

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				
1	H	2														S	
2	F	2													02	S	
3	F	2													05	S	
4	H	3														S	
5	H	2													05	S	
6	H	3													05	S	
7	H	3											-			E	Adjust stem so that something happens – RHR Pps start -ok
8	H	2				x									09	E	C seems implausible , TB will not be a backup for RB. – ok as is

Instructions

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9	F	2												07	S	
10	H	2												05	S	
11	F	3												05	S	
12	H	2													S	
13	F	2				x						x		M	E	Plausibility of d? - fixed
14	F	2												05	S	
15	F	2												M	S	
16	F	2												M	S	F

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17	H	2													S	
18	F	1													U	Need something more substantial than recognize status - new
19	F	1													U	The OHA implies Open, and OT114. Ask about verification- new
20	H	2													S	
21	F	2					x								S	
22	F	2											09		S	
23	H	3											07		S	
24	H	2											07		S	

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25	F	1													07	E	A, C too easily discarded - fixed
26	H	2													M	S	
27	F	2													M	S	ok
28	F	2														S	
29	H	2														E	Clarify combinations, get 3 out of one distractor - fixed
30	F	2														S	
31	H	2														S	
32	F	3													05	S	

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33	F	2													S	
34	H	3													S	
35	H	2													S	
36	F	2											02		S	
37	F	2													S	
38	F	2											97		E	Change "D" – potential mechanical damage when internals placed - fixed
39	H	3													S	
40	F	2													E	typo

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41	H	3												M	S	
42	F	3												05	S	
43	H	2													S	
44	F	2													S	
45	H	2				x	x							09	E	All are challenged eventually, no? Ask first - ok
46	H	2												07	S	
47	F	2												09	E	Modify. What interlocks? Prevent spurious ops/allow ops? - fixed
48	H	2													S	

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49	F	2													S	
50	H	2	X												S	
51	H	2													S	
52	H	2													S	
53	H	2											M		S	
54	F	3													S	
55	F	3													S	
56	F	2													E	Change A&C from T101 to T102 -fixed

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## **VY Ground Water Key Messages**

The NRC is aware of the licensee's sample results indicating new tritium contamination, and is closely following the licensee's investigation in determining the source of the tritium in GZ-24S and GZ-6.

The NRC's continuing review has confirmed that ground water movement in the vicinity of GZ-24S is east towards the Connecticut River and has no direct impact on any drinking water sources in the area, and is not expected to have any impact on public health and safety.

Ground water contamination inspection activities conducted by the NRC continue to indicate there has been no impact to public health and safety, with no detectable radioactivity in any offsite environmental samples.

Since the discovery of contaminated groundwater from the AOG building at Vermont Yankee, Entergy has installed 31 new monitoring wells and has been conducting an extensive hydrogeology evaluation and modeling of their site that is expected to be completed in the first quarter of 2011. NRC and USGS hydrogeologists are conducting an on-going review of Entergy's site evaluation and modeling. That Entergy discovered new contamination in sentinel wells (GZ-24S and GZ-6) is indicative of the effectiveness of their heightened oversight of ground water.

The NRC is continuing to closely follow the licensee's investigation. Two full-time NRC resident inspectors, with support by regional and headquarters technical experts, continue to monitor Entergy's investigation under the NRC's Reactor Oversight Process. If the licensee's sample results exceed any reportability threshold, approach any regulatory limits or otherwise show any significant increase or trends, this could result in potential increased oversight by NRC.

## Qs & As for Bill Dean visit with Governor Shumlin and DPS Commissioner Miller on 2/4/11:

*Q.) Why are you doing this on a Friday afternoon? Does the timing have to do with Friday afternoon being a good time to put out information when the public is not paying close attention?*

A.) The timing was simply what worked for the schedules of Mr. Dean, Ms. Miller and the Governor. Mr. Dean just got back from a trip to Spain for an international nuclear oversight mission.

*Q.) What was the primary purpose of the meeting today?*

A.) The original purpose of the meeting was to provide Mr. Dean with an opportunity to meet the state's new DPS Commissioner and discuss the status of our oversight activities at Vermont Yankee. It was later expanded to include the Governor.

*Q.) What is your view of the governor's decision to establish an oversight panel for Vermont Yankee? Does it conflict with the NRC's oversight responsibilities? How would the NRC respond to any recommendations issued by this panel? Do other states have such oversight panels?*

A.) The state has established oversight panels in the past to provide state scrutiny of Vermont Yankee, specifically from the perspective of plant reliability. We do not take a position on the formation of such panels. However, we have – and will continue to – review their findings to ensure there are no issues being identified that warrant attention from the NRC. I'm not immediately aware of nuclear power plant oversight panels in other states.

*Q.) The new DPS Commissioner is saying the oversight panel will look at groundwater contamination as well as decommissioning fund issues. Does the NRC have any concerns about the status of the Vermont Yankee decommissioning trust fund?*

A.) The NRC reviews the decommissioning trust funds on a regular basis. After we reviewed the most recent update from Entergy on Vermont Yankee's fund, which was filed in March 2009, the NRC staff determined there was a shortfall. To address that, Entergy executed a \$40-million Parent Company Guarantee at the end of 2009. We are scheduled to receive another update on Vermont Yankee and other plants next month. As with the previous reviews, we will ensure the plants' funds are on track to have sufficient amounts for decommissioning work when the time for those activities arrives.

*Q.) What is the NRC's view of the latest groundwater contamination at Vermont Yankee? Is it coming from new source? Is it coming from buried piping? Could it be coming from the pre-existing plume of tritium? Will Entergy be excavating to look for leakage from buried piping? Should they be doing that? Is the company moving at a fast-enough pace?*

A.) NRC is closely monitoring Entergy's efforts to identify the source the new low-level tritium contamination in wells GZ-24S and GZ-6. At this time, Entergy cannot rule out a new source of leakage. Entergy is also examining the possibility that the contamination could have migrated north from the existing known plume channeled by man-made or natural geological underground conditions.

*Q.) Is the NRC okay with the work being done by Entergy to identify the source of the latest contamination?*

A.) An Entergy investigation team, including a hydrogeology expert, was assembled to systematically identify potential new leak sources near these wells, and develop techniques to test each pipe system. Five drain lines were identified. Two have already been tested with no leakage identified. The drain lines of interest are:

- 1.) Plant stack sump discharge line (test completed 2/3, no leakage)
- 2.) Steam packing exhaust drain line (AOG to radwaste)
- 3.) AOG no. 1 off-gas delay pipe drain line
- 4.) AOG no. 2 off-gas delay pipe drain line (test completed 2/3, no leakage)
- 5.) Standby Gas Treatment System drain line

*Q.) Does it concern the NRC that equipment used to test groundwater samples on-site was out of service for several weeks? Didn't this impede the ability to get timely measurements of groundwater contamination at the site? Were the NRC's on-site inspectors aware that the equipment was not working?*

A.) The liquid scintillation counter is not vital to the plant's radiological emergency response. The liquid scintillation counter at Vermont Yankee is only used for tritium analysis. In-line beta-gamma monitors are used for real-time emergency response indications and dose-significant radionuclides are measured via gamma spectroscopy counters in the chemistry laboratory, based on sample measurements. There is sufficient redundancy in the in-line plant monitors and chemistry laboratory gamma monitors to evaluate radiological conditions affecting emergency response. Therefore, there is no safety concern associated with out-of-service liquid scintillation counting equipment with respect to emergency response capabilities. Tritium is not a radionuclide limiting isotope in any accident scenario.

*Q.) Entergy had halted the pumping out of contaminated groundwater late last year. It was not until Gov. Shumlin raised concerns did the company resume that pumping. What is the NRC's view of that extraction pumping? Should it continue? Has it been effective?*

*Q.) Can Vermont Yankee continue to operate after its license expires in March 2012? What if the state continues to oppose the plant's relicensing?*

A.) We issued a document in March 2006 titled, "Frequently Asked Questions on License Renewal of Nuclear Power Plants": [http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1850/sr1850\\_faq\\_lr.pdf](http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1850/sr1850_faq_lr.pdf) . On Page 1-10, we answer the following question: "What happens if the review of a license renewal application is not completed before the current license expires?"

Answer: "If the applicant files a sufficiently complete application for renewal of its operating license at least 5 years before the existing license expires but the renewal of the license is delayed because of administrative or judicial appeal, then the existing license will still be considered valid until a final decision on the renewal application has been made."

Of course, Entergy did apply for an extension of the Vermont Yankee license with at least five years remaining on its initial 40-year operating license.

With respect to state opposition to the plant's relicensing, Vermont has its own process for determining whether the plant should be relicensed. That process would be separate and distinct from the NRC's review, which is ongoing.

*Q.) Has the NRC heard anything about the sale of the plant? What will the NRC do if Entergy finds a prospective buyer?*

A.) Not at this point. If Entergy does find a prospective buyer for Vermont Yankee, the plant's license would have to be amended to reflect that change. As part of our review of that license amendment request, we would look at several things, including A.) whether the buyer has the proper qualifications, i.e., sufficient experience, to safely operate a nuclear power plant; and B.) whether the buyer would have the wherewithal to properly decommission the facility once it was permanently shut down. Those reviews can take 6 months to a year.

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												E	Define "TBCCW restored" – added a bullet to stem
77	H	2												02	S	
78	H	3												08M	S	
79	H	2												08M	S	
80	H	2													S	
81	H	2												08	S	
82	H	2													S	Needs T117
83	H	2				X									E	Improve plausibility of one "is allowed" i.e. "necessary to restore and maintain ... - fixed

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

- Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
- Enter the level of difficulty (LOD) of each question using a 1 – 5 (easy – difficult) rating scale (questions in the 2 – 4 range are acceptable).
- Check the appropriate box if a psychometric flaw is identified:
  - 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).
- 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.
- 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).
- Enter question source: (B)ank, (M)odified, or (N)ew. Check that (M)odified questions meet criteria of ES-401 Section D.2.f.
- 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?
- 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
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/units	Back-ward	Q=K/A	SRO Only			
84	H	2												07	S	
85	H	2		X											S	Giving TS this becomes DLO - Giving TS is DLO (no, need to understand potential drain) - ok
86	H	2		X											E	Don't aim applicant at TS sections. Ask condition. - fixed
87	H	2		X		X									E	Enhance plausibility of A, B
88	H	2		X											U	No Ref reqd for notifications – removed reference
89	H	2													E	"selection of procedure" – don't state procedure
90	H	2		X											S	Requires basis knowledge to evaluate power source operability
91	H	2													S	

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

4. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
5. 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).
6. 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).
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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	H	2				X									07	E	A.(1) implausible – turbine trip, not generator? - fixed
93	H	3														S	
94	H	2														S	
95	H	2														S	
96	F	2												02	E		
97	H	2		X										09M	E	Remove T104. Test applicant knows ED IFF release > GE - done	
98	F	2												08	S		
99	H	2												08M	S		
100	F	2		X		X								09M	E	Mix and match choices so answer less obvious	

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

7. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
8. 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).
9. 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).
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8. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

The following materials were revised based on comments from the NRC Examination Team during the on-site exam preparation held January 10-12, 2011.

A. Administrative JPMs:

1. RO-Emergency Plan – modified JPM conditions to provide land-based “probable” threat (5-30 minute warning) vice land-based “imminent” threat (<5 minute warning). Time validated JPM to ensure realistic completion time.
2. SRO-Conduct of Operations #1 – made minor enhancement to description of event to clarify “on scene” telephone number.
3. SRO-Radiation Control – modified standard for step #9 to allow disapproval of worker #1 to perform task requiring emergency exposure since the task requires two workers (worker #2 is not authorized because of previous emergency exposure).

B. Control Room JPMs:

1. JPM Set #1 (Rod Drift and HPSW Injection) – setup schedule to have 1<sup>st</sup> applicant perform Rod Drift JPM, and then HPSW JPM while 2<sup>nd</sup> applicant performs Rod Drift JPM.
2. HPCI – minor enhancement to standard for step #13.
3. A.C. Electrical – added 1 condition (fire in the turbine building) and enhanced notes prior to step #3.
4. Removed alternate cueing statements (for use if simulator is not available) from all Control Room JPMs.

C. In-plant JPMs:

1. Swap EHC Regulators – changed cued “as found” value for step #2, and values for subsequent steps based on change to step #2. Also clarified cueing in step #10 to allow for returning to EHC regulator to “as found” value.
2. Added note addressing AOV accessibility before steps #2 and #4.

D. Simulator scenarios:

1. Scenario 1:

- a. Reworded critical task #2 to require a reactor scram when one area exceeds the T-103 action level for temperature (vice prior to blowdown).
- b. Added CRD flow control valve designation (page 3 of 12).
- c. Added NOTE to allow continuing with the scenario without restoring recirc pump seal purge (page 3 of 12).
- d. Added scripting to execute ARC-201 H-1 "Feedwater Field Instrument Trouble" on the turbine stop valve failure event (page 4 of 12).
- e. Added NOTE about momentary receipt of the "Main Steam Line Hi Radiation" alarm due to power reduction with hydrogen water chemistry injection (page 4 of 12).
- f. Rearranged sequence of alarms associated with HPCI steam leak event (page 6 of 12).
- g. During NRC validation of scenario #1, following the loss of CRD event, one NRC examiner noticed that CRD accumulator alarms cleared when the CRD pump was restored but before the CRD pump discharge valve was opened. The exam team ran this event again and confirmed the simulator modeling error. We expect this problem to be resolved prior to exam administration on 1/31/2011. (Note that although loss of a CRD pump is a frequently used malfunction, this particular scenario event used a Remote Function to close the pump suction strainer inlet, simulating a clogged suction strainer, which is why the software code error was not previously identified.)

2. Scenario 2:

- a. Modified simulator operator direction to insert loss of SWC malfunction after the first control rod is inserted for the power reduction required by the recirc pump trip event. This ensures reactor power is high enough to require SRV actuation during the subsequent ATWS and turbine trip.
- b. Corrected minor typographical errors.

3. Scenario 3:

- a. Added scripting to secure containment purge / SBTGT following radiation monitor failure event (page 3 of 13).
- b. Added NOTE for examiner to inform PRO that control room panel door cannot be opened, preventing simulated bypass of radiation monitor alarm input (page 3 of 13).
- c. Added scripting that the crew may direct local manual operation of the recirc MG set following scoop tube lockup (page 5 of 13).
- d. Added scripting to transfer to single RHR pump operation prior to attempting to spray containment (page 10 of 13).

- e. Clarified NOTE regarding DWCW leak—will not occur if crew isolates DWCW before drywell pressure reaches 26 psig (page 11 of 13).
- 4. Scenario 4: will not be used; deleted from submittal.
- 5. Scenario 5 (spare):
  - a. Added NOTE to allow continuing with scenario without performing the system restoration portion of ST-O-001-200-2 (page 2 of 16).
  - b. Added NOTE to clarify requirement for the crew to reduce power to prevent a low reactor level scram following the condensate pump trip, not necessarily to the recirc pump runback setpoint of 45% (page 7 of 16).

E. Written Exam:

- 1. Incorporated all comments as discussed and agreed upon during written exam review with the Chief Examiner on Wednesday January 12, 2011. The following additions / deviations are noted:
  - a. Question #29 – modified choice D since it was a second correct answer as originally submitted.
  - b. Question #56 – added the word “ONLY” to choices A and C.
  - c. Question #68 – developed a “new” replacement question due to technical challenges that were uncovered during validation of the agreed upon replacement question (the original “as submitted” question was rejected as LOD-1).
  - d. Question #69 – modified question due to technical challenges that were uncovered during validation of the agreed upon “enhanced” question.
  - e. Question #100 – modified choice D due to potential for it to be a second correct answer (based on the way the “enhanced question was written, choice D could have been misinterpreted to mean the licensed operator moving the control rods and the Shift Manger—who is also licensed—performing the 2<sup>nd</sup> verification.
- 2. Updated Forms ES-401-3 and ES-401-4 to reflect the rejected and reselected K/A for question #66.
- 3. Updated Form ES-401-6 to reflect how question duplication was controlled for the additional SRO-only audit exam that was developed and administered after the 45-day submittal. Form ES-401-6 was also updated to reflect changes to the number of memory versus C/A level questions, and the number of bank, new or modified questions, which resulted from incorporating NRC examiner comments.

This matrix shows the pages that have been changed as a result of the modifications to the written exam questions.

<b><u>Question #</u></b>	<b><u>Modified Page(s)</u></b>
7	Question and Answer pages
8	Answer page ONLY
13	Question and Answer pages
15	Question and Answer pages
16	Answer page ONLY
17	Answer page ONLY
18	Question and Answer pages
19	Question and Answer pages
25	Question and Answer pages
27	Answer page ONLY
29	Question and Answer pages
38	Question and Answer pages
40	Question page ONLY
45	Question and Answer pages
47	Question and Answer pages
56	Question and Answer pages
57	Question page ONLY
59	Question page ONLY
62	Answer page ONLY
64	Answer page ONLY
66	Question and Answer pages
68	Question and Answer pages
69	Question and Answer pages
71	Imbedded Reference ONLY (covered values on legend)
73	Question and Answer pages
76	Question and Answer pages
83	Question and Answer pages
86	Question and Answer pages
87	Question and Answer pages
88	Question and Answer pages
92	Question and Answer pages
97	Question page ONLY (deleted portion of T-104)
100	Question and Answer pages