

U.S. Nuclear Regulatory Commission
Site-Specific SRO Written Examination

Applicant Information

Name:

Date: October 3, 2007

Facility/Unit: Monticello Plant

Region: I ☐ II ☐ III ☐ IV ☐

Reactor Type: W ☐ CE ☐ BW ☐ GE ☐

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

RO/SRO-Only/Total Examination Values n/a / 25 / 25 Points

Applicant's Scores _____ / _____ / _____ Points

Applicant's Grade _____ / _____ / _____ Percent

Question 1

Which of the following procedures would require a 10CFR50.59 screening if it were significantly revised?

- a. D.2-05.E.1 (RAISING A FUEL ASSEMBLY)
- b. 4211-PM (CORE SPRAY PUMP MOTOR 11)
- c. A.2-101 (CLASSIFICATION OF EMERGENCIES)
- d. C.4-C (SHUTDOWN OUTSIDE CONTROL ROOM)

Question 2

The plant is operating at rated conditions with 11Core Spray pump isolated for maintenance. A Station Blackout occurs concurrent with a LOCA. Plant conditions are as follows:

- RPV pressure is 300 psig and lowering 10 psig/minute
- RPV water level is – 80” inches and lowering 5 inches/minute
- Drywell pressure is 9 psig and rising 0.2 psig/minute
- Drywell temperature is 260°F and rising 1°F/minute

Ten minutes later 15 Bus is reenergized from #11 EDG. Which of the following should be directed FIRST?

- a. C.5-3502, (CONTAINMENT SPRAY).
- b. C.4-H, (RESTORATION OF PLANT LOADS)
- c. C.5-3503, (DEFEAT DRYWELL COOLER TRIPS).

B.09.07-05.E.7, (TRANSFER OF LPCI SWING BUS FROM ALTERNATE TO NORMAL SOURCE).

Question 3

The plant was operating at rated conditions when an inadvertent Group I Isolation occurred. While taking actions for the scram the crew notices all suppression chamber to drywell vacuum breakers are cycling open when a SRV opens. The following conditions are now present:

- Torus spray is OFF
- Torus pressure is 6 psig
- Drywell cooling fans are OFF
- Drywell temperature is 250°F

For the given conditions, can you direct the initiation of Drywell Sprays from the temperature leg of C.5-1200? Why or why not?

- a. No, torus sprays must be placed in service prior to initiation of drywell sprays
- b. No, under current plant conditions drywell pressure is less than torus pressure.
- c. No, both recirc pumps are running and must be tripped prior to initiating drywell sprays.
- d. Yes, drywell temperature is approaching 281°F and all conditions are met to initiate sprays.

Question 4

An event has occurred that has resulted in the Reactor Vessel Safety Pressure Limit being exceeded. A Site Area Emergency has been declared. It has been determined that an operator is required to enter the reactor building and manipulate a number of valves to protect valuable property.

As Emergency Director, which of the following is the Emergency Plan exposure limit that you can authorize for this activity?

- a. 5 REM
- b. 10 REM
- c. 15 REM
- d. 25 REM

Question 5

Which of the following conditions would NOT ensure Adequate Core Cooling?

	Reactor <u>Power</u>	Blowdown <u>in-progress</u>	RPV Water <u>Level</u>	RPV <u>Pressure</u>
a.	18%	NO	- 145"	820 psig
b.	11%	YES	- 161"	306 psig
c.	2%	YES	- 155"	128 psig
d.	0%	YES	- 138"	70 psig

Question 6

The plant was operating at 95% power when a 2R Lockout resulted in an ATWS event. Ten minutes following the event the following conditions exist:

- Bus 15 is locked out, all other buses are energized from 1R
- Reactor power is 15% and slowly lowering
- SBLC is injecting, tank level is 1300 gallons and lowering
- RPV water level is –80 inches and difficult to control
- H SRV remains full open and G SRV is cycling open and closed

As the CRS, which of the following must be directed to the Balance of Plant operator?

- a. Allow LO-LO SET to remain cycling
- b. Stabilize RPV pressure 800-1000 psig using SRVs
- c. Open additional SRVs to lower RPV pressure to 930 psig
- d. Stabilize RPV pressure below 1056 psig using main turbine bypass valves

Question 7

The plant was operating at rated conditions when control room receives a report of a fire in the Heating Boiler Room. Given the following timeline:

00:00:00 Fire reported to control room
00:08:00 Fire Brigade began attacking the fire
00:16:00 Control Room notified the fire is extinguished

Determine if Emergency Plan classification is required and, if so, who would fulfill the responsibilities of the Shift Emergency Communicator (SEC)?

Emergency Plan classification ...

- a. is NOT required
- b. Is required, Shift Security Supervisor
- c. Is required, Shift Chemistry Technician
- d. Is required, Shift Radiation Protection Technician

Question 8

A plant startup is being performed with a rod withdrawal currently in progress. The OATC completes withdrawal of the selected control rod and the following occurs:

00:00:00 IRMs indicate 10 on Range 3
00:00:08 Reactor power has doubled
00:00:10 The OATC inserts the selected control rod
00:00:13 The OATC completes insertion of the selected control rod
00:00:42 Reactor power has doubled again

As the CRS, you are required to direct the OATC to insert control rods...

- a. and establish a 60-100 second period IAW C.1 (Reactor Startup).
- b. to bring the reactor subcritical until the Nuclear Engineer completes an evaluation and notify personnel IAW 4AWI-04.08.01 (Event Notifications).
- c. to bring the reactor subcritical until the Nuclear Engineer completes an evaluation, then reestablish a 60-100 second period IAW C.1 (Reactor Startup).
- d. to bring the reactor subcritical until the Nuclear Engineer completes an evaluation, then with permission from the Operations Manager continue the startup IAW C.1 (Reactor Startup). .

Question 9

An event has occurred that has resulted in the following conditions:

- General Emergency has been declared
- A Radioactive release is in progress
- The MET tower is out of service
- Field teams report wind directly from the West
- Severe weather is NOT predicted in the forecast

For the above conditions, determine wind direction and the initial Protective Action Recommendations?

Wind direction from (1) degrees.

Evacuate (2) sectors out to 2 miles.

Evacuate (3) sectors out to 5 miles

Evacuate (4) sectors out to 10 miles.

	(1) <u>Wind From</u>	(2) <u>2 miles</u>	(3) <u>5 miles</u>	(4) <u>10 miles</u>
a.	270	D, E, F	5N, 5E, 5S	10E, 10SE
b.	90	M, N, P	5W	10SW, 10W, 10NW
c.	90	All	5W	None
d.	270	All	5N, 5E, 5S	None

Question 10

The plant is operating at rated conditions with a fuel bundle currently being shuffled in the Spent Fuel Pool. While the fuel bundle is being moved radiation levels change and are now as follows:

- Area Radiation Monitor A-1 reads 27 mrem/hr
- Area Radiation Monitor A-2 reads 22 mrem/hr
- Area Radiation Monitor A-3 reads 11 mrem/hr
- RM-17-453A (FUEL POOL MONITOR CHANNEL A) reads 22 mrem/hr
- RM-17-453B (FUEL POOL MONITOR CHANNEL B) reads 28 mrem/hr

As the CRS, which of the following meets the requirements for the above conditions?

- a. Declare an NUE
- b. Evacuate the Reactor Building
- c. Verify Standby Gas Treatment System is operating
- d. Continue with the fuel shuffle, radiation levels are normal for this evolution

Question 11

A reactor startup is in progress when a complete loss of Y-50 (RPS Bus A) occurs. Given the following:

- Reactor power is 4%
- The Mode Switch is in START TO HOT STANDBY
- APRMs 1 & 6 are currently bypassed
- Bypassed LPRMs are circled on the given LPRM assignment matrix (see photo on next page)

What action, if any, is required to be taken prior to placing the Mode Switch in RUN?

- a. Bypass APRM #4
- b. Bypass APRM #5
- c. No action required; APRM #6 is already bypassed
- d. No action required; LCO 3.0.4 applies allowing a mode change for this condition

0 = BYPASSED
LPRM ASSIGNMENT MATRIX

<u>LPRM</u>	<u>LPRM</u> <u>GRP 1</u>	<u>LPRM</u> <u>GRP 2</u>	<u>APRM</u> <u>CH 1</u>	<u>APRM</u> <u>CH 2</u>	<u>APRM</u> <u>CH 3</u>	<u>APRM</u> <u>CH 4</u>	<u>APRM</u> <u>CH 5</u>	<u>APRM</u> <u>CH 6</u>
04-29		3C				3D	3A	3B
12-13	4C		4D	4A	4B	4C	4D	4A
12-21		4B						
12-29	2A		2B	2C	2D			
12-37		2D				2A	2B	2C
20-13		5C				5D	5A	5B
20-21	4D		4A	4B	4C			
20-29		3A				3B	3C	3D
20-37	2B		2C	2D	2A			
20-45		1C				1D	1A	1B
28-05		6B				6C	6D	6A
28-13	4A		4B	4C	4D			
28-21		4D				4A	4B	4C
28-29	3C		3D	3A	3B			
28-37		3B				3C	3D	3A
28-45	1A		1B	1C	1D			
36-13		6A				6B	6C	6D
36-21	5B		5C	5D	5A			
36-29		4C				4D	4A	4B
36-37	3D		3A	3B	3C			
36-45		2A				2B	2C	2D
44-21		5B				5C	5D	5A
44-29	3A		3B	3C	3D			
44-37		3D				3A	3B	3C

Question 12

The plant is in Mode 5 with movement of irradiated fuel in progress. A change to the Refueling procedure (Verification Checklist Data File and Fuel Handling Supervisor Verification Checklist) has been requested. The in-core location of a fuel bundle will be changed to prevent SRM count rate from lowering below 10 CPS.

Which of the following meets the required signatures for this change?

- a. Control Room Supervisor AND Shift Manager
- b. Fuel Handling Supervisor AND Nuclear Engineer
- c. Control Room Supervisor, Shift Manager AND Nuclear Engineer
- d. Fuel Handling Supervisor, Control Room Supervisor AND Operations Manager

Question 13

The plant is operating at rated conditions. The previous shift performed routine maintenance on HPCI (See photo on next page for HPCI system status). The following event occurs:

- SRV H tailpipe is reading 140°F and rising 1°F/hr
- SRV H "Amber" light is OFF

As the CRS, if these conditions continue, which of the following must be directed if SRV H tailpipe temperature exceeds 210°F?

- a. Place DIV I Core Spray in Torus Mixing Mode and restore Core Spray to operable status within 72 hours
- b. Place DIV I Torus Cooling in service and restore RHR/LPCI mode to operable status within 72 hours
- c. Reduce Reactor power IAW C.4-F (Rapid Power Reduction) with Recirc pumps but do not reduce flow < 34 Mlb/hr
- d. Place DIV II Core Spray in Torus Mixing Mode, restore Core Spray to operable status within 7 days AND restore SRV H to operable status within 14 days



Question 14

The plant is operating at rated conditions. Given the following conditions:

- Outside air temp is 89°F
- Static Inverter Y-81 tagged out for maintenance.
- Y-81 loads are being powered via MBS Y-83
- Breaker B4482 (Y82 120V INST AC ALT SOURCE XFMR) trips on over current.

For the conditions given above, which procedure must be prioritized FIRST to mitigate this event?

- a. C.4-F (Rapid Power Reduction)
- b. C.4-K (Immediate Reactor Shutdown)
- c. C.4-B.06.03.A (Decreasing Condenser Vacuum)
- d. C.4-B.05.07.A (Loss of Reactor Water Level Control)

Question 15

The plant is operating at rated conditions when a LONOP and small break LOCA occurred. Given the following:

- 15 Bus is LOCKED out
- 12 EDG-ESW pump failed to start
- 11 Service Water pump is running
- Drywell pressure is 2.2 psig and slowly rising
- Drywell temperature is 138°F and slowly rising
- RPV pressure is 820 psig and slowly lowering
- RPV water level is –10 inches and slowly rising using HPCI

Which of the following directions should be prioritized FIRST?

- a. Place Torus sprays in service
- b. Restore cooling to the #12 EDG
- c. Start all available Drywell cooling
- d. Prevent Core Spray and LPCI injection

Question 16

The plant has been operating at rated conditions for several months. On August 6th at 1300 it was discovered that SR 3.1.3.3 had not been performed on control rod 26-19 since June 28th at 0800. Given the following:

- Control rod 26-19 is at position 12
- It has been determined that the risk impact can be managed

Determine if an extension is allowed, if so, when is the latest the surveillance can be completed and remain in compliance with Technical Specifications?

- a. Perform the surveillance prior to August 7th at 0200.
- b. Perform the surveillance prior to August 7th at 1300.
- c. Perform the surveillance prior to September 6th at 1300.
- d. An extension IS NOT allowed, immediately enter the ACTIONS of TS 3.1.3.

Question 17

The plant is operating at 50% power with #12 Circulating Water Pump isolated for required maintenance. The following events occur:

- Lockout on Bus 13
- LC-107 fails to reenergize
- The reactor is scrammed
- Ten control rods are at position 48
- IRMs are reading 75 on range 7 and lowering

As the CRS, which of the following actions should be directed?

- a. Trip both recirc pumps IAW C.4-A
- b. Trip both recirc pumps IAW C.5-2007
- c. Defeat low-low RPV water level MSIV isolation IAW C.5-3301
- d. Manually open enough SRV's and lower RPV pressure to 930 psig

Question 18

The plant was operating at 7% with a startup in progress. Predict the impact if there was a loss of controller signal to the in-service Level Control Valve, and what action should be directed to mitigate this abnormal condition.

RPV water level would (1) and the CRS should direct the crew to (2) .

- | | | |
|----|----------------------------|--|
| | <u>(1)</u> | <u>(2)</u> |
| a. | remain relatively constant | adjust RWCU dump flow as required |
| b. | rise | raise reactor power |
| c. | lower | lower reactor power |
| d. | lower | take local manual control of the valve |

Question 19

The plant is operating at rated conditions. While performing the SBLC operability surveillance Test, the Out-plant Operator inadvertently drained an unknown volume of solution from the storage tank. The following information has been obtained.

- Tank level indication is 1150 gallons.
- Boron enrichment is 58 percent.
- Boron solution concentration is 12.6 percent.
- Pump flow rate is 26 gpm at 1275 psig.
- Boron solution temperature is 70°F.

Is the SBLC system OPERABLE or INOPERABLE and why?

- The SBLC system is OPERABLE. Existing conditions satisfy Table 3.1.7-1 Equations 1 and 2.
- The SBLC system is INOPERABLE; a minimum of 50 gallons of demin water must be added to declare the SBLC system operable.
- The SBLC system is INOPERABLE; boron concentration must be raised a minimum of 0.62 percent to declare the SBLC system operable.
- The SBLC system is OPERABLE. Tank volume and Boron concentration are within the allowed operation region of Figure 3.1.7-1 of Technical Specifications.

Question 20

A plant startup is in progress with the reactor critical and a positive period established in the intermediate range. The Duty RO has completed OPERATIONS DAILY LOG – PART J and has given it to you for review.

After reviewing the given completed portions of OPERATIONS DAILY LOG – PART J, which of the following, if any, describes the Technical Specification required action and completion time?

- a. None, RCS Operational LEAKAGE is within limits
- b. Reduce RCS Total LEAKAGE to within limits in 4 hours
- c. Reduce RCS Unidentified LEAKAGE to within limits in 4 hours
- d. Verify RCS Unidentified LEAKAGE increase is not in service sensitive type 304 or type 316 austenitic stainless steel in 4 hours

Question 21

The plant is operating in single loop with the following conditions:

- Reactor power is 50%
- MCPR is determined to be 1.10

Which of the following, if any, is the required action that must be directed to satisfy Technical Specifications?

- a. Insert control rods until RTP < 25%
- b. No action required, maintain MCPR ≥ 1.10
- c. Fully insert all insertable control rods within 2 hours.
- d. Restore MCPR to within COLR limits within 2 hours.

Question 22

Which of the following fleet tagging responsibilities can ONLY be carried out by Operations Shift Supervision or persons designated by Operations Management in the Work Control Center (WCC)?

- a. Status a clearance checklist to "Distributed"
- b. Status a clearance order to "Working"
- c. Authorize more than one holder at a time for each operating permit.
- d. Direct Primary Authorized Employee(s) to release OR verify released all stored energy prior to start of work.

Question 23

As the CRS, you had been working with the Reactor Building Operator and the ALARA Coordinator to determine the best way to perform an upcoming evolution in the plant. The following facts are known:

- Past task performance has resulted in an average exposure of 550 mrem
- The task historically required 2 hours to complete
- If shielding is hung it would lower the dose rate by 25%
- The total dose to hang and remove the shielding is estimated to be 220 mrem
- A special tool is available to perform the task that would allow the operator to be in a lower exposure area (200 mrem/hr)
- Use of the special tool is estimated to extend the job time by 40%

What direction must the CRS provide to the Reactor Building Operator and the ALARA Coordinator to ensure that the task is performed within the principles of ALARA?

- a. Hang the shielding AND use the special tool
- b. DO NOT use the shielding, but use the special tool
- c. Hang the shielding, but DO NOT use the special tool
- d. DO NOT use the shielding AND DO NOT use the special tool

Question 24

A plant shutdown is in progress with reactor power at 25%. De-inerting preparations are in progress IAW 2140 (DEINERTING PRIMARY CONTAINMENT).

As the CRS, you are required to...

- a. De-inert by venting primary containment through the Reactor Building plenum.
- b. Complete de-inerting within 24 hours of the time the primary containment purge was initiated.
- c. Verify an analysis of primary containment atmosphere has been completed within the previous 24 hours.
- d. Stop the primary containment purge once the drywell equipment hatch, drywell personnel hatch, or torus manway are opened.

Question 25

The plant is operating at 60% power when an unisolable reactor coolant leak occurs in the RWCU pump room. Given the following:

- SBTG has automatically initiated
- RWCU Pump Room temperature is 215°F and rising
- 962-foot elevation outside the RWCU Pump Room is 205°F and rising
- 962-foot elevation outside the RWCU Pump Room is 1100 mrem/hr and rising

As the CRS, which of the following actions is required to be taken for the above conditions?

- a. Open all 3 ADS valves and rapidly depressurize the RPV
- b. Stabilize RPV pressure and maintain cooldown rate <100°F/hr
- c. Restart Turbine Building Ventilation to ensure a diluted elevated release
- d. Open main turbine bypass valves and exceed a 100°F/hour cooldown rate

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QUESTION 001
K/A 95016 2.2.9
REFERENCE AWI-02.02.02
MEMORY
NEW

QUESTION 002
K/A 295003AA2.04
REFERENCE B.09.07-02
HIGHER
NEW

QUESTION 3
K/A 295024EA2.04
REFERENCE C.5-1200,
B.04.01.01-02
Reference provided during exam: EOP
Flow Charts
HIGHER
NEW

QUESTION 004
K/A 295025 2.3.4
REFERENCE A.2-401
FUNDAMENTAL
NEW

QUESTION 5
K/A 295031EA2.04
REFERENCE C.5.1-1000, C.5-
1100, C.5-2002 and C.5-2007
Reference provided during exam: EOP
flowcharts
HIGHER
NEW

Question 006
K/A 295037EA2.06
REFERENCE C.5.1-2007 and
C.5-2007
Reference provided during exam: EOP
flowcharts
HIGHER
MODIFIED

Question 7
K/A 600000 2.4.29
REFERENCE 4AWI-08.02.02,
A.2-101
Reference provided during exam: EAL
Matrix
HIGHER
NEW

QUESTION 008
K/A 295014AA2.02
REFERENCE C.6-005-A-20, C.1
FUNDAMENTAL
NEW

QUESTION 009
K/A 295017AA2.05
REFERENCE A.2-204, 5790-102-
02
Reference provided during exam: 5790-
102-02 pg. 2 of 3
HIGHER
NEW

QUESTION 010
K/A 295034 2.4.11
REFERENCE D.2-05, page 6
paragraph 11)
Reference provided during exam: EOP
flowcharts and EAL Matrix
FUNDAMENTAL
NEW

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QUESTION 011
K/A 212000A2.16
REFERENCE B.05.01.02, TS 3.0,
3.3.1.1
Reference provided during exam: TS
3.0, 3.3.1.1
HIGHER
NEW

QUESTION 012
K/A 215004 2.2.26
REFERENCE D.2-05
FUNDAMENTAL
NEW

QUESTION 013
K/A 239002A2.02
REFERENCE C.4-B.03.03.B, TS
3.4.3 & 3.5.1
Reference provided during exam: TS
3.4.3 & 3.5.1
HIGHER
NEW

QUESTION 014
K/A 262002A2.01
REFERENCE C.4-B.09.13.E & G
HIGHER
NEW

QUESTION 015
K/A 264000 2.4.22
REFERENCE C.6-008-C-17
Reference provided during exam: EOP
Flow Charts
HIGHER
NEW

QUESTION 016
K/A 201002 2.2.12
REFERENCE SR 3.0, TS 3.1.3
Reference provided during exam: SR
3.0, TS 3.1.3, 2007 calendar
HIGHER
NEW

QUESTION 017
K/A 202002A2.02
REFERENCE C.5.1-1000, C.5.1-
2007, C.5-2007, C.4-A, and C.4-
B.09.07.E
Reference provided during exam: EOP
Flow Charts
HIGHER
NEW

QUESTION 018
K/A 259001A2.07
REFERENCE B.05.07-01, C.4-
B.05.07.A
HIGHER
BANK

QUESTION 019
K/A 2.1.25
REFERENCE TS 3.1.7
Reference provided during exam: TS
3.1.7 and figures
HIGHER
BANK

QUESTION 020
K/A 2.1.33
REFERENCE B.07.01-05 and TS
3.4.4
Reference provided during exam: TS
3.4.4, Completed Pages 11, 12 and 13
of 0000-J
HIGHER
NEW

QUESTION 021
K/A 2.2.22
REFERENCE TS 2.1.1.2, 2.2 and
3.2.2
Reference provided during exam:
Technical Specification (Safety Limit
Section 2 removed)
HIGHER
NEW

QUESTION 022
K/A 2.2.13
REFERENCE 4 AWI-04.05.04 and
FP-OP-TAG-02
FUNDAMENTAL
NEW

QUESTION 023
K/A 2.3.2
REFERENCE 4AWI-08.04.01,
GET-Radiation Worker
HIGHER
NEW

QUESTION 024
K/A 2.3.9
REFERENCE 2140
MEMORY
NEW

QUESTION 025
K/A 2.4.6
REFERENCE C.5-1-1000, C.5-1-
1100, and C.5-1100
Reference provided during exam: EOP
Flow Charts
HIGHER
NEW

*****END OF EXAM*****

ANSWER KEY
MULTIPLE CHOICE

- 001 d.
- 002 d.
- 003 b.
- 004 b.
- 005 c.
- 006 c.
- 007 b.
- 008 b.
- 009 d.
- 010 b.
- 011 b.
- 012 c.
- 013 a.
- 014 d.
- 015 b.
- 016 c.
- 017 a.
- 018 d.
- 019 a.
- 020 c.
- 021 c.
- 022 a.
- 0023 d.
- 024 c.
- 025 d.