



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

October 12, 2017
NOC-AE-17003525
File No. D4302
10 CFR 55

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
1600 East Lamar Boulevard
Arlington, TX 76011-4511

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Written Examination Results

The LOT 21 NRC License exam was administered from September 25, 2017 to October 9, 2017 at the South Texas Project. In accordance with NUREG 1021, Operator Licensing Examination Standards for Power Reactors, STP Nuclear Operating Company (STPNOC) is submitting the following post examination materials in electronic form on the enclosed CD-ROM.

- LOT 21 NRC JPMs
- LOT 21 NRC Simulator Scenarios
- LOT 21 NRC Written Exam
- LOT 21 NRC Exam Applicant Comments
- LOT 21 NRC Written Exam Analysis
- LOT 21 NRC Written Exam Question Challenges by STP
- LOT 21 NRC Written Exam Questions and Clarifications During Exam
- LOT 21 NRC Written Exam Seating Chart

In addition, the following documentation is attached:

- Form ES-403-1, Written Exam Grading QA Checklist
- Graded written examinations with cover sheets and original answer sheets

The completed ES-201-3, Examination Security Agreement will be forwarded to you as soon as possible.

STPNOC requests that NRC consider withholding the enclosure and attachments to this letter from Public Disclosure. None of these exam materials should go to the Public Document Room (ADAMS) for two years.

There are no commitments in this letter.

STI: 34554147

If you have any questions, please contact Stan Mason at (361) 972-4356 or me at (361) 972-7586.


ADRIAN CULVER

FOR Gregory W. Janak
Manager, Operations Training

Enclosure: CD-ROM with Post-Exam Information

Attachments: 1. ES-401-3, Written Exam Grading Quality Checklist
2. Graded written examinations with cover sheets and original answer sheets

cc:

(paper copy without attachments)

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*Copies distributed without attachments except as noted by the asterisk

RM without attachments

LOT 21 NRC EXAM ANALYSIS – 10/9/2017

Bank #	RO#	SRO#	ANSWER	A	B	C	D	Total Missed
2506	1		B					
2661	2		A					
2707	3		D					
2651	4		B					
2687	5		C					
2682	6		D					
1329	7		A					
2712	8		A		1			1
2689	9		C					
2560	10		A					
2693	11		B					
674	12		A					
1844	13		B					
1813	14		D		1			1
921	15		A					
2643	16		C	1			3	4
2694	17		D		5			5
1359	18		B					
2692	19		B					
1113	20		C				2	2
2700	21		A					
2677	22		C				2	2
516	23		B					
2647	24		C				5	5
2658	25		C					
2650	26		A				1	1
2729	27		A					
2705	28		D					
2039	29		C	2			1	3
2704	30		B					
2645	31		A			3		3
2716	32		C	5			1	6
1479	33		D			1		1
2702	34		A				1	1
704	35		B					
83	36		C				1	1
2666	37		C				1	1
2640	38		C					
2698	39		A					
870	40		D	1	2			3
790	41		A					
2685	42		A			4		4
2653	43		C				4	4

LOT 21 NRC EXAM ANALYSIS – 10/9/2017

Bank #	RO#	SRO#	ANSWER	A	B	C	D	Total Missed
2659	44		C					
2714	45		C					
2667	46		A					
2652	47		D	1				1
2642	48		B				1	1
2708	49		B					
2200	50		B					
1061	51		C					
2091	52		B			2		2
2663	53		A		4	1		5
2561	54		B					
2548	55		D					
2657	56		C	1			1	2
2641	57		D		1			1
1867	58		B				1	1
2116	59		D			1		1
2696	60		D	1		1		2
2672	61		D					
2644	62		A		2			2
2648	63		B					
2715	64		A			1		1
2649	65		B					
2646	66		D			1		1
1226	67		D	1				1
2675	68		C	1			1	2
1858	69		B				2	2
2536	70		D					
2664	71		C				1	1
1101	72		C					
2665	73		D					
1346	74		B					
2655	75		D		1			1
2668		76	A					
2291		77	A					
2673		78	D					
2697		79	C					
2686		80	D					
2706		81	D		1			1
2688		82	B					
2681		83	B					
2711		84	A					
2710		85	B					
416		86	C		1			1
2577		87	C				2	2

LOT 21 NRC EXAM ANALYSIS – 10/9/2017

Bank #	RO#	SRO#	ANSWER	A	B	C	D	Total Missed
2684		88	C	1				1
2683		89	D					
2679		90	B					
2690		91	C		1			1
2703		92	B				2	2
2447		93	D		7			7
2717		94	A				1	1
2695		95	C					
2691		96	A		1		1	2
2676		97	D			2		2
2701		98	A		1			1
2670		99	A			1		1
2709		100	B					

RO #17 – 5 candidates chose distracter “B”; (correct answer is “D”).

Question is based knowledge of procedures associated with Main Generator Hydrogen (H₂) Gas. The distracter chosen indicates a lack of knowledge of actions needed to be taken given the level of indicated H₂ purity. Training on the annunciator procedure requirements are given in the lesson plan for Main Generator H₂ Gas. LOT 202.19.

No changes to the exam are warranted.

RO #24 – 5 candidates chose distracter “D”; (correct answer is “C”).

Question is based knowledge of how the ESF DG governor is controlled when the engine receives an emergency start signal due to a loss of power to its associated BUS. The distracter chosen indicates a lack of knowledge of how generator frequency changes with an adjustment using the ‘GOV’ control switch. Training on the governor controls for an ESF DG are given in the lesson plan for ESF DG. LOT 201.39.

No changes to the exam are warranted.

RO #32 – 5 candidates chose distracter “A”; 1 candidate chose distracter “D” (correct answer is “C”).

Question is based on operator understanding of Component Cooling Water (CCW) heat exchanger controls and their effects on CCW temperatures. The distracters chosen indicate a lack of knowledge of which CCW valve would be procedurally used to control temperature. Training on CCW heat exchanger controls and the procedure are given in the lesson plan for CCW. LOT 201.12.

No changes to the exam are warranted.

LOT 21 NRC EXAM ANALYSIS – 10/9/2017

RO #53 – 4 candidates chose distracter “B”; 1 candidate chose distracter “C” (correct answer is “A”).

Question is based on off-normal procedural requirements during a fuel handling accident. The distracters chosen indicate a lack of knowledge for actions to take during a shutdown condition and fuel assemblies are being off-loaded from the reactor core when a fuel handling accident occurs in containment. Training on 0POP04-FH-0001, Fuel Handling Accident, is covered in off-normal procedure training. LOT 505.

No changes to the exam are warranted.

SRO #93 – 7 candidates chose distracter “B”; (correct answer is “D”).

Question is based knowledge of Technical Specifications (TS) associated with offsite power. The distracter chosen indicates a lack of knowledge of how to apply TS 3.8.1.1 with a loss of power to one of the switchyard BUSES. (North or South BUS) Seven out of eight SRO candidates missed this question, however, a review of the lesson plan on non-class 13.8 and 4.16KV power, LOT 201.31, and the lesson on TSs, LOT 503, indicates that the knowledge needed to answer the question is being given. In addition the ESF Power Availability Surveillance, 0PSP03-EA-0002, clearly states in the notes and pre-cautions the knowledge needed to answer the question. This surveillance is covered during time on shift.

No changes to the exam are warranted.

STPEGS
LOT 21 Written Exam
Student Questions and Clarifications
10/9/2017

The following are clarifications given to questions on the LOT 21 Written Exam:

Question #80

The crew is performing actions of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, with the following conditions:

- Containment Pressure is 12 psig and slowly lowering
- SG levels are all 50% and stable
- Pressurizer level is 48% and slowly rising
- RCS pressure is 1800 psig and stable
- Subcooling is 50° and stable
- RWST level is 125,000 gal and lowering
- ‘CNTMT SUMP TO SI SUCT HDR ISOL’ MOV-0016B has lost power.
- ‘CNTMT SUMP TO SI SUCT HDR ISOL’ MOV-0016C is danger tagged closed.

The Unit Supervisor will NEXT perform steps in...

- A. 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation.
- B. 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.
- C. 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.
- D. 0POP05-EO-ES11, SI termination.

Correct Answer D

Student Question – named removed – Referring to the 2nd bullet: “Narrow Range levels?”

Proctor Response – Yes. Wrote the following on white board: SRO Q80 – 2nd bullet – “SG NR levels...”

Note: Question updated in exam bank.

STPEGS

LOT 21 Written Exam

Student Questions and Clarifications

10/9/2017

Question #83

The crew was performing actions of 0POP04-RC-0004, Steam Generator Tube Leakage, in response to a tube leak on SG 'A'.

Subsequently;

- The leak became larger and was approximately 250 gpm.
- The crew performed a Reactor Trip and Safety Injection.

The crew is currently performing steps of 0POP05-EO-EO30, Steam Generator Tube Rupture. SG 'A' has been isolated and the RCS cooldown is in progress when the following parameters are observed:

	Pressure	Level	Main Steamline Radiation
SG A	1190 psig and lowering	44% NR and stable	1.8 E-1 and rising
SG B	910 psig and lowering	22% NR and stable	9.2 E-2 and rising
SG C	910 psig and lowering	17% NR and lowering	2.0 E-2 and stable
SG D	910 psig and lowering	23% NR and lowering	2.0 E-2 and stable

Based on these indications, the Unit Supervisor should...

- A. stop the cooldown when the required CET temperature is reached and continue in 0POP05-EO-EO30.
- B. stop the cooldown immediately and return to step 1 of 0POP05-EO-EO30.
- C. transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation.
- D. transition to 0POP05-EO-EC31, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.

Correct Answer B

Student Question – name removed – “Do I assume the same amount of AFW is going to SGs B, C, and D?”

Proctor Response – Yes. Wrote the following on white board: SRO Q83 – “Assume same amount of AFW going to SG B, C, and D”

STPEGS
LOT 21 Written Exam
Student Questions and Clarifications
10/9/2017

Question #96

The crew is performing a plant startup with the following conditions:

- Source Range NIs are reading 9.0×10^4 counts per second.
- Intermediate Range NIs are reading 5.0×10^{-10} amps.

Subsequently,

- DP 1201 loses power.

Only considering the Technical Specifications required for NIs, what is the appropriate LCO statement the Unit Supervisor would enter?

- A. Restore the inoperable channel to operable status prior to raising power above 10%.
- B. Restore the inoperable channel to operable status prior to raising power above P-6.
- C. Startup may proceed up to 75% if the inoperable channel is tripped within 72 hours.
- D. Suspend all operations involving positive reactivity changes immediately.

Correct Answer A

Student Question – name removed – “Is the snap shot taken before the trip or after?”

Proctor Response – Called chief examiner to discuss. Agreed to add clarification to the stem. Informed applicant of the decision and wrote the following on white board: SRO Q96 – “Prior to any Reactor Trip occurring, only considering the Technical Specifications required for NIs...”

Note: Question updated in exam bank.

STPEGS
LOT 21 Written Exam
Student Questions and Clarifications
10/9/2017

The following are questions asked by students but **NO** clarifications were given:

Question #58

The Unit is operating at 100% power with the following conditions:

- The crew is responding to a tube leak per 0POP04-RC-0004, Steam Generator Tube Leakage.
- Pressurizer level is at 32%, trending down slowly.

In accordance with 0POP04-RC-0004, the crew should (1) letdown flow and raise charging flow to control Pressurizer level.

AND

If Pressurizer level cannot be maintained greater than (2), then the crew should trip the Reactor and initiate Safety Injection.

- A. (1) lower
(2) 15%
- B. (1) lower
(2) 17%
- C. (1) isolate
(2) 15%
- D. (1) isolate
(2) 17%

Correct Answer B

Student Question – name removed – “I believe there is a note in RC-0004 that allows isolation or lowering.” (referring to letdown)

Proctor Response – Read as written. No clarification given.

STPEGS
LOT 21 Written Exam
Student Questions and Clarifications
10/9/2017

Question #60

The Unit is at 45% power with the following conditions:

- CW Pump #14 is OOS for maintenance.
- CW Pump #12 was tripped 5 hours ago due to a sheared shaft.

Subsequently;

- CW Pump #13 trips on overcurrent.
- Crew enters 0POP04-CW-0001, Loss of Circulating Water Flow.

The Steam Dumps will (1) available.

AND

Per 0POP04-CW-0001, the Crew will next perform actions of (2) .

A. (1) be

(2) 0POP04-TM-0003, Turbine Trip Below P-9

B. (1) be

(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

C. (1) NOT be

(2) 0POP04-TM-0003, Turbine Trip Below P-9

D. (1) NOT be

(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Correct Answer D

Student Question _ name removed– “How many Circ Water Pumps are running?”

Proctor Response – Read as written. No clarification given.

STPEGS
LOT 21 Written Exam
Student Questions and Clarifications
10/9/2017

Question #81

The crew is responding to a Loss of All AC Power per 0POP05-EO-EC00 with the following conditions:

- Steps 1-7 were completed and the crew was on step 8 when power was restored to Train 'A' AC ESF Bus.

Subsequently;

- The crew goes to step 26 to start recovery actions.
- SG pressures are being stabilized using SG PORVs.
- While re-energizing the Train 'A' Sequencer a SG PORV sticks open and cannot be closed locally.

If SG pressure lowers to the SI setpoint, the SI equipment (1) .

AND

The Unit Supervisor would transition to (2) .

- A. (1) will automatically start
 (2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- B. (1) will automatically start
 (2) 0POP05-EO-EC02, Loss of All AC Power Recovery with SI Required
- C. (1) must be manually started
 (2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- D. (1) must be manually started
 (2) 0POP05-EO-EC02, Loss of All AC Power Recovery with SI Required

Correct Answer D

Student Question – name removed – referring to the last bullet in stem: “Was it energized?”

Proctor Response – Read as written. No clarification given.