7)] (20 min)	N, R	**Admin-303, Calculate Maximum Permissible Stay Time** (Both)
Emergency Plan [KA GEN 2.4.38 (2.4/4.4)] (30 min)	N, R	**Admin-S403, Determine Emergency Classification And Complete The Initial Emergency Notification Form** (SRO Only)

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes & Criteria:

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

Facility: **Oconee**	Date of Examination: **12/02/15**
Exam Level: **RO** [X] SRO-I [ ] SRO-U [ ]	Operating Test No.: **1**

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. **RO-102 Respond to a Boron Dilution Event** AP/1/A/1700/003 (Boron Dilution) [KA: APE 024 AA1.04 (3.6*/3.7)] (15 min)	N, S	**1**
b. **RO-202 Remove 1A Letdown Cooler From Service** OP/1/A/1104/002 HPI System Encl. 4.5 (Operation of Letdown Coolers) [KA: 004 G 2.2.2 (4.6/4.1)] (15 min)	D, S	**2**
c. **RO-304a Perform Rule 2 Following a LOSCM** EP/1/A/1800/001 EOP Rule 2 (Loss of SCM) [KA: E/APE 011 EA2.11 (3.9/4.3)] (10 min)	A, EN, N, S	**3**
d. **RO-P402a Start a Fourth Reactor Coolant Pump** OP/1/A/1103/006 Encl 4.4 (Starting 1B2 RCP) [KA: 003 A4.03 (2.8/2.5)] (10 min)	A, D, L, S	**4P**
e. **RO-503, Pump the Quench Tank** OP/1/A/1104/017 Encl 4.1 (Pumping QT) [KA: 007 A1.01 (2.9/3.1)] (10 min)	D, L, S	**5**
f. **RO-602, Restore Secondary Loads After Loss of Offsite Power** AP/1/A/1700/011 (Recovery from Loss of Power) [KA: 062 A4.01 (3.3/3.1)] (15 min)	N, S	**6**
g. **RO-803a, Align Intake Canal For Recirc on Dam Failure** AP/1/A/1700/013 Dam Failure [KA: 075 G2.1.23 (4.3/4.4)] (20 min)	A, D, S	**8**
h. **RO-901a Release GWD Tank** OP/1&2/A/1104/018 Encl. 4.9 (GWD Tank Release) [KA: 071 A4.26 (3.1/3.9)] (30 min)	A, D, S	**9**

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. **AO-602 Startup a Vital Bus Inverter** OP/2/A/1107/004 (Operation of Vital Bus, Computer, ICS, and Auxiliary Inverters) Encl 4.2 (Startup of Vital Bus Inverters) [KA: 062 A3.04 (2.7/2.9)] (12 min)	D	**6**
j. **AO-101 Swap CRD Filters** OP/1/A/1104/008 (Component Cooling System) Encl 4.19 (Placing 1A or 1B CRD Filter in Service) [KA: 001 G2.3.13 (3.4/3.8)] (20 min)	D, R	**1**
k. **AO-802a Isolate HPSW and LPSW During an AB Flood** AP/3/A/1700/030 (Auxiliary Building Flooding) Encl 5.1 (HPSW AB Flood Isolation) and 5.2 (LPSW AB Flood Isolation) [KA: BW/A07 AA2.2 (3.3/3.7)] (16 min)	A, D, E	**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
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	≥ 1/ ≥ 1/ ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: **Oconee**	Date of Examination: **12/02/15**
Exam Level: **RO** ☐ SRO-I ☐ SRO-U ☒	Operating Test No.: **1**

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. **N/A**		
b. **N/A**		
c. **RO-304a Perform Rule 2 Following a LOSCM** EP/1/A/1800/001 EOP Rule 2 (Loss of SCM) [KA: E/APE011 EA2.11 (3.9/4.3)] (10 min)	A, EN, N, S	**3**
d. **RO-P402a Start a Fourth Reactor Coolant Pump** OP/1/A/1103/006 Encl 4.4 (Starting 1B2 RCP) [KA: 003 A4.03 (2.8/2.5)] (10 min)	A, D, L, S	**4P**
e. **N/A**		
f. **RO-602, Restore Secondary Loads After Loss of Offsite Power** AP/1/A/1700/011 (Recovery from Loss of Power) [KA: 062 A4.01 (3.3/3.1)] (15 min)	N, S	**6**
g. **N/A**		
h. **N/A**		

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. **N/A**		
j. **AO-101 Swap CRD Filters** OP/1/A/1104/008 (Component Cooling System) Encl 4.19 (Placing 1A or 1B CRD Filter in Service) [KA: 001 G2.3.13 (3.4/3.8)] (20 min)	D, R	**1**
k. **AO-802a Isolate HPSW and LPSW During an AB Flood** AP/3/A/1700/030 (Auxiliary Building Flooding) Encl 5.1 (HPSW AB Flood Isolation) and 5.2 (LPSW AB Flood Isolation) [KA: BWA07 AA2.2 (3.3/3.7)] (16 min)	A, D, E	**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
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	≥ 1/ ≥ 1 / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Tier / Group	Randomly Selected K/A	Reason for Rejection
1 / 1	EPE011 EK1.01	At Oconee, natural circulation and reflux boiling are not used during a Large Break LOCA. Low Pressure Injection provides core cooling and the SGs are not used . Replacement K/A is APE056 AK1.03.
1 / 2	APE001 AK3.02	Could not write a discriminating question on the K/A. Tech Spec control rod operability is not associated with Continuous Rod Withdrawal. Replacement K/A is APE001 AK3.01.
1 / 2	APE059 AA1.02	Oconee does not have an Area Radiation Monitor associated with Accidental liquid waste release. Our release monitor is RIA-54, which is a process monitor. Replacement K/A is APE059 AA1.01.
2 / 1	SYS013 K4.21	Oconee does not have service water booster pumps associated with Engineered Safety Features. Replacement K/A is SYS013 K4.12.
2 / 1	SYS059 A2.04	The A2.04 K/A could not be matched without overlap with question 11. Therefore this K/A was replaced with SYS059 A2.07.
2 / 2	SYS035 K4.04	Oconee does not have a radiation high-level isolation while draining SG secondary to the main condenser. Replacement K/A is SYS035 K4.01.
1 / 1	APE022 2.4.20	Unable to meet the K/A at the SRO level. Chief Examiner provided new K/A APE054 2.4.38 on 11/06/15 during Utility Review.
3 / 0	GEN2.3 2.3.7	Could not write a question at the SRO level on complying with Radiation Work permit requirements. Replacement K/A is GEN2.3 2.3.11.

FINAL SUBMITTAL / EXAM AUTHORIZATION

ES-401 **Written Examination Quality Checklist** **Form ES-401-6**

Facility: Oconee Nuclear Station Date of Exam: 12/7/2015 Exam Level: RO ☐ SRO ☑

	Item Description	Initial a	b*	c*	
1.	Questions and answers are technically accurate and applicable to the facility.	SL	TB	AG	MM
2.	a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	SL	TB	AG	MM
3.	SRO questions are appropriate in accordance with Section D.2.d of ES-401	SL	TB	AG	MM
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).	SL	TB	AG	MM
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: __ the audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or ☑ the licensee certifies that there is no duplication; or __ other (explain)	SL	TB	AG	MM
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: 25 / 5 — Modified: 22 / 5 — New: 28 / 15	SL	TB	AG	MM
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: 34 / 5 — C/A: 41 / 20	SL	TB	AG	MM
8.	References/handouts provided do not give away answers or aid in the elimination of distractors.	SL	TB	AG	MM
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.	SL	TB	AG	MM
10.	Question psychometric quality and format meet the guidelines in ES Appendix B.	SL	TB	AG	MM
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.	SL	TB	AG	MM

	Printed Name / Signature	Date
a. Author	SAM LADD / SLadd	11/18/15
b. Facility Reviewer (*)	Toby Lawson / TW. L	11/18/15
c. NRC Chief Examiner (#)	Andrea Goldau / AGoldau MICHAEL MEEKS	11/23/15 11/24/2015 ①
d. NRC Regional Supervisor	Gerald McCoy / Gerald McCoy Michael Meeks	11/25/2015

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.

① A. GOLDAU IS CHIEF EXAMINER UNDER INSTRUCTION; M. MEEKS IS CHIEF EXAMINER OF RECORD.

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			

[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).

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

Key/Summary

Question distribution:

	RO	SRO
Bank (≤75%)	27 (27 from previous NRC exams, 1 within last 2 exams), 36%	5 (5 from previous NRC exams, 0 within last 2 exams), 20%
Modified	20 (20 from previous NRC exams, 8 within last 2 exams)	6 (6 from previous NRC exams, 2 within last 2 exams)
New (≥10 hi)	28 (18 at higher cog)	14 (11 at higher cog)
Cog Level (50-60% RO)	45 higher, 60%	20 higher, 80%

S	Indicates SAT: 11 SRO, 43 RO (initial submittal)
E	Indicates Enhancement: 6 SRO, 24 RO (initial submittal)
U	Indicates UNSAT: 8 SRO, 6 RO (initial submittal)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
Generic to exam															E	1. Ensure there is an appropriate spread of questions between Unit 1, Unit 2, and Unit 3. Work in unit differences when appropriate. 2. Ensure annunciator noun names are consistently written through the exam, i.e. a comma, capitalized title, quotation marks, etc. The same for procedure titles. 3. Be consistent with the which one of the following completes the following **statement** or **statements.** 4. Be consistent through the exam with caps or bold for parameter directions i.e. detector failed HIGH. 5. Change "should be" and "will be" language to what are the requirements or what do procedures direct. 6. When using bank Questions, rearrange the answer choices such that the correct answer is not always the same letter choice as the original Question unless there is a reason not to do so. i.e. answer choice length or numerical order.
1	F	2						X						N	E	Do the statalarms input directly to trip confirm lamp? Concerned about operational validity. Applicants would see many other alarms in CR. How would we handle applicant question during exam. Licensee confirms that applicants have enough information in the stem to answer the question. Facility licensee made slight modifications as requested by NRC. Q appears ready to be administered on the examination. ASG 11/6/15
2	H	2												M ILT45 Q1	S	Question is SAT. Q appears ready to be administered on the examination. ASG 11/6/15

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			
3	H	3												B ILT45 Q2	E	Maybe a correct answer letter other than A would be better since the bank Q answer is A? Mix it up when using bank Qs. Changed correct answer to B. Q appears ready to be administered on the examination. ASG 11/6/15
4	H	3												N	S	Make PZR temperature 640.0 degrees for better accuracy. Distractor analysis for A. and B. could be improved. "Plausible because it could be true" has no technical basis. Facility licensee made slight modifications as requested by NRC. Q appears ready to be administered on the examination. ASG 11/6/15
5	F	2										~~N~~ Y		N	S	Question is U due to KA match: the question does not ask for the <u>reason</u> Tave shifts to the loop with the highest flow, just what signal causes it to shift. Too difficult to come up with an operationally valid reason for the shift other than "because it's more accurate." After discussion with CE, accepted as a KA match. Question is SAT. Spacing of Answer choice A is different than the others.- corrected. Q appears ready to be administered on the examination. ASG 11/6/15
6	F	2				X								N	U	B2 and D2 distractor is not plausible. It doesn't make sense to have RCP thermal barrier system just to prevent a temperature rise in the LDST. Also there is a separate seal return cooler that performs this function. Changed distractors B2 and D2 to improve plausibility. Q appears ready to be administered on the examination. ASG 11/6/15
7	H	3												M ILT44 Q6	S	Question is SAT Q appears ready to be administered on the examination. ASG 11/6/15

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
8	H	4												N	E	Applicants can determine Mode 3 based on RCS temperature, the first bullet is not needed. Removed 1st bullet
9	H	3												N	E	For second part Q: We need to add words to the effect "when all other requirements are met in Rule 6" an applicant may be confused by the current conditions are power is still 52% decreasing, HPI cannot be throttled even with CRS concurrence.
10	H	3				X								N	U	U for two implausible distractors. The second part essentially asks to choose between doing nothing with the affected SG or stop steaming the affected SG. Potential fix: because discontinue steaming is so strong, maybe it should be in the question stem and test the next actions to take. i.e. Align blowdown to lower level or verify other SG is available for continuing cooldown.
11	H	3		X										B ILT46 Q10	E	Mix up correct answer letter for Bank questions This question looks like a Modified Q rather than a Bank Q. Distractor for second part reads in the Question sentence as "excessive excessive".
12	H	3												M ILT39 Q11	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
13	F	3	X											N	E	Part 2: should add "in accordance with caution statement in procedure…" or words to that effect. CAUTION statement says: If using the TDEFDWP for SG feed, reducing steam pressure below ≈ 250 psig can result in reduced pumping capability. Recommend rewriting second part Q statement as follows: In accordance with a caution in the EOP BO tab, reducing steam pressure below approximately _____ psig can result in reduced TDEFDWP pumping capability.
14	H	3												B ILT44 Q14	E	Mix up correct answer letter for Bank questions.
15	H	3												N	E	"Procedure requires" SG level to be controlled at…
16	H	3												M ILT46 Q16	E	Change stem to say frequency at 57.0 Hz since trip and procedure use tenths of Hz.
17	H	3												B 2009 Q18	E	Mix up correct answer letter for Bank questions.
18	F	3												B 2010A Q18	E	Mix up correct answer letter for Bank questions.
19	H	3												N	S	KA match is weak, accepted by CE after discussion with licensee over method of rod insertions used at this plant. Discussed during 10 Q pre review.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
20	F	3												B ILT39 Q20	S	
21	H	3	X											N	E	Clarify when "over the next two hours" starts. Better would be time stamps for each part of the question and the given conditions to make it very clear what "the next two hours" means.
22	H	2												B 2010A Q19	E	Mix up correct answer letter for Bank questions. Second bullet in stem use "inches" instead of """ for consistency.
23	H	3												B ILT41 Q8	E	Mix up correct answer letter for Bank questions.
24	H	3												M ILT44 Q50	S	
25	F	3												N	S	
26	H	3												M ILT44 Q24	S	
27	H	3												N	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
28	F	3												M 2010A Q35	S	
29	F	2	X											N	E	Add the word AUTOMATICALLY to Q first part.
30	H	3	X											M ILT46 Q30	E	With no operator actions, due to the Letdown temperature increase, the RCS boron concentration over the next several hours will____. Make the question clearer.
31	F	2												M ILT46 Q31	S	
32	H	3	X											B ILT41 Q32	E	Mix up correct answer letter for Bank questions. Delete “at Time = 0405” from first part question. This is teaching in the stem of the question by reminding the applicant to focus on conditions at 0405.
33	F	3	X											M ILT46 Q34	E	Nice working in unit differences, do more of this if possible. Make it clear what the second part question is asking: is ES channel 1 and 2 actuates, or ES-1 or 2, or what? Change wording of first part: “shall be maintained”, to the procedure requires to be maintained.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
34	H	3	X											B ILT42 Q7	E	Second part question should ask what does the ARG direct, not what will be done.
35	H	3												B ILT45 Q37	E	Mix up correct answer letter for Bank questions.
36	F	2												M ILT42 Q38	E	Question would be better if a choice of RPS trips were given for the second part rather than is/is NOT. To be technically accurate wouldn't we need to say that <u>one of the</u> design reasons for hi flux trip is DNB. The question seems to imply that DNB is the only reason for the hi flux trip.
37	F	2												B ILT45 Q32	S	
38	H	3												B ILT43 Q39	E	Mix up correct answer letter for Bank questions.
39	F	3												B ILT43 Q40	E	Mix up correct answer letter for Bank questions.
40	F	2												B ILT40 Q43	E	Mix up correct answer letter for Bank questions.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
41	H	2										N		N	U	Question does not meet the KA. The question does not relate Main and Reheat steam system to MFW pump turbines. The first question asks where the turbines are being controlled (with given conditions of reactor power and positions of FDW master controllers, reactor diamond, and main and startup FDW valves): the motor gear unit or the motor speed changer. This can be answered without knowledge of the KA. The second question asks whether runback of main feed water will occur automatically on reactor trip. Again, this can be answered without knowledge of the KA.
42	F	2												N	E	Recommend adding a comma in the question statement: "…degrees F, and we ensure this…"
43	F	2	x											N	E	AP-1 says to lower power to less than or equal to X. Question wording "…power reduction to a MINIMUM of ___" is confusing. The direction in the AP gives a maximum power by saying less than or equal to. Recommend changing second part to "AP-1 requires a Manual power reduction to _____. and change the choices to ≤65 or ≤74 or AP-1 states that ….

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
44	H	2	x											B 2009B Q43	E	In the first bullet underline high. First part Q say AUTOMATICALLY actuated. Rule 5 requires the operator to ___.
45	H	2		X										N	E	Second part question needs to be rewritten to not cue the answer to the first part. If AP-10 is implemented… or When perfoming AP-10…. Change “will be performed” to what does the procedure require.
46	F	2			X									B ILT43 Q15	E	Are both answers to part 2 correct? Preventing overload of CT-4/5 minimizes voltage drop for ES pumps (HPI) which will in turn ensure integrity of RCP seals? Verify both are not correct. Should probably change distractor or second Question. How does this meet the KA?
47	F	2				x								B ILT45 Q49	S	Choice B. What is meant by control power to 4160V? 4160v what? Seems like B is incomplete.
48	H	2												B ILT44 Q75	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
49	H	2												N?	E	Question is listed as "NEW," but a bank question is provided in the supporting references. Although there are differences between the two questions, is this question is actually modified rather than new?
50	H	2												M ILT46 Q49	S	
51	H	2												M ILT44 Q41	E	First question can be seen as a cue to the second question. Recommend switching the order of the questions and slightly rewording to avoid using the word "only" and therefore eliminate any possibility that someone could argue "no correct answer" if there is any follow up action associated with RB purge termination such as procedure direction to close PR-1 and 6. 1) Automatic termination of RB Purge [does/does NOT] close 1PR-1 and 1PR-6; Under the given conditions, automatic termination of RB Purge operation due to increasing activity [is/is NOT] available.
52	H	2												N	S	Need to ensure that the conditions in the stem give enough information that that applicant has the opportunity to determine that EDLs are in effect.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
53	H	2												N	E	Recommend rewording the first question for clarity and to enhance distractor plausibility: "An increase in LPSW flow to the Component Coolers [is/is NOT] required in order to maintain 3A Letdown Cooler Component Cooling outlet temperature constant from 1200 – 1230." The second question is a borderline tack-on. However, since the question involves and increasing letdown line temperature due to the cooler leak, requiring an increase in LPSW flow to the cooler, the second question is related.
54	F	2	x											B ILT41 Q52	E	Add "no operator actions" Does the fact that the Backup IA compressors are in STBY1 need to be specified in the stem to ensure there are not two correct answers? If an applicant can reasonably think that the Backup IA compressor could be in STBY2, then both C and A would be correct. This question does not appear to overlap with Question 64. Although both questions have IA pressure around 90 psig and decreasing (91 psig and decreasing in Q54), Q64 requires knowledge of alignment of station air to IA (auto or manual) at IA=85 psig. Q54 requires knowledge of automatic set points of IA compressors. None of the distractors rely on an 85 psig set point.
55	H	2												M ILT46 Q54	S	
56	F	2												B ILT41 Q56	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
57	H	2	x											N	E	Question is SAT Be consistent with inches versus “. Spell out inches throughout the exam.
58	H	2	x											N	E	Question appears to meet the KA, in that failure of 1HP-120 is a malfunction of the pressurizer level control system, and the question asks for the impact on the PZR heaters, which is part of the pressurizer pressure control system. Recommend adding the word “begins” under Time = 1230 to tighten up the fact that there is one and only one correct answer: “Pressurizer level begins decreasing at 1” per minute”. The determination if HPI is available is part of the IMAs, and therefore RO knowledge. However, the second half of the question goes one step further and asks if 1HP-5 will be shut by the procedure, which is contained in the subsequent actions. Need to make sure that the second half of the question is expected RO level knowledge. Is an RO expected to know that 1HP-5 is only closed when there are no HPI pumps operating under the given conditions? If so, the question appears to be SAT (with the above recommended modification). Otherwise, the second question will need to be modified. Need to add which one of the following statement. Double quotes to inches.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
59	H	2	x											N	E	Recommend adding the word "currently" to the first question, since the RB pressure is stated as decreasing: "Currently, actual 1B SG level…" Change " to inches. Why, in the second bullet say "very slowly" versus slowly? Does it change anything?
60	H	2				x								M ILT46 Q45	E	Question appears to be SAT, but need to look at overlap with Q61 and low vacuum conditions. Giving the actual set point of MFP low vacuum trip in Q 61 answer choices gives this question away. Fix Q61 will make this SAT
61	H	2	X			X	X							N	E	The distractor analysis states that the distractor (555) would be correct if Reactor Power was > 29.75%. The conditions in the stem give reactor power at 25% and slowing increasing and turbine vacuum at 27"HG and degrading. No rates are given. Without the rates, there is no definitive single correct answer, since both could be argued to be correct (one is correct if vacuum is degrading faster than power is increasing, and the other would be correct if power is increasing faster than the vacuum is degrading). To fix this, as well as to make the first question more meaningful, recommend giving a series of times, power levels, and turbine vacuum readings. The first question can ask the earliest time at which a turbine trip should have occurred (should also fix overlap with Q 60), and the second can ask what Tave will stabilize at (same as current second question). The words "stabilize from the transient" imply the reactor did not trip and too strongly points to the correct answer.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
62	F	2										x		M 2009B Q9	U	Second question is a tack-on. In the stem of the question, the conditions indicate primary to secondary leakage that is worsening, and the first part of the question (which meets the KA) elicits knowledge of determining the leak rate from the process rad monitor readings. The second part of the question places the applicant in the SGTR tab and asks the maximum RCS temp allowed when isolating the affected SG. Both deal with primary to secondary leakage, but the jump is a far and the two halves are not very closely related. The third bullet in the stem is actually unnecessary to answer the question. Maybe actions from AP for tube leak, or ask if entry conditions met?
63	H	2				X								N	U	There are subset issues with the answer choices… a tank that is sampled for hydrogen within 24h (the correct answer) will also be sampled within 48h (incorrect). Similarly, a tank that must be reduced within 24h (incorrect) will also be reduced within 48h (correct). The subset issue makes it so there are two correct answers for the first question, and although there is only one correct answer for the second question, it renders the distractor implausible (NUREG rules of usage/logic… there can be only one correct answer, and if someone were to choose 24, that would mean there were two correct answers, therefore the correct answer must be 48). This should be able to be solved by asking: within a maximum of ___ hours for both halves or using a time line. Tie the question into what do the procedure say? or make it a time line question. For instance, taking the watch, while reviewing logs, time tank isolated, time sampled (is/is not acceptable by procedure), reduce H2 by time ____.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
64	F	2	x											M ILT46 Q65	E	This question does not appear to overlap with Question 54. Although both questions have IA pressure around 90 psig and decreasing (91 psig and decreasing in Q54), Q64 requires knowledge of alignment of station air to IA (auto or manual) at IA=85 psig. Q54 requires knowledge of automatic set points of IA compressors. None of the distractors in Q54 rely on an 85 psig set point, as specified in this question. Change language “will dispatch” to what does the procedure direct. Need a which one of the following statement.
65	F	2												M ILT42 Q99	U	Question does not meet the KA. The first question asks the effect of deenergizing the 1TA switchgear on the RCPs. The second question asks if a water fog can be used to fight a fire at the switchgear. However, the KA asks the operational implication of the effect of the water spray on electrical components. The questions are asked in such a way that knowledge of the fire protection system and using a water fog on 1TA is not needed to answer the first question (bypassing the intent of the KA). Per CE, OK to ask about use of fog pattern with water on electrical equip. However still need to meet KA by asking about operational implication of using the fog pattern on it. i.e. does the fire plan require deenergizing swgr prior to using a fog? are there any super important things that are allowed to be fogged vs anything that must be deenergized?

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
66	F	2	x											N	E	Recommend the following grammatical modifications: • Add a comma to the 2nd question: "…with visitors, you Should…" • Add a comma to the 2nd part answer choice: "immediately, taking…" Could make this question apply to RO license rather than GET by asking where, for example, as an extra RO on shift, where is your assembly location? with visitors or drop them at PAP. Also reference a procedure.
67	F	2				x								B ILT 39 Q66	E	Question could be worded to prevent any possible subset issues and ensure distractors are maximally plausible: [One/Two] source range Nis is/are required, and it/they [must be specified by Reactor Engineering/can be chosen by the RO]. Is the word Refueling clear enough to indicated core on load in progress? Either add a bullet to say all SR Nis operable or in distractors say RO can use operable NI.
68	F	2												B ILT44 Q59	S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
69	F	2	x				X							B 2009 Q70	E	There ***may*** be a subset issue associated with the second question. The question asks the required action of the TS 3.8.1: to energize "at least ONE" or "BOTH" standby bus(es) from a Lee Combustion Turbine via an isolated power path. The intended correct answer is BOTH, but if you start BOTH, you have started at least ONE. Make sure the question clearly asks what does the TS state. 2009 NRC Exam Q70. Original question not provided. Second part Q state, "one of the required actions associated with this inoperability is to _____.....via an isolated power path per TS 3.8.1" this would make it more clear.
70	H	2												M ILT39 Q70	S	
71	H	2	x											M ILT42 Q70	E	There should be a comma added to the second question as follows: "…while performing this task, he will…" Tie the second part question to a procedure. Language of "will do" versus "required to do by ___procedure".
72	F	2												N?	E	Question is listed as "NEW," but a bank question is provided in the supporting references. Although the second half of the question in the supporting references is not present in Q72, if it was used to develop Q72, should Q72 be categorized as MODIFIED?

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
73	H	2												B ILT40 Q74	S	
74	H	2												B 2009 Q74	S	
75	F	2				X								B ILT40 Q75	E	Distracter B is not plausible, particularly when compared to the correct answer and the strongest distractor. It seems that an applicant is unlikely to select an action out of Rule 1 (distractor B) when there is an option to perform Rule 1, since performing Rule 1 would encompass that action and the question is phrased to choose the NEXT action.
76 APE022 2.4.20	H	3										**N**	**N**	N	U	Plausibility discussion is inaccurate. Encl. 5.2 is not used unless the LDST is not available, stem conditions do not support LDST not available. Body of AP-14 is used to align C HPI pump. Does not meet KA at SRO only level.
77 APE027 AA2.04	F	2										**N**	Y	N	U	Not the malfunction portion of the KA. The question doesn't address it nor does the answer require any response to a malfunction. - Need a pressure control malfunction: maybe PORV control power fail and ask if dedicated operator is allowed by TS as substitute? or go away from LTOP-i.e. PORV or spray valve malfunction and TS basis stuff about DNB? or conditions that indicate that the PORV malfunctioned and can a dedicated LTOP operator be used as a substitute?

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
78 EPE038 EA2.01	F	3										**N**	Y	M ILT43 Q78	U	The statement for basis of meeting the KA is not supported by the question. The question does not ask "knowing when steaming of isolated SG is required".
79 APE057 2.4.11	H	3										Y	Y	N	E	Question is SAT. Ensure Q statement is clear so that AP23 is not potentially a correct answer. i.e. procedure steps for controlling …are contained in… or words to that effect.
80 APE065 2.4.41	H	3										Y	Y	N	E	Q should ask what is what is highest classification, if any? Add statement: Do not use emergency director's judgement.
81 APE077 AA2.07	H	2					**X**					Y	Y	M ILT39 Q16	U	Answer B and D discussions state a MSLB is occurring in this question and seem incomplete. Answer C discussion states a LOCA is occurring in this question. What in the question stem is used to differentiate between a MSLB and a LOCA? Both answers may be correct. How low will RCS pressure get with a large MSLB in containment before ECCS systems turn pressure?
82 APE003 AA2.02	H	3										Y	Y	N	E	Question is SAT. 2nd part add reference to Q. IAW TS 3.1.4 basis…

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
83 APE024 AA2.06	H	2										**N**	Y	M ILT46 Q96	U	Basis for meeting KA statement is backwards. The question requires the ability to determine the control rod motion direction based on being given that a dilution is taking place. This does not meet the KA in that it does not test the ability to determine if a dilution is taking place.
84 BWA05 2.2.44	H	3										Y	Y	B ILT45 Q85	E	Question is SAT. Change “should be” and “will be” language to what are requirements or what do procedures direct.
85 BWA07 2.4.21	H	2										Y	**N**	N	E	Asking if rule 4 is or is not required seems to point too directly at the answer, may be “major mitigation strategy” and not meet SRO only criteria. Second part would be better if a procedure choice were given, i.e. transfer to LOSCM tab vs Perform Rule 4. Conditions in stem must be clear that loss of sub cooling margin was due to heat up not a LOCA at Time 1300.
86 SYS005 2.2.25	H	3										Y	Y	B ILT44 Q87	S	Question is SAT.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
87 SYS012 A2.05	H	1										N	Y	M ILT46 Q87	E	Part 1 question can be read that the actual RPS trip set point is 2345 plus 6 psig non conservative which would make it 2351. Please certify that knowledge of TS set point is required at facility. Is it clear what non-conservative means to an applicant? Will they raise their hand and ask what was the as found set point value?
88 SYS013 A2.06	H	3										Y	Y	N	S	Question is SAT.
89 SYS039 A2.03	H	3	**X**	**X**								**N**	Y	N	U	Restarting 1A1 RCP seems to be hanging out there for no reason, why did it need to be restarted, why was it off? Following SGTR tab with conditions in stem leads to stopping one RCP in B loop and moving on with 3 RCPs, never getting to the restart enclosure. Applicant will have to assume that something happened to RCP to get less than two RCPs operating to invoke IAAT step 190. Does not seem operationally valid as written. Question does not ask about impact on Main/Reheat Steam System. Does not meet KA.
90 SYS062 2.2.4	H	3										Y	Y	N	E	Question is SAT. The initial and current conditions are not needed to answer the question or add plausibility to distractors. Irrelevant fluff.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
91 SYS002 2.2.22	H	2										Y	**N**	B ILT44 Q91	U	Not SRO only. Only "above the line knowledge" is required to answer this question. Only RO knowledge of containment RIAs is required to know RIA-47 is the particulate monitor. Only RO knowledge is required to know that RBNS level instrument is not providing useful information.
92 SYS014 A2.02	H	3										Y	Y	N	E	Question is SAT. There appears to be overlap with Q82, facility please discuss acceptability.
93 SYS033 2.4.9	H	3										Y	Y	N	E	Question is SAT. Change "should be" and "will be" language to what are requirements or what do procedures direct.
94 GEN2.1 2.1.39	H	3										Y	Y	N	S	Question is SAT.
95 GEN2.1 2.1.5	F	3										Y	Y	N	S	Question is SAT.
96 GEN2.2 2.2.43	F	3										Y	Y	N	E	Distractor A. not plausible, all three other choices are SROs. Is there another SRO that can be used for A choice? NEO supervisor or Work control center SRO maybe? (but not STA)

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6.	7.	8.
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only	B/M/N	U/E/S	Explanation
97 GEN2.3 2.3.15	H	2										**N**	Y	M ILT40 Q90	U	This is a fuel accident Q. Do I need to know anything about Rad monitors? Does not meet KA.
98 GEN2.3 2.3.11	H	3										Y	Y	M ILT42 Q97	E	Should change first part to "Highest level of approval required by OP…" tank will not be released if CRS does not approve. Second part in accordance with ARG…no alarms are mentioned, which ARG? "The ARG requires the operators to ____ ".
99 GEN2.4 2.4.18	H	3										Y	Y	B ILT45 Q77	S	Question is SAT.
100 GEN2.4 2.4.29	F	3										Y	Y	B ILT43 Q100	S	Question is SAT.