U.S. Nuclear Regulatory Commission

Site-Specific RO Written Examination

Applicant Information	
Name:	
Date: November 12th, 2009	Facility/Unit: Plant E. I. Hatch
Region: I ☐ II X III ☐ IV ☐	Reactor Type: W ☐ CE ☐ BW ☐ GE X
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. Examination papers will be collected 6 hours after the examination begins.

Applicant Certification

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

_____
Applicant's Signature

Results	
Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

#	ID	Answers 0
1	201001K5.02 1	D
2	202001A3.04 1	B
3	202002K2.02 1	C
4	203000G2.1.31 1	B
5	204000G2.4.46 1	D
6	205000K5.03 1	D
7	206000K5.05 1	B
8	209001K1.09 1	D
9	209001K1.13 1	B
10	211000K4.03 1	C
11	212000A2.16 1	B
12	212000A2.19 1	A
13	214000K1.04 1	B
14	215003A1.04 1	A
15	215004K6.04 1	C
16	215005A1.04 1	B
17	215005A1.05 1	B
18	216000A2.10 1	B
19	217000K2.03 1	B
20	218000K1.06 1	D
21	223002K3.21 1	B
22	233000K4.06 1	A
23	234000K3.04 1	C
24	239002A3.05 1	D
25	241000A1.24 1	A
26	259002A4.03 1	B
27	259002K6.04 1	C
28	261000K3.01 1	B
29	261000K3.06 1	C
30	262001G2.2.44 1	D
31	262002A3.01 1	B
32	263000A2.01 1	C
33	264000K4.04 1	B
34	286000A4.05 1	C
35	290002K6.08 1	D
36	290003A1.04 1	D
37	295001K2.07 1	D
38	295003K1.04 1	B
39	295004G2.4.09 1	A
40	295005K3.07 1	C
41	295006A1.02 1	A
42	295010A1.05 1	D
43	295013G2.4.01 1	B
44	295015A1.02 1	B
45	295016A2.06 1	B
46	295018K3.06 1	C
47	295019A2.02 1	A
48	295020A2.03 1	B

#	ID	Answers 0
49	295021G2.2.40 1	D
50	295023A1.04 1	D
51	295024A2.02 1	D
52	295025G2.1.23 1	B
53	295026K3.01 1	A
54	295028A1.03 1	C
55	295030K1.02 1	D
56	295031A1.05 1	C
57	295032K1.02 1	A
58	295035K3.02 1	C
59	295037K2.07 1	B
60	295038K1.03 1	B
61	300000K6.07 1	D
62	400000K2.02 1	C
63	500000K2.06 1	D
64	600000K1.02 1	C
65	700000K2.07 1	A
66	G2.1.06 1	C
67	G2.1.08 1	B
68	G2.1.17 1	A
69	G2.2.01 1	D
70	G2.2.37 1	C
71	G2.2.44 1	B
72	G2.3.05 1	B
73	G2.3.13 1	B
74	G2.4.26 1	D
75	G2.4.49 1	C

RO Candidate List of Handouts for Written Exam

	Handout
1.	34AB-R42-001-0S, Page 2 (Section 4.0 Subsequent Operator Actions) and Attachment 2.
2.	Unit 2 EOP Graph 1, "RPV Saturation Temperature" and Graph 8 "Drywell Spray Initiation Limit"
3.	Unit 2 EOP Graph 17A, HPCI Pump NPSH Limit (Torus Water Level At or Above 146") Unit 2 EOP Graph 17B, HPCI Pump NPSH Limit (Torus Water Level Below 146")
4.	Unit 2, top section of 31EO-PCG-001-2, PCGC .

4.0 SUBSEQUENT OPERATOR ACTIONS

4.1 IF ground is indicated on the Station Service batteries, determine the significance of the ground as follows:

4.1.1 Determine the magnitude of the ground using meter indication and Attachment 2.

NOTE

125/250 VDC bus grounds are indicated on 1/2H11-P655 on Battery Ground Detection System meters (1/2R42-R613A and 1/2R42-R613B). Portion of battery bus with ground can be determined as follows:

Ground ON	Switch Position	Direction Of Meter Deflection	Section
P	1	Negative (-)	Page 6
	2	Negative (-)	
PN	1	Positive (+)	Page 8
	2	Negative (-)	
N	1	Positive (+)	Page 10
	2	Positive (+)	

4.1.2 IF ground is greater than 19000 ohms, PLACE the Ground Detection Sys Battery meter switch in the position which clears the alarm, AND exit this procedure.

NOTE

A ground is determined by a resistance of $\leq$19,000Ω which is equivalent to current value outside of the range of +1.98 mA to -1.98 mA as determined on Attachment 2.

4.1.3 IF ground is less than 19000 ohms:

4.1.3.1 IF possible, PLACE the Ground Detection Sys Battery meter switch in the position which clears the alarm.

4.1.3.2 Locate the ground per the following subsections.

NOTE

The correlation's on this table correspond to readings expected for a single ground on the system. IF multiple grounds occur on the system, THEN the meter readings may not correspond to table values.

GROUND FAULT ON BUS P

POTENTIOMETER RESISTANCE = 25,000

GROUND RESISTANCE IN OHMS	SWITCH POSITION 1 I_G IN MILLIAMPS	SWITCH POSITION 2 I_G IN MILLIAMPS
0	-5.00	-15.00
1000	-4.63	-13.89
2000	-4.31	-12.93
3000	-4.03	-12.10
4000	-3.79	-11.36
5000	-3.57	-10.71
6000	-3.38	-10.14
7000	-3.21	- 9.62
8000	-3.05	- 9.15
9000	-2.91	- 8.72
10000	-2.78	- 8.33
11000	-2.66	- 7.98
12000	-2.55	- 7.65
13000	-2.45	- 7.35
14000	-2.36	- 7.08
15000	-2.27	- 6.82
16000	-2.19	- 6.58
17000	-2.12	- 6.36
18000	-2.05	- 6.15
19000	-1.98	- 5.95
20000	-1.92	- 5.77
21000	-1.87	- 5.60
22000	-1.81	- 5.43
23000	-1.76	- 5.28
24000	-1.71	- 5.14
25000	-1.67	- 5.00
26000	-1.62	- 4.87
27000	-1.58	- 4.75
28000	-1.54	- 4.63
29000	-1.51	- 4.52
30000	-1.47	- 4.41

GROUND FAULT ON BUS P

POTENTIOMETER RESISTANCE = 25,000

GROUND RESISTANCE IN OHMS	SWITCH POSITION 1 I_G IN MILLIAMPS	SWITCH POSITION 2 I_G IN MILLIAMPS
31000	-1.44	-4.31
32000	-1.40	-4.21
33000	-1.37	-4.12
34000	-1.34	-4.03
35000	-1.32	-3.95
36000	-1.29	-3.87
37000	-1.26	-3.79
38000	-1.24	-3.71
39000	-1.21	-3.64
40000	-1.19	-3.57
41000	-1.17	-3.50
42000	-1.15	-3.44
43000	-1.13	-3.38
44000	-1.11	-3.32
45000	-1.09	-3.26
46000	-1.07	-3.21
47000	-1.05	-3.15
48000	-1.03	-3.10
49000	-1.02	-3.05
50000	-1.00	-3.00

GROUND FAULT ON BUS PN

POTENTIOMETER RESISTANCE = 25,000

GROUND RESISTANCE IN OHMS	SWITCH POSITION 1 I_G IN MILLIAMPS	SWITCH POSITION 2 I_G IN MILLIAMPS
0	**+5.00**	**-5.00**
1000	**+4.63**	**-4.63**
2000	**+4.31**	**-4.31**
3000	**+4.03**	**-4.03**
4000	**+3.79**	**-3.79**
5000	**+3.57**	**-3.57**
6000	**+3.38**	**-3.38**
7000	**+3.21**	**-3.21**
8000	**+3.05**	**-3.05**
9000	**+2.91**	**-2.91**
10000	**+2.78**	**-2.78**
11000	**+2.66**	**-2.66**
12000	**+2.55**	**-2.55**
13000	**+2.45**	**-2.45**
14000	**+2.36**	**-2.36**
15000	**+2.27**	**-2.27**
16000	**+2.19**	**-2.19**
17000	**+2.12**	**-2.12**
18000	**+2.05**	**-2.05**
19000	**+1.98**	**-1.98**
20000	+1.92	-1.92
21000	+1.87	-1.87
22000	+1.81	-1.81
23000	+1.76	-1.76
24000	+1.71	-1.71
25000	+1.67	-1.67
26000	+1.62	-1.62
27000	+1.58	-1.58
28000	+1.54	-1.54
29000	+1.51	-1.51
30000	+1.47	-1.47
31000	+1.44	-1.44
32000	+1.40	-1.40
33000	+1.37	-1.37
34000	+1.34	-1.34
35000	+1.32	-1.32
36000	+1.29	-1.29
37000	+1.26	-1.26
38000	+1.24	-1.24
39000	+1.21	-1.21
40000	+1.19	-1.19

GROUND FAULT ON BUS PN

POTENTIOMETER RESISTANCE = 25,000

GROUND RESISTANCE IN OHMS	SWITCH POSITION 1 I_G IN MILLIAMPS	SWITCH POSITION 2 I_G IN MILLIAMPS
41000	+1.17	-1.17
42000	+1.15	-1.15
43000	+1.13	-1.13
44000	+1.11	-1.11
45000	+1.09	-1.09
46000	+1.07	-1.07
47000	+1.05	-1.05
48000	+1.03	-1.03
49000	+1.02	-1.02
50000	+1.00	-1.00

GROUND FAULT ON BUS N

POTENTIOMETER RESISTANCE = 25,000

GROUND RESISTANCE IN OHMS	SWITCH POSITION 1 I_G IN MILLIAMPS	SWITCH POSITION 2 I_G IN MILLIAMPS
0	**+15.00**	**+5.00**
1000	**+13.89**	**+4.63**
2000	**+12.93**	**+4.31**
3000	**+12.10**	**+4.03**
4000	**+11.36**	**+3.79**
5000	**+10.71**	**+3.57**
6000	**+10.14**	**+3.38**
7000	**+ 9.62**	**+3.21**
8000	**+ 9.15**	**+3.05**
9000	**+ 8.72**	**+2.91**
10000	**+ 8.33**	**+2.78**
11000	**+ 7.98**	**+2.66**
12000	**+ 7.65**	**+2.55**
13000	**+ 7.35**	**+2.45**
14000	**+ 7.08**	**+2.36**
15000	**+ 6.82**	**+2.27**
16000	**+ 6.58**	**+2.19**
17000	**+ 6.36**	**+2.12**
18000	**+ 6.15**	**+2.05**
19000	**+ 5.95**	**+1.98**
20000	+ 5.77	+1.92
21000	+ 5.60	+1.87
22000	+ 5.43	+1.81
23000	+ 5.28	+1.76
24000	+ 5.14	+1.71
25000	+ 5.00	+1.67
26000	+ 4.87	+1.62
27000	+ 4.75	+1.58
28000	+ 4.63	+1.54
29000	+ 4.52	+1.51
30000	+ 4.41	+1.47
31000	+ 4.31	+1.44
32000	+ 4.21	+1.40
33000	+ 4.12	+1.37
34000	+ 4.03	+1.34
35000	+ 3.95	+1.32
36000	+ 3.87	+1.29
37000	+ 3.79	+1.26
38000	+ 3.71	+1.24
39000	+ 3.64	+1.21

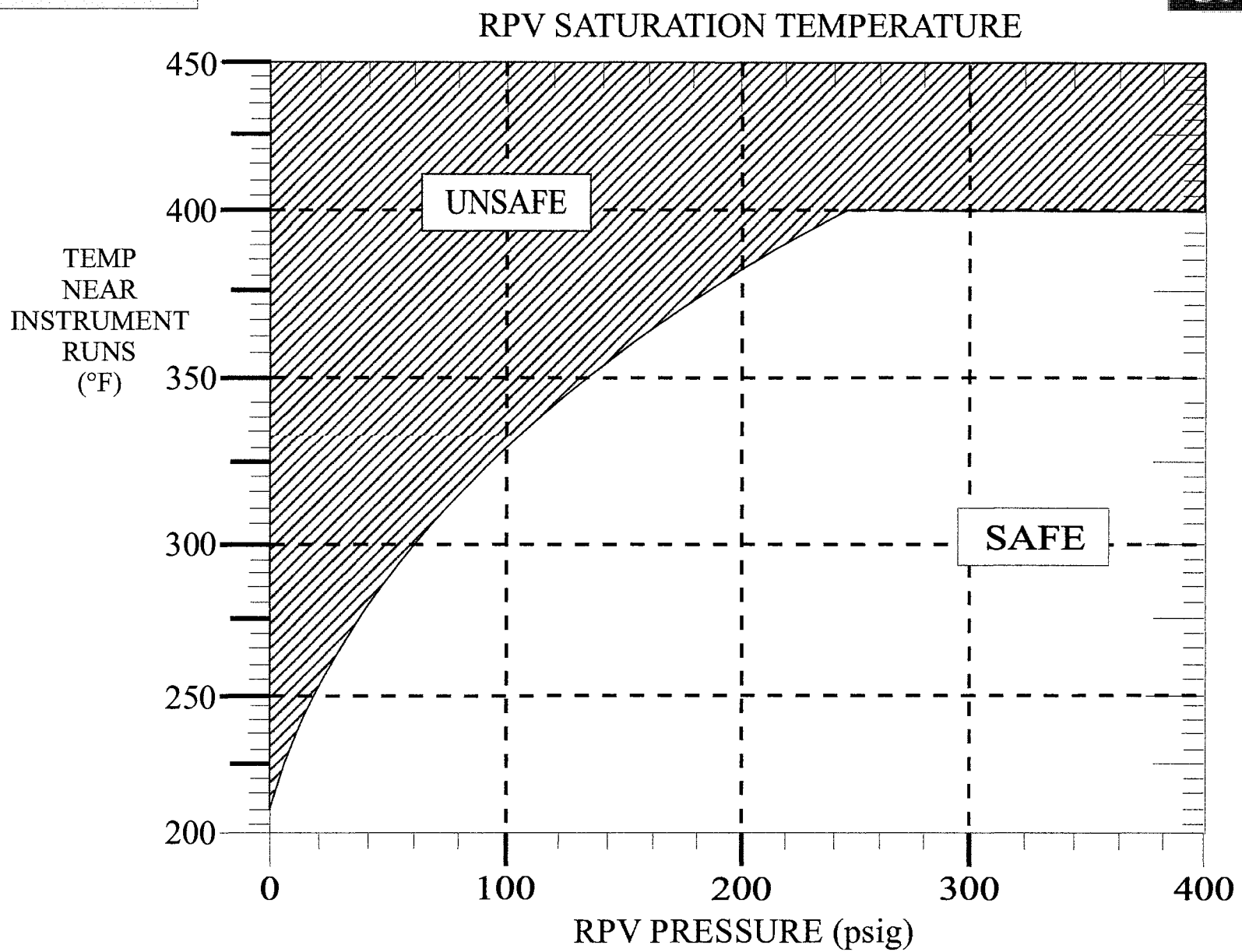
GROUND FAULT ON BUS N

POTENTIOMETER RESISTANCE = 25,000

GROUND RESISTANCE IN OHMS	SWITCH POSITION 1 I_G IN MILLIAMPS	SWITCH POSITION 2 I_G IN MILLIAMPS
40000	+ 3.57	+1.19
41000	+ 3.50	+1.17
42000	+ 3.44	+1.15
43000	+ 3.38	+1.13
44000	+ 3.32	+1.11
45000	+ 3.26	+1.09
46000	+ 3.21	+1.07
47000	+ 3.15	+1.05
48000	+ 3.10	+1.03
49000	+ 3.05	+1.02
50000	+ 3.00	+1.00

GRAPH 1

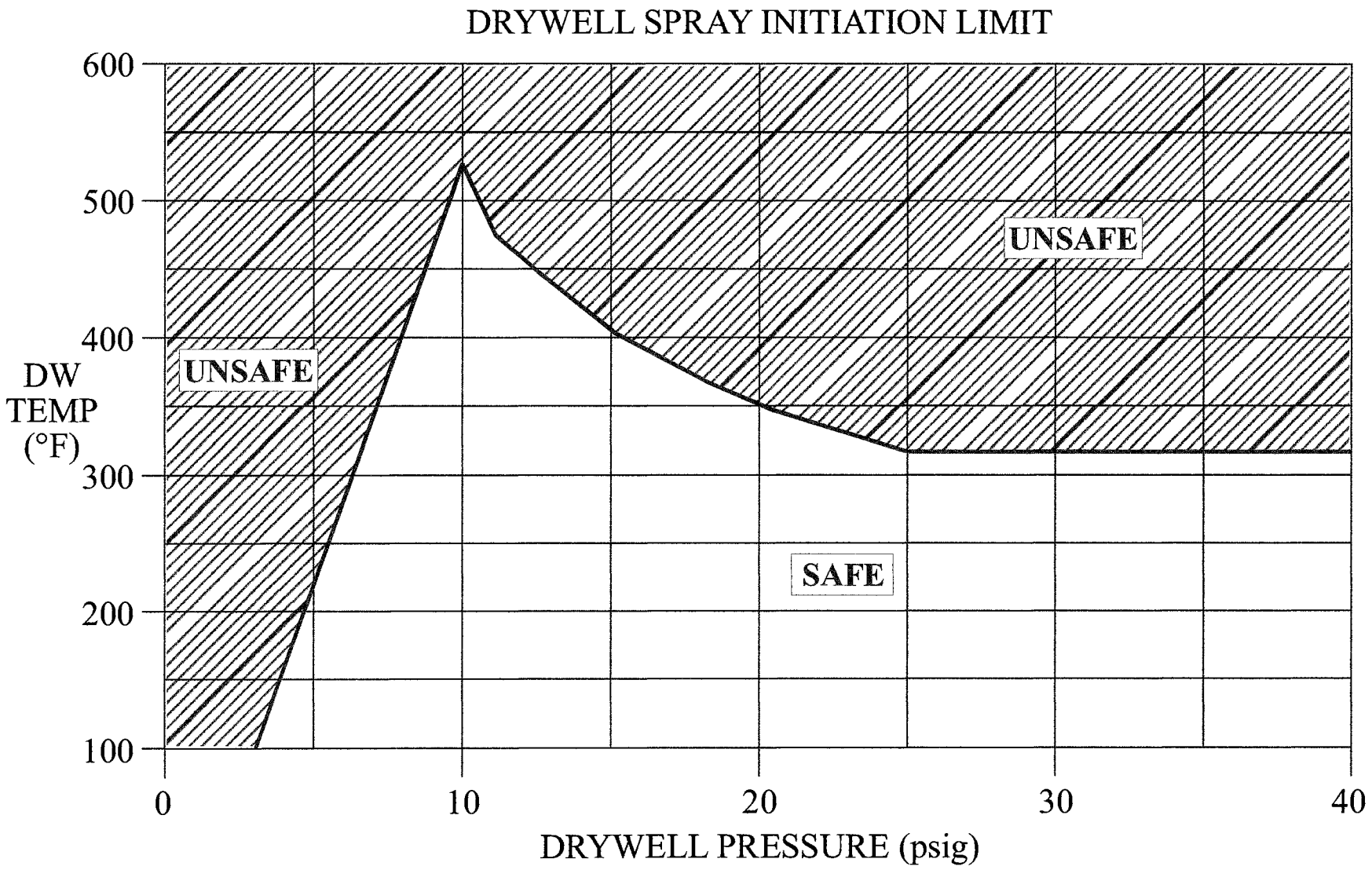
UNIT 2



NOTE: May use SPDS Emergency Displays in place of this Graph.

GRAPH 8

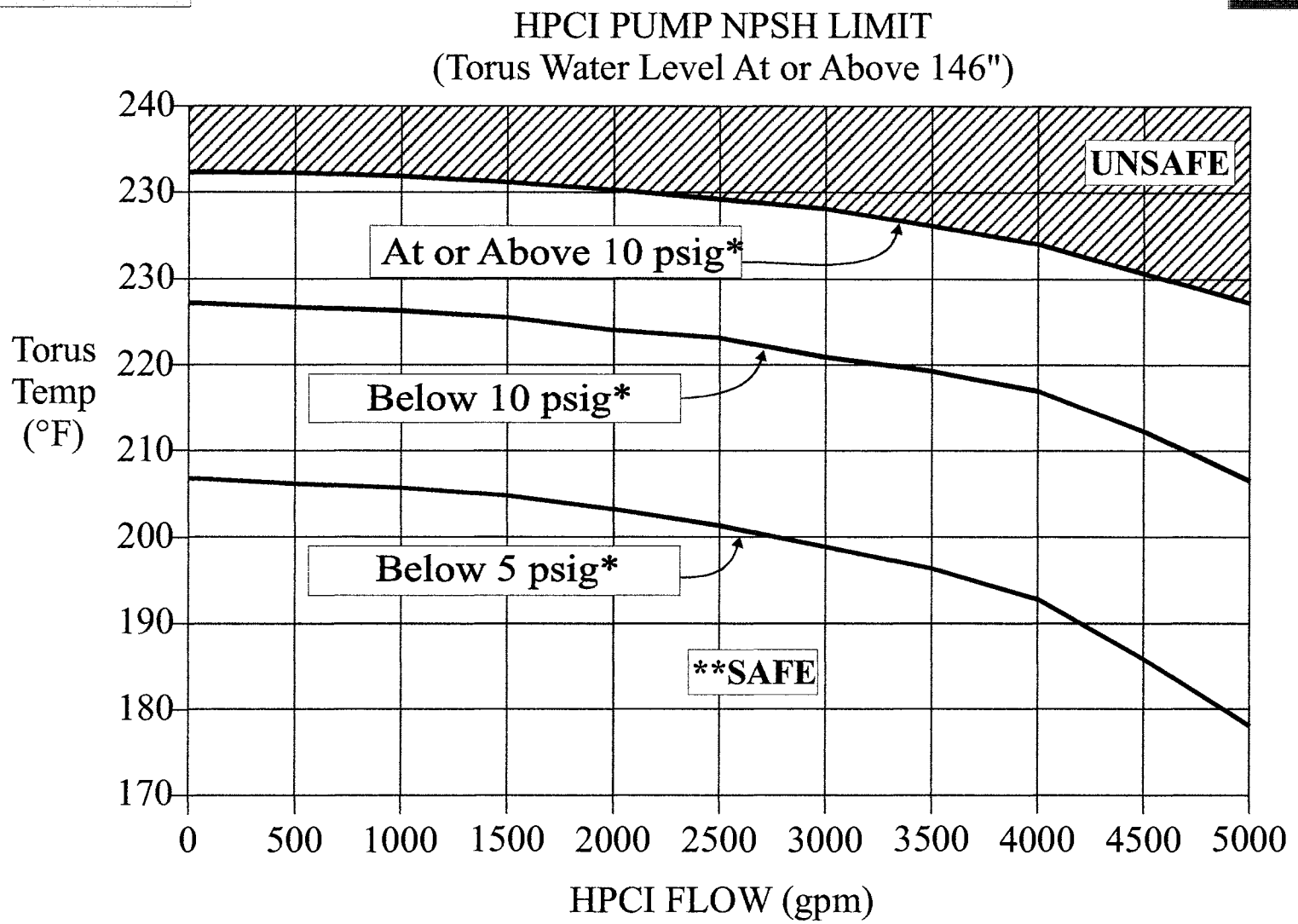
UNIT 2



NOTE: May use SPDS Emergency Displays in place of this Graph.

GRAPH 17A

UNIT 2



NOTE: May use SPDS Emergency Displays in place of this Graph.

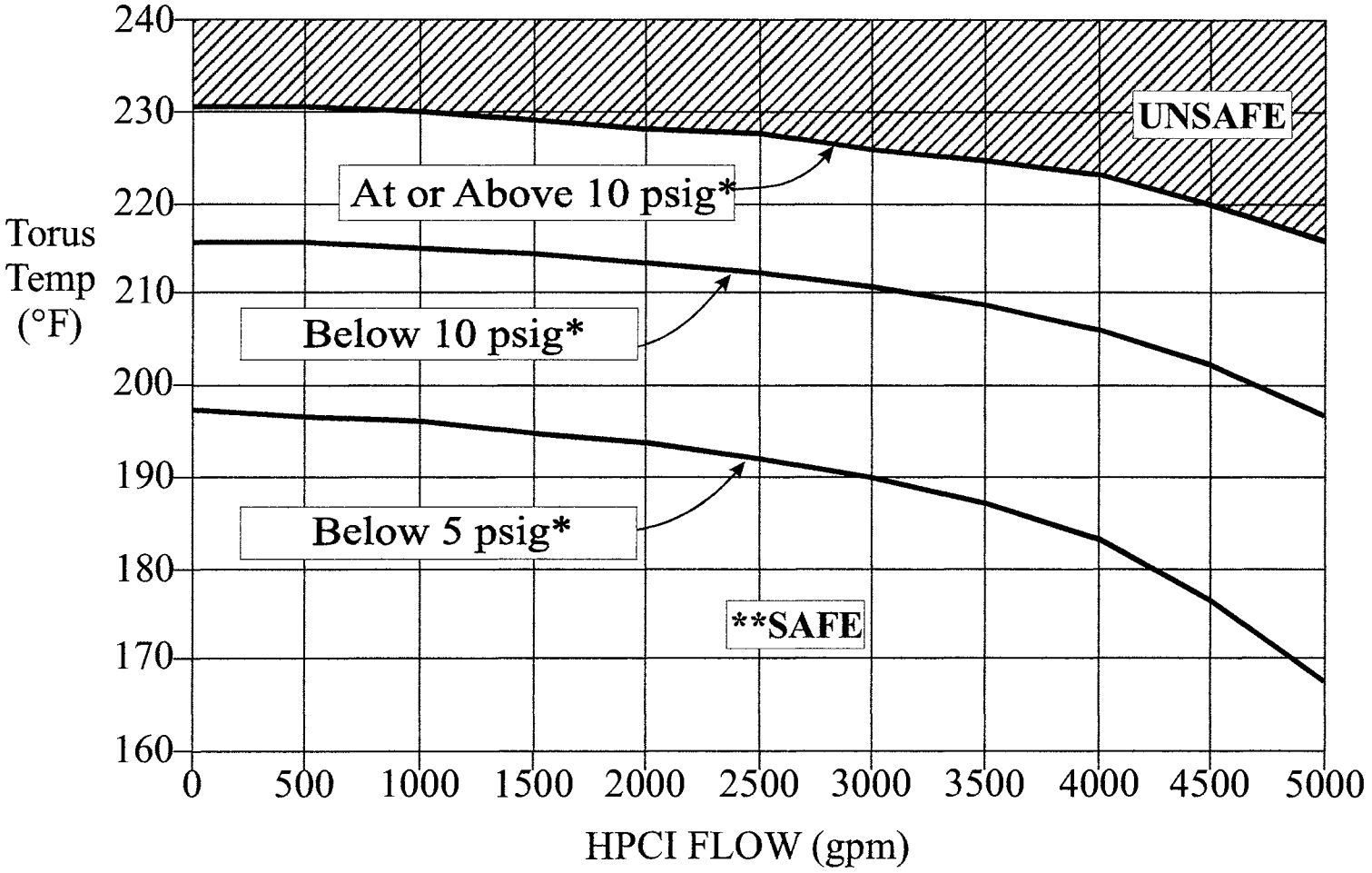
* Suppression Chamber Pressure.

** Safe operating region is below the applicable pressure line.

GRAPH 17B

UNIT 2

HPCI PUMP NPSH LIMIT
(Torus Water Level Below 146")



NOTE: May use SPDS Emergency Displays in place of this Graph.

* Suppression Chamber Pressure.

** Safe operating region is below the applicable pressure line.

WHILE PERFORMING THE FOLLOWING

IF drywell and torus gas concentrations are within a range specified in the table below

THEN perform the action specified in the table

		HYDROGEN Drywell OR torus H2 (whichever is higher)		
		None detected (below 1.5%)	1.5% or higher AND less than 6%	6% or higher OR cannot be determined to be less than 6%
OXYGEN	Drywell AND torus O2 less than 5%	no action required go to point Q on this sheet	perform path G-1 go to point R on this sheet	perform path G-1 go to point R on this sheet
	Drywell OR torus O2 5% or higher OR cannot be determined to be less than 5%	no action required go to point Q on this sheet	perform path G-2 go to point S on this sheet	perform path G-3 go to point T on this sheet

1.

Unit 2 was operating at 100% power when the reactor was manually scrammed.

Which ONE of the following choices completes the following statement?

The Control Rod Drive (CRD) Flow Controller (2C11-R600) flow indication IMMEDIATELY following the manual scram is __(1)__ ; consequently, there is a potential for __(2)__ to occur until the reactor scram is reset.

A. (1) greater than the setpoint;
(2) CRD pump runout

B. (1) less than the setpoint;
(2) low drive water differential pressure (dp)

C. (1) less than the setpoint;
(2) elevated CRDM temperatures

D. (1) greater than the setpoint;
(2) excessive reactor vessel bottom head cooldown

2.

Unit 2 is operating at 90% power when the RFPT 2A trips.

Which ONE of the following choices completes BOTH of the statements below?

After the RFPT 2A trips, the Red Recirc A AND B Runback lights will be ____(1)____ .

The alarms 602-134 "RECIRC A FLOW LIMIT" AND 602-234 "RECIRC B FLOW LIMIT" will ____(2)____ .

A. (1) extinguished
(2) be alarming

B. (1) illuminated
(2) be alarming

C. (1) extinguished
(2) NOT be alarming

D. (1) illuminated
(2) NOT be alarming

3.

Unit 2 is at 100% power when a loss of 4160 Bus 2C occurs.

Which ONE of the choices below completes the following statement?

The Reactor Recirc System _____ runback and the Reactor Recirc Pumps _____.

A. will NOT;
will NOT trip

B. will NOT;
will eventually trip, but not immediately

C. will;
will eventually trip, but not immediately

D. will;
will NOT trip

4.

Unit 2 was operating at 100% when a LOCA occurred and the following conditions currently exist:

- o Drywell pressure at 3 psig
- o RPV pressure at 500 psig
- o RPV level at -45 inches
- o RHR "A" and "D" pumps are turned OFF
- o RHR "C" pump running in LPCI mode
- o RHR "B" pump running in Torus Cooling mode

Which ONE of the following identifies the control room panel that provides flow indicators for BOTH RHR loops and the expected flow indication on these flow indicators?

A. 2H11-P601;
Both loops flow indicators will have flow

B. 2H11-P601;
ONLY one loop's flow indicator will have flow

C. 2H11-P602;
Both loops flow indicators will have flow

D. 2H11-P602;
ONLY one loop's flow indicator will have flow

5.

Unit 1 was operating at 100% power with the following RWCU indications:

- o RWCU Inlet Flow Indicator R609: 245 gpm
- o RWCU Demin "A" & "B" Flow Ind R605 A/B: 115 gpm each

Subsequently, the following alarm is received, RWCU SYS LEAK (602-421).

Which ONE of the following flow indications at the 1G31-R615 Cleanup Leak Detection Indicator on Panel 1H11-P613 is the LOWEST value consistent with these plant conditions?

A. 0 gpm

B. 15 gpm

C. 45 gpm

D. 60 gpm

6.

Unit 1 is in Mode 4 with Shutdown Cooling in service. The following conditions exist:

- o Recirculation Pumps.....Secured
- o RHR B Pump flow.....5500 gpm
- o All other RHR Pumps.....Standby

IAW 34SO-E11-010-1, "Residual Heat Removal System", which ONE of the following identifies the MINIMUM corrected reactor water level that must be maintained by the OATC?

A. +32"

B. +34

C. +42"

D. +54"

7.

Unit 2 was at 100% power when the following occurred:

- o DW pressure increased to 12 psig
- o HCPI started, injected and tripped on high reactor water level
- o Reactor level lowered to +10"
- o The Shift Supervisor directed HPCI be restarted
- o The Operator depressed the "HPCI High Water Level" Reset pushbutton
- o No other operator actions are taken

Which ONE of the choices below completes the following statement?

When the HPCI High Water Level Reset pushbutton is depressed, the _____ will open and the ramp generator _____ control turbine speed.

A. 2E41-F001 Turb Steam Supply Valve;
will

B. HPCI Turbine Stop Valve;
will

C. 2E41-F001 Turb Steam Supply Valve;
will NOT

D. HPCI Turbine Stop Valve;
will NOT

8.

Unit 1 is at 100% power. Core Spray 1E21-F004A has been stroked closed for a timing test when the following occurred:

- o An unisolable Main Steam Line break occurs
- o Reactor level..... -105", decreasing
- o Reactor pressure..... 800 psig, decreasing

Which ONE of the choices below completes the following statement?

The 1E21-F004A "Outbd Discharge Valve" will FIRST receive the auto open signal when Reactor Pressure decreases to _____ psig as sensed by a pressure instrument tap from the _____.

A. 425 psig;
Reactor Recirc System

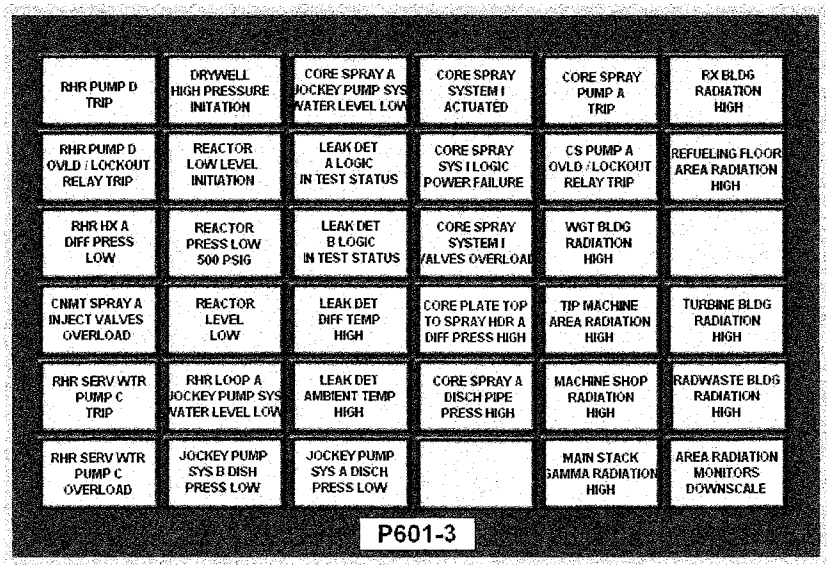
B. 425 psig;
Vessel Steam Dome

C. 449 psig;
Reactor Recirc System

D. 449 psig;
Vessel Steam Dome

9.

Unit 2 is operating at 30% RTP with the following annunciator illuminated:



Local investigation of the alarm indicates a value on 2E21-N004A of -0.33 psid.

Which ONE of the following choices completes both the following statements?

IAW 34AR-601-322, the dP indication on 2E21-N004A _____ valid for determining Core Spray piping integrity at 30% power.

As reactor power and recirc flow is increased, 2E21-N004A indication is expected to move toward _____ psid.

A. is
-5.0

B. is NOT
-5.0

C. is NOT
+5.0

D. is
+5.0

10.

Concerning the **Unit 2** Standby Liquid Control (SBLC) system:

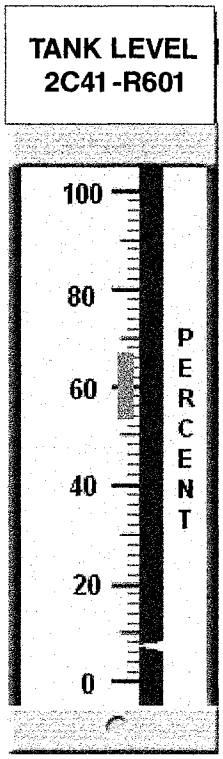


Figure A

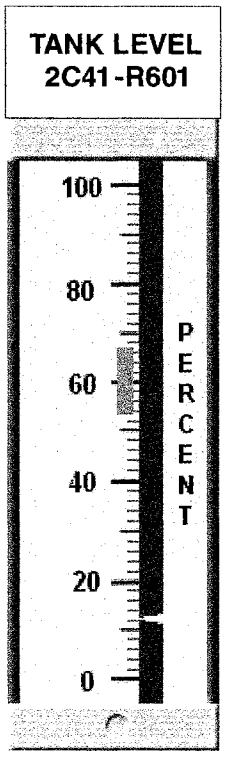


Figure B

Which ONE of the following completes both of these statements?

During normal operation, the means by which Sodium Pentaborate is CONTINUOUSLY maintained in solution inside the SBLC tank is by the use of _____ .

Given the two figures shown above, and that SBLC has been initiated during an ATWS, _____ indicates the HIGHEST SBLC tank level which ensures that Cold Shutdown Boron Weight has been injected into the RPV.

A. tank heaters
Figure A

B. an air sparger
Figure A

C. tank heaters
Figure B

D. an air sparger
Figure B

11.

Unit 2 is in Mode 1 shutting down for a planned maintenance outage IAW 34GO-OPS-013-2, Plant Shutdown, with the following conditions present:

IRM.....Reading/Range

A ..... 38 / R9
B ..... 33 / R9
C ..... 30 / R9
D ..... 38 / R9
E ..... 28 / R9
F ..... 37 / R9
G ..... 37 / R9
H ..... 26 / R9

Which ONE of the choices below completes the following statements?

Placing the Reactor Mode Switch in the "START & HOT STBY" position _____ cause an automatic scram signal.

After the mode switch has been placed to the "START & HOT STBY" position, the operator is required to _____.

A. will;
transfer to and lock the Reactor Mode Switch in Shutdown IAW 34AB-C71-001-2, Scram Procedure

B. will;
confirm Hydrogen injection is shutdown IAW 34AB-C71-001-2, Scram Procedure

C. will NOT;
fully insert the SRMs prior to IRMs going below Range 2 IAW 34GO-OPS-013-2, Plant Shutdown

D. will NOT;
confirm power is turned on to the Refueling Bridge IAW 34GO-OPS-013-2, Plant Shutdown

12.

Unit 2 is operating at 100% power when the 2A RPS MG Set trips.

Which one of the following predicts the status of 2G31-F001, Rx Water Cleanup Valve, AND identifies the PREFERRED source of Alternate Power to 2A RPS Bus IAW 34SO-C71-001-2, 120 VAC RPS Supply System?

A. closed;
Essential Cab 2A

B. closed;
Essential Cab 2B

C. remains open;
Essential Cab 2A

D. remains open;
Essential Cab 2B

13.

Unit 1 is at 5% power and the following alarms are received:

- o RMCS/RWM Rod Block or Sys. Trouble (603-239)
- o Process computer alarm typer: RPIS INOPERATIVE

Which ONE of the choices completes the following statements?

With the above alarms Reactor Manual Control System (RMCS) _____ allow a rod to be selected/latched and the Full-in and Full-out lights on the full core display _____ available.

A. will NOT;
are still

B. will NOT;
are NOT

C. will still;
are still

D. will still;
are NOT

14.

Unit 2 is in a reactor startup with the following conditions:

- o Mode Switch in START & HOT STBY
- o All SRMs and IRMs fully inserted
- o Control Rods are being withdrawn
- o All IRMs are reading mid-scale on ranges 1 or 2 except:
  - IRM "C" is on range 1 and reading 32
  - IRM "D" is on range 2 and reading 12
  - IRM "H" is failed downscale and bypassed
- o Annunciator "Rod Out Block" (603-238) is in alarm

Which ONE of the choices below answers the following statement?

The "Rod Out Block" annunciator will clear if the operator ranges _____ OR if the operator_____.

A. IRM "C" to range 2;
bypasses IRM "C"

B. IRM "C" to range 2;
places the mode switch in RUN

C. IRM "D" to range 1;
bypasses IRM "D"

D. IRM "D" to range 1;
places the mode switch in RUN

15.

Unit 2 is in a refueling outage.

Plant conditions:

- o Reactor Protection System (RPS) Shorting Links have been REMOVED
- o Due to a detector malfunction, the SRM "A" count rate begins to rise

Which ONE of the choices below completes the following statement?

When SRM "A" count rate increases to 4 x 10^5 cps , THEN a _____ will exist.

A. control rod block (ONLY)

B. control rod block AND a trip in RPS Channel "A" (ONLY)

C. control rod block AND a trip in BOTH RPS Channels

D. "SRM Upscale OR Inoperative" (603-204) alarm (ONLY)

16.

Unit 2 is operating at 90% power and 90% core flow

A malfunction occurs on Recirc ASDs which causes core flow to increase to 100%.

Which ONE of the following will be the new ACTUAL Simulated Thermal Power trip setpoint for the APRMs IAW 34AR-603-210-2, "APRM/OPRM TRIP"?

A. 104%

B. 110%

C. 112.5%

D. 113.8%

17.

Unit 2 is starting up with the Reactor Mode Switch in the START & HOT STBY position when the following occurs:

- o I&C has determined a GE SIL (Service Information Letter) causes several APRM "D" LPRMs to be inoperable.
- o Operations bypasses the inop LPRMS

The following is the present status of APRM "D":

- o Indicated Power Level 9%
- o Number of Level D LPRM Inputs .. 5
- o Number of Level C LPRM Inputs ... 4
- o Number of Level B LPRM Inputs ... 4
- o Number of Level A LPRM Inputs ... 3

Which ONE of the following identifies the ROD OUT BLOCK (603-238) alarm status based on the current status of APRM "D"?

A. APRM "D" is causing a ROD OUT BLOCK alarm because there are too few LPRM inputs per level.

B. APRM "D" is causing a ROD OUT BLOCK alarm because there are too few total LPRM inputs.

C. APRM "D" is causing a ROD OUT BLOCK alarm because power is too high.

D. APRM "D" is NOT causing a ROD OUT BLOCK alarm.

18.

Unit 2 is at 100% power when the following occurs:

- o A Loss of DW chillers occurs
- o DW Pressure (peak) ..... 2.1 psig
- o DW Bulk Average Temperature (peak) ..... 155°F
- o Reactor Pressure ..... Controlled by LLS
- o A Torus leak develops and Emergency Depressurization is required
- o When 7 SRVs are initially opened, level swell causes level to rise to +55"
- o When the RHR injection valves automatically open, level is at minus 20"

IAW 34AB-B21-002-2 "RPV Water Level Corrections," which ONE of the choices below completes the following statements?

When the 7 SRVs are initially opened, the recommended reactor water level (RWL) instrument to monitor level is ___(1)___ .

When the RHR injection valves automatically open, RWL may be ~~monitored~~ determined with ___(2)___ RWL instruments.

A. (1) Floodup Range;
(2) Fuel Zone and Wide Range

B. (1) Narrow Range
(2) Fuel Zone ONLY

C. (1) Floodup Range;
(2) Fuel Zone ONLY

D. (1) Narrow Range;
(2) Fuel Zone and Wide Range

19.

Which ONE of the following is the power supply to the **Unit 2** RCIC flow controller?

A. Vital AC (2R25-S063)

B. DC Cabinet "2A" (2R25-S001)

C. Instrument Bus "2A" (2R25-S064)

D. DC Cabinet "2B" (2R25-S002)

20.

Unit 2 has experienced a Loss of Offsite Power (LOSP).

The following conditions existed at 15:00:

- Reactor..... All rods in
- RPV Pressure..... 860 psig controlled by LLS
- RWL..... -93 inches, decreasing at 2 inches/minute
- Drywell Pressure..... 0.6 psig, increasing at 0.05 psi/minute
- ADS Inhibit Switches..... "Normal" position

Given these trends, which ONE of the following predicts the EARLIEST time that the ADS valves will automatically open?

A. 15:04

B. 15:06

C. 15:15

D. 15:17

21.

Unit 2 is at 100% power and the STA is running the "D" TIP machine with the probe in the mid-core region. All other TIP machines have their associated detectors at the PARKED position. During TIP operation the following occurs:

- o Power is subsequently lost to ONLY the "D" TIP Machine and all "D" TIP movement stops
- o DW pressure is 2.2 psig and increasing
- o TIP area rad monitor 2D21-K601F is reading 700 mr/hr and increasing
- o An SO reports steam coming from the TIP room

The status of the TIP machines is that _____ and the operator is required to _____ IAW 34AB-C71-001-2, Scram Procedure.

A. ALL TIP ball valves are open;
immediately fire all shear valves

B. ONLY the "D" TIP ball valve is open;
immediately fire TIP "D" shear valve ONLY

C. ALL TIP ball valves are open;
fire all TIP shear valves ONLY after radiation levels reach 1,000 mr/hr

D. ONLY the "D" TIP ball valve is open;
fire "D" TIP shear valve ONLY after radiation levels reach 1,000 mr/hr

22. 2 AB

Unit 1 is in a refueling outage when a rupture of the Fuel Pool Cooling and Cleanup (FPCC) return line to the fuel pool occurs.

Which ONE of the following identifies the low suction pressure trip setpoint and a design feature which will minimize the inventory loss from the Fuel Pool?

A. 8 psig;
The Anti-Siphon check valves on the return lines re-position.

B. 18 psig;
The Anti-Siphon check valves on the return lines re-position.

C. 8 psig;
The Diffusers on the return lines become uncovered.

D. 18 psig;
The Diffusers on the return lines become uncovered.

23.

Unit 2 is in a refueling outage with the following conditions:

- o Refueling grapple has latched a seated bundle in the core
- o Refueling platform air compressor line breaks
- o Refueling platform air pressure is 0 psig

Which ONE of the choices below identifies how the malfunction will affect the main grapple?

The latched bundle _____ be unlatched.
The grapple _____ be raised.

A. can still;
can still

B. can still;
can NOT

C. can NOT;
can still

D. can NOT;
can NOT

24.

Unit 2 is in an ATWS with the following conditions:

- o Reactor Power.....20%
- o Reactor Pressure.....1125 psig, (highest reached)
- o MSIVs.....Closed
- o Torus temp.....105°F, rising

Which ONE of the choices below completes BOTH the following statements?

With no operator action, the MAXIMUM number of SRV's that will be open is _____ .

IAW EOP PC flowchart, 31EO-EOP-012-2, the MINIMUM number of loop(s) of RHR required to be placed in Torus Cooling is _____.

A. 8;
1

B. 8;
2

C. 4;
1

D. 4;
2

25.

Unit 2 is operating at 23% reactor power. Operators are in the process of starting up the Main Turbine. The Main Turbine is on turning gear.

Which ONE of the choices below completes the following statements?

IAW 34SO-N30-001-2, "Main Turbine Operation" section 7.1.5, "Turbine Roll And Initial Loading", the _____ is required to be used for monitoring Eccentricity on the Main Turbine.

The first speed selected for the Initial Turbine walkdown is "Speed Cmd RPM" _____ .

A. Human Machine Interface (HMI) Screen;
LOW (100)

B. Human Machine Interface (HMI) Screen;
MED (800)

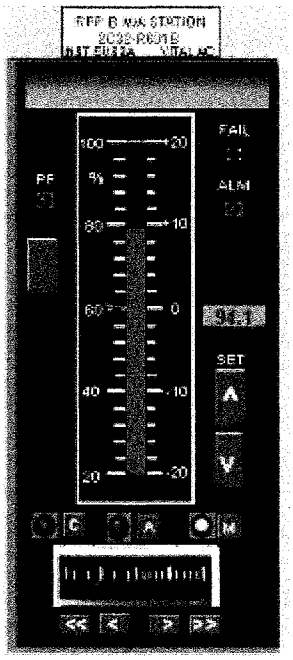
C. 2N32-R609, "TURBINE METAL EXPANSION/TEMP" recorder;
MED (800)

D. 2N32-R609, "TURBINE METAL EXPANSION/TEMP" recorder;
LOW (100)

26.

Unit 1 is at 60% power with the following conditions:

- o "A" RFPT is in Auto, controlled from the FW Master Controller 1C32-R600
- o "B" RFPT is in Manual, controlled from M/A station 1C32-R601B, as indicated below



Which one of the choices below completes the following two statements IAW 34SO-N21-007-1 "Condensate & Feedwater System"?

Prior to placing the "B" RFPT controller in "Auto", its OUTPUT signal is required to be matched with its INPUT signal (from Master Controller) using the _____.

When the "B" RFPT controller is in "Auto", then the _____ will be used to balance flows between the RFPTs.

A. output lever
output lever

B. output lever
set point keys

C. set point keys
output lever

D. set point keys
set point keys

27.

Unit 2 is operating at 100% rated power with the following conditions:

- o Feedwater Level Control is in three element automatic control
- o Reactor level is 36"
- o The "A" Feedwater Flow signal to the Feedwater Control System suddenly fails downscale

Which one of the choices below completes the following statement?

After the system stabilizes, reactor water level will be _____ and the Master Feedwater Level Controller will be in _____.

A. higher;
single element control

B. higher;
3 element control

C. the same;
single element control

D. the same;
3 element control

28.

Unit 1 is at 100% power with the Unit 1 refueling equipment hatch installed, when a loss of all feedwater occurs.

Subsequently, the following conditions exist:

- o HPCI and RCIC auto start on low level
- o SBGT suction valves from the Reactor Building are CLOSED

Which ONE of the choices below completes the following statements?

Rx Bldg DP will _____ .

SBGT system suction valves _____ .

A. approach 0";
responded correctly

B. approach 0";
failed to reposition

C. remain the same;
responded correctly

D. remain the same;
failed to reposition

29.

Unit 2 is inerting the primary containment IAW Containment Atmospheric Control & Dilution, 34SO-T48-002-2, Section 7.1.1, Primary Containment Inerting.

The following conditions currently exist:

- o SBGT 2A running
- o DW O_2 concentration is 4.2%, slowly lowering

Assuming no operator action, which ONE of the following choices predicts how the oxygen concentration and DW venting are affected if the 2A SBGT fan trips?

DW O_2 concentration will _____.
The current DW venting lineup _____ allowed without SBGT in service IAW 34SO-T48-002-2.

A. remain at 4.2%;
is NOT

B. remain at 4.2%
is

C. continue to lower;
is NOT

D. continue to lower ;
is

30.

Unit 2 is operating at 50% RTP and a CRD pump rotation is planned when a number of annunciators alarm, including:

- o ARI OUT OF SERVICE (603-305)
- o LOSS OF OFF SITE POWER (652-102)

A subsequent check indicates that ARI is out of service but Off Site Power has NOT been lost.

Which ONE of the choices below completes the following statements?

The annunciators indicate that there has been a loss of _____ .

The Control Room operator _____ be able to operate the breaker for CRD Pump 2A from the Control Room.

A. DC Cabinet 2E, 2R25-S005;
will still

B. DC Cabinet 2E, 2R25-S005;
will NOT

C. DC Cabinet 2D, 2R25-S004;
will still

D. DC Cabinet 2D, 2R25-S004;
will NOT

31.

Unit 2 is at 100% power when a Loss of Off-Site Power occurs and the "2C" EDG fails to start

Which ONE of the below choices completes the following statements?

The Vital AC Bus is currently receiving its power from _____ .

The Vital AC Bus will transfer to its Alternate source ONLY after the non-essential loads from _____ have been re-energized.

A. the Vital AC batteries;
600 V Bus 2D

B. the Vital AC batteries;
600 V Bus 2C

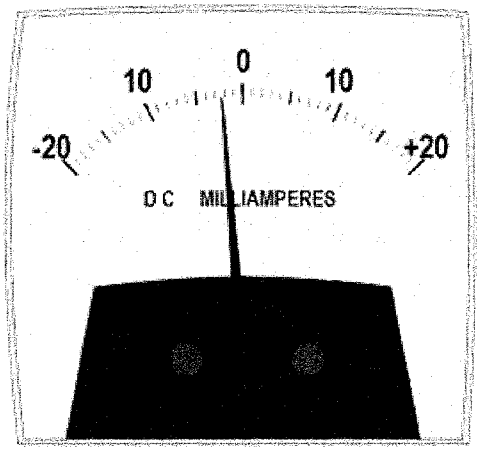
C. 600 V Bus 2C;
600 V Bus 2D

D. 600 V Bus 2D;
600 V Bus 2C

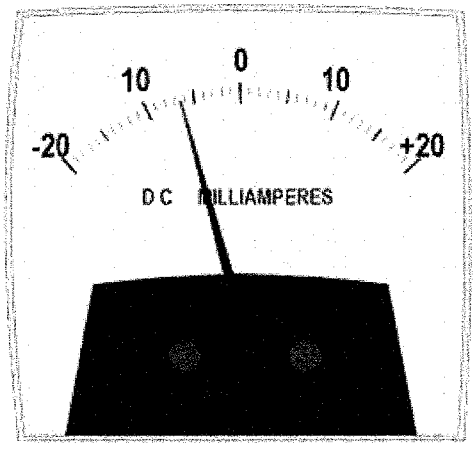
32.

Unit 1 is operating at full power when the following occurs:

- o 125/250V BATTERY GND FAULT 651-141 alarms
- o 34AB-R42-001-0, "Location Of Grounds" is entered
- o On 1H11-P655, the Battery Ground Detection System meter 1R42-R613B indicates the following when placed to Position 1 and then Position 2:



Switch Position 1



Switch Position 2

Which ONE of the choices below completes BOTH of the following statements?

If the cause of the deflections is a single ground, then spurious component actuations due to the ground are _____ .

Based on the resistance value of the ground, the operator _____ remain in 34AB-R42-001-0S, Location Of Grounds.

REFERENCE PROVIDED

A. possible;
is NOT required to

B. possible;
is required to

C. NOT possible;
is required to

D. NOT possible;
is NOT required to

33.

Unit 2 is at 100% power and EDG 2A is to be run locally for post maintenence testing per 34SO-R43-001-2, "Diesel Generator Standby AC System".

The local operator must place the "At Engine-Remote Switch" to the _____ position to start the diesel and the switch _____ position to flash the field.

A. "At Engine";
will remain in the "At Engine"

B. "At Engine"'
must be placed to the "Remote"

C. "Remote";
will remain in the "Remote"

D. "Remote";
must be placed to the "At Engine"

34.

Unit 1 experiences a Loss of Offsite Power when the following occurs:

- o Annunciator "FIRE ALARM" (651-160) alarms
- o A Fire on "1E" Emergency Bus is reported
- o The Fire Brigade requests that "1E" Emergency Bus be de-energized.

To IMMEDIATELY de-energize the bus from the Control Room, the operator is required to ___(1)___ IAW 34SO-R43-001-1, "Diesel Generator Standby AC System".

- o After the bus is de-energized, water is sprayed on the fire.

In order to verify automatic actions occur, the operator is required to send a Systems Operator to the ___(2)___ fire pump to verify it automatically starts.

A. (1) trip EDG "1A"
(2) # 1 Diesel

B. (1) trip EDG "1A"
(2) Electric

C. (1) open EDG "1A" output breaker
(2) # 1 Diesel

D. (1) open EDG "1A" output breaker
(2) Electric

35.

Unit 1 is at 100% power with the following conditions:

- o Reactor Level Mode Select - Manual
- o Reactor Water Level Select - "B"
- o FW Control Mode Select - 3 Element
- o "B" GEMAC level transmitter starts slowly drifting upscale

Which ONE of the choices below completes the following statement?

Initially the drifting level transmitter causes the steam dryer/separators to allow more _____ and the recirc/jet pumps will see a _____ in their available NPSH.

A. carryover;
increase

B. carryover;
decrease

C. carryunder;
increase

D. carryunder;
decrease

36.

Which ONE of the following **Unit 2** plant conditions will cause Control Room pressure to automatically INCREASE relative to Turbine Building pressure?

A. Rx Bldg Pot Contaminated Area, 2D11-K609 A-D 18 mr/hr

B. High Drywell Pressure of 1.2 psig

C. Main Steam Line Radiation, 2D11-K603 A-D HI-HI (3 times normal),

D. Reactor Water Level of -110 inches

37.

Unit 2 is operating at 50% power when the 2B Recirc pump trips resulting in the following plant conditions:

- o 2B31-R661A, "2A Recirc Percent Speed" ..... 32% speed.
- o Jet Pump Flow 2B21-R611A, "Total A Flow" ..... 21 Mlbm/hr.
- o Jet Pump Flow 2B21-R611B, "Total B Flow" ..... 6 Mlbm/hr.
- o 2B21-R613, "Core Plate dp / Rx Core Flow" recorder ..... 19 percent

Which ONE of the following identifies BOTH the accuracy of 2B21-R613 and actual Rx core flow in Mlbm/hr?

The 2B21-R613 recorder _____ accurate and actual core flow is _____ Mlbm/hr.

A. Is;
15

B. Is;
27

C. Is NOT;
15

D. Is NOT;
27

38.

Unit 2 was at power when, due to required RFPT repairs, a controlled shutdown is completed and plant conditons are:

- o Control Rods..... inserted to 00
- o MSIVs.....Closed
- o Reactor Pressure.....900 psig with HPCI
- o Reactor Level.....+30" with RCIC

Subsequently, a Loss of Off-Site Power occurs with the following conditions:

- o EDG "2A" fails to start
- o EDG "1B" is suppling "2F" 4160 VAC Bus
- o It is desired to power "2C" 600 VAC Bus from the "2CD" 600 VAC Transformer
- o NO EOPs have been entered

Which ONE of the choices below completes the following statment?

In order to power "2C" 600 VAC Bus from "2CD" 600 VAC Transformer, an electrical jumper _____ required to jumper out the breaker closure interlock.

IAW 34AB-R23-001-2 "Loss Of 600 Volt Emergency Bus" the 2C 600 VAC bus _____ allowed to be powered from the 2CD Transformer.

A. is;
is

B. is NOT;
is NOT

C. is;
is NOT

D. is NOT;
is

39.

Unit 1 is at 10% power when a seismic event causes the following:

- o 125/250 VDC Switchgear "1A" (1R22-S016) de-energizes
- o A Main Steam Line leak in the drywell occurs
- o 10 minutes elapse and reactor parameters are:
  - Reactor level.....-108"
  - Reactor pressure.....600 psig

Which ONE of the following systems can be used for injection for the current plant conditions?

A. HPCI

B. RHR

C. Reactor Feed Pump Turbine

D. Condensate Booster Pump

40.

Which ONE of the following completes both these statements?

The Main Turbine Bypass valves OPEN following a main turbine trip from full power to prevent _____.

The pressure transmitter inputs used to control Bypass valve position sense _____.

A. over pressurization of the Reactor vessel.
reactor pressure

B. rupture LP Turbine rupture discs.
turbine inlet main steam (throttle) pressure

C. over pressurization of the Reactor vessel.
turbine inlet main steam (throttle) pressure

D. rupture LP Turbine rupture discs.
reactor pressure

41.

Unit 2 is at 100% power when the Main Turbine trips and plant conditions are:

- o Steam Flow, C32-R607..... 2 mlbm/hr
- o Reactor Water Level, 2B21-D003B..... -1" and starting to increase

Which ONE of the choices below completes the following statements?

IF level continues to rise, THEN a FWLC set point setdown will be active when Narrow Range indicates _____.

This set down will cause the FW master controller (C32-R600) setpoint to be automatically changed to _____.

A. +3"
+9"

B. +3"
+20"

C. +1"
+9"

D. +1"
+20"

42.

Unit 2 is operating at 23% power when a leak develops in the Drywell. The following conditions exist at Time 13:00:

- o Drywell pressure is 1.1 psig and increasing @ 0.1 psi/minute
- o Drywell venting is underway per 34SO-T48-002-2" Containment Atmospheric Control And Dilution Systems" per section 7.1.3 "Primary Containment Venting" with both CAD Loops in service.

Which ONE of the following identifies;

(1) The ADDITIONAL vent path that is available AND

(2) The EARLIEST time the operator is REQUIRED to close/confirm closed the Primary Containment vent valves assuming the additional vent path is NOT used?

A. (1) 2T48-F334A and 2T48-F335A, Drywell Vent Isolation valves
(2) 13:02

B. (1) 2T48-F320 and 2T48-F319, Drywell Vent valves
(2) 13:02

C. (1) 2T48-F334A and 2T48-F335A, Drywell Vent Isolation valves
(2) 13:09

D. (1) 2T48-F320 and 2T48-F319, Drywell Vent valves
(2) 13:09

43.

Unit 1 is operating at 75% with the following conditions:

- o Safety Relief Valve (SRV) "G" leaking past its seat
- o Suppression Pool temperature 102°F, (1T47-R626) and increasing slowly

Which ONE of the following choices completes BOTH statements?

Immediate entry into the EOP PC flowchart _____ required.

The LOWEST Torus temperature which requires placing the Rx Mode Switch in Shutdown occurs at a torus temperature of _____.

A. is
120°F

B. is
110°F

C. is NOT
120°F

D. is NOT
110°F

44.

Unit 2 was at 4% when an auto-scram signal was received. The reactor operator inserted a manual scram, all immediate operator actions were taken and the following conditions currently exist:

- o The 8 white RPS lights on 2H11-P603 are illuminated
- o Full core display blue lights are all extinguished

Which ONE of the following identifies the current status of "APRM Downscale" (603-228) annuciator and the required operator action IAW 34AB-C11-005-2, Control Rod Insertion Methods?

A. Illuminated;
Individually scram control rods

B. Illuminated;
Place RPS Test Trip Logic Switches to TRIP

C. Extinguished ;
Individually scram control rods

D. Extinguished;
Place RPS Test Trip Logic Switches to TRIP

45.

Unit 2 is at 100% power when the following occurs:

- o A fire starts in the Control Room
- o The following procedures are entered and ALL Immediate Operator actions are COMPLETE:

  - 31RS-OPS-001-2, "Shutdown from Outside the Control Room"
  - 34AB-C71-001-2, "Scram Procedure"
  - 34AB-X43-001-2, "Fire Procedure"

IAW 31RS-OPS-001-2, which ONE of the following conditions would REQUIRE closing the MSIVs?

A. Reactor water level decreases from +30" to -30" over 30 minutes

B. Reactor pressure decreases from 1000 psig to 350 psig over 30 minutes

C. Turbine Building steam line area temperatures at 175°F

D. Main Steam line pressure 850 psig

46.

Unit 1 is operating at 5% power and the following conditions exist:

- o Reactor Water Cleanup (RWCU) is being used for reactor water level control
- o RBCCW Heat Exchanger outlet temperature has risen to 95°F
- o The Shift Supervisor directs PSW flow through the heat exchanger (Hx) to be increased by opening the 1P41-F206A, RBCCW Hx PSW discharge valve

Which ONE of the following completes this statement?

During RWCU blowdown operations, opening 1P41-F206A will _____ and this will _____ the differential pressure (delta P) between PSW and RBCCW.

A. raise the RWCU return temperature to the vessel in the Regenerative Heat Exchanger; decrease (less dP) .

B. raise the RWCU return temperature to the vessel in the Regenerative Heat Exchanger; increase (more dP)

C. lower the RWCU Non-Regenerative Heat Exchanger outlet temperature; decrease (less dP)

D. lower the RWCU Non-Regenerative Heat Exchanger outlet temperature; increase (more dP)

47.

Unit 2 is operating at 100% power when a total loss of Instrument Air occurs.

With no operator actions, which ONE of the following identifies how the Reactor Building differential pressure (dP) and the SBGT Filter Inlet dampers from the Reactor Building will be affected by the loss of Instrument Air?

The Reactor Building differential pressure (delta P) will trend towards _____ and the SBGT Inlet Dampers from the Reactor Building will fail _____

A. 0 inches water (less negative);
open

B. 0 inches water (less negative);
closed

C. -0.6 inches water (more negative);
open

D. -0.6 inches water (more negative);
closed

48.

Unit 2 is at 60% power when Inboard MSIV 2B21-F022A and Outboard MSIV 2B21-F028A inadvertently fail closed.

Which ONE of the choices below completes the following statement?

INITIALLY, reactor power will _____ and a RPS half scram signal _____ be generated.

A. increase;
will

B. increase;
will NOT

C. remain the same;
will

D. remain the same;
will NOT

49.

Unit 2 is shutdown with the following conditons

- o Rx pressure ..... 134 psig
- o "2A" Rx Recirculation pump ..... Running
- o "2B" Rx Recirculation pump ..... Off

Which ONE of the choices below completes BOTH the following statement?

IAW Tech Spec 3.4.7, "Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown" the MINMUM number of RHR Shutdown Cooling (SDC) subsystems required to be operable, (without requiring entry into a Required Action Statement) (RAS), is _____ .

Also, IAW with Tech Spec 3.4.7 and with current plant conditions, _____ RHR SDC subsystem is required to be in operation.

A. one;
one

B. one;
neither

C. two;
one

D. two;
neither

50.

An irradiated fuel bundle is in the "FULL-UP" position on the **Unit 2** Refueling Bridge Main Grapple and is being moved from the Unit 1 to the Unit 2 Fuel Pool. An equipment malfunction prevents Bridge movement and the bundle CANNOT be lowered.

- o The Fuel Pool Transfer Canal seals deflate which causes Fuel Pool water level to decrease to its lowest possible level
- o The 2D21-K601A and 2D21-K601M Area Radiation Monitors (ARM) red TRIP lights illuminate and the local alarm horn sounds

Which ONE of the following completes both of the following statements?

Fuel Pool Water level will _____ the top of the Fuel Bundle.

When local radiation levels drop below the ARM trip setpoint, the ARM local horn alarm _____.

A. remain above
will automatically silence (reset)

B. remain above
must be manually silenced (reset) at 2D21-P600 ARM Panel

C. go below
will automatically silence (reset)

D. go below
must be manually silenced (reset) at 2D21-P600 ARM Panel

51.

Unit 2 was at 100% power when a LOCA occurred and the Narrow Range and Floodup Range instruments trended a lowering RWL until they all went downscale.

Current plant conditions are:

- o Reactor pressure.....60 psig
- o Reactor Level indications
  - Narrow Range..... downscale
  - Floodup..... downscale
  - Wide Range.....-50", erratic
  - Fuel Zone.....-60", erratic
- o Drywell pressure..... 5 psig
- o Drywell average temperature.....at RPV Saturation Temperature

Which ONE of the choices below completes the following statement?

Drywell sprays _____ be initiated and entry into EOP CP-2, "RPV Flooding" _____ required.

REFERENCE PROVIDED

A. can;
is NOT

B. can;
is

C. can NOT;
is NOT

D. can NOT;
is

52.

31EO-EOP-107-2, "ALTERNATE RPV PRESSURE CONTROL" is in progress.

- o The RCIC system is being used to control reactor pressure.
- o The 2E51-R612, "RCIC flow controller," is in automatic, with the setpoint at 300 gpm.

Which ONE of the following completes the statement below in accordance with 31EO-EOP-107-2?

To DECREASE the reactor cooldown rate (CDR), the operator is required to use _____ and _____ .

A. 2E51-R612, "RCIC flow controller,"
RAISE the setpoint

B. 2E51-R612, "RCIC flow controller,"
LOWER the setpoint

C. 2E41-F011, "Test to CST VLV,"
throttle it in the CLOSE direction

D. 2E41-F011, "Test to CST VLV,"
throttle it in the OPEN direction

53.

Unit 1 is at 100% power when the following occurs:

- o SRV "C" has failed open
- o Torus temperature reaches 180°F

Which ONE of the choices below identifies the reason that emergency depressurization is required when torus temperature can not be maintained below the Heat Capacity Temperature Limit Curve IAW the Hatch EOP "Plant Specific Technical Guideline, Appendix A"?

A. Ensures that the suppression chamber and its equipment do not fail when required to operate during an emergency depressurization (blowdown).

B. Ensures that ECCS pumps maintain adequate net positive suction head and available for adequate core cooling.

C. Ensures that suppression chamber torus temperature is maintained less then the Boron Injection Initiation Temperature.

D. Ensures that chugging in the downcomers does not occur which could cause failure of the downcomer vents.

54.

Unit 2 is operating at 100% power with the 2B Drywell (DW) Chiller tagged out when a loss of the 2A DW Chiller occurs.

When repair of the 2A DW Chiller is complete, the following conditions exist:

- o Drywell Pressure: ..... 2.2 psig
- o Bulk Average Drywell Temperature: .... 275°F

Which ONE of the following completes the following statement?

IAW 31EO-EOP-100-2, "Miscellaneous Emergency Overrides", the"2A" DW Chiller _____.

A. is NOT allowed to be restarted because at this DW temperature the potential for a rupture in the DW cooler OUTLET piping exists.

B. is NOT allowed to be restarted because at this DW temperature the potential for a rupture in the DW cooler INLET piping exists.

C. is allowed to be restarted. The operator must first place the LOCA override switch to "BYPASS" and then reset the 86 Lockout relay at the DW Chiller breaker.

D. is allowed to be restarted. The operator must first reset the 86 Lockout relay at the DW Chiller breaker and then place the LOCA override switch to "BYPASS".

55.

Unit 2 is operating at 100% power when a Loss of Coolant Accident occurs. The High Pressure Coolant Injection (HPCI) system is being used to control RPV water level.

- o HPCI flow rate ..... 3,500 gpm
- o RWL ..... -80" and increasing at 1" per minute
- o RHR Loop "A" is in Suppression Pool Cooling
- o Torus level ..... 135 inches
- o Torus temperature ..... 210°F
- o Suppression Chamber Pressure ..... 6 psig

Which ONE of the following choices completes this statement?

HPCI pump operation is _____ acceptable NPSH ~~and Vortex Limits~~ AB and _____.

REFERENCE PROVIDED

A. within; flow is required to be increased

B. within; flow must be maintained at or below its current flow rate

C. outside of; reducing flow to 3,000 gpm will NOT restore acceptable operation for NPSH ~~and Vortex limits~~ AB

D. outside of; reducing flow to 3,000 gpm will restore acceptable operation for NPSH ~~and Vortex limits~~ AB

56.

Unit 1 is at 100% power when the following occurs:

- o All normal feedwater is lost
- o Reactor Scram
- o Rx Pressure..... 985 psig
- o Reactor Water Level..... -45"

- o RCIC Flow Controller (E51-R612) Indications:
  - Flow Indication..... 500 GPM
  - Auto Green LED.....Illuminated
  - Demand Output..... 0

- o RCIC Turb Speed (E51-R610)..... 300 RPM
- o RCIC Pump Disch Press (E51-R601)..... 50 psig

Which ONE of the choices below completes the following statement?

RCIC flow controller is required to be _____ .

A. left in Automatic, and RCIC injection flow will start increasing reactor vessel level

B. left in Automatic, but RCIC should be tripped because it is pumping 500 gpm through a feedwater line break

C. placed in Manual, and the controller output should be increased until discharge pressure is greater than 985 psig

D. placed in Manual, but the controller output should be decreased until RCIC flow is 400 gpm.

57.

Both Unit 1 and Unit 2 are at 100% power when the following occurs on **Unit 2:**

- o HPCI Steam Line.....break occurs in the HPCI room
- o Reactor Building HVAC.....isolated
- o SBGTs.....auto start on high radiation
- o HPCI Pump Room Area Temp (2E41-N024).....145°F, rising 10°F/min

Which ONE of the choices below completes both of the following statements?

IAW 34SO-T46-001-2 "Standby Gas Treatment System", the operator is required to _____ to limit the release of radioactive material.

IAW the 31EO-EOP-014-2, SC flowchart, the Unit 2 Reactor Building HVAC is required to be _____.

A. place one SBGT in standby;
left isolated

B. place one SBGT in standby;
restarted

C. operate both SBGTs;
left isolated

D. operate both SBGTs;
restarted

58.

Unit 1 is in a startup with the following conditions:

- o 1T41-C004A, Rx Bldg Vent Accessible Area Exh Fan.....Running
- o 1T41-C007A, Rx Bldg Vent Inaccessible Area Exh Fan.....Running
- o 1T41-C001A, Rx Bldg Vent Supply Fan.....Running
- o 1T41-C001B, Rx Bldg Vent Supply Fan.....Tagged Out

Which ONE of the choices below completes the following statement?

If 1T41-C001A, Rx Bldg Vent Supply Fan trips, the two running Reactor Building Area Exhaust Fans _____ .

A. will automatically trip to prevent opening of the tornado vents

B. will automatically trip because there are no running supply fans

C. will remain running and are required to be tripped to prevent excessive negative dP on the building

D. will remain running and are required to continue running to ensure monitoring of potential off-site releases

59.

Unit 1 was at 100% power when the following occurs:

- o A scram occurs
- o Not all rods inserted

Which ONE of the below choices completes the following statements IAW 31EO-EOP-011-1, RCA flowchart?

The HIGHEST APRM power indication which allows the operator to use 34AB-C11-005-1, Control Rod Insertion Methods, to insert rods is _____ .

Boron injection is required when APRMs exceed a MINIMUM peak to peak oscillation of _____ .

A. 4%
10%

B. 4%
25%

C. 13%
10%

D. 13%
25%

60.

A General emergency has been declared on **Unit 2**.

The control room operator is performing a prompt offsite dose assessment in accordance with 73EP-EIP-005-0, On Shift Operations Personnel Emergency Duties and 73EP-EIP-018-0, Prompt Offsite Dose Assessment (PODA).

Which ONE of the below choices completes the following statements?

In order to obtain release assessment information for an ELEVATED release, the operator will use the _____ value from 1Y33-R603, 100 Meter Wind Speed recorder on 1H11-P690 panel.

A wind direction of 90 degrees means that the wind is blowing _____ the East.

A. 15 minute average
to

B. 15 minute average
from

C. instantaneous
from

D. instantaneous
to

61.

Unit 2 is at 100% power with the following conditions:

- o A Service Air Header break has occured
- o The break is greater than the capacity of the Service Air Compressors

Which ONE of the choices below completes the following two statements?

As air pressure decreases, 2P51-F017, Turbine Building Service Air Isolation Valve, will isolate at _____ .

If 2P51-F017 fails to isolate OR pressure continues to decrease, 2P52-F015, Non-Essential Inst. Air Isolation Valve, will isolate at _____ .

A. 80 psig;
61 psig

B. 80 psig;
50 psig

C. 70 psig;
61 psig

D. 70 psig;
50 psig

62.

Unit 1 is at 100% power when the following annunciators alarm:

- o 600V BUS 1D BREAKER TRIPPED, 652-318
- o 600V BUS 1D UNDERVOLTAGE, 652-323

Which ONE of the following lists two components that have lost power?

A. Station Service Air Compressor A;
RBCCW Drywell Inlet Isolation Valve (P42-F051)

B. Station Service Air Compressor A;
RWCU Inboard Suction Isolation Valve (G31-F001)

C. Station Service Air Compressor B;
RBCCW Drywell Inlet Isolation Valve (P42-F051)

D. Station Service Air Compressor B;
RWCU Inboard Suction Isolation Valve (G31-F001)

63.

A LOCA occurred on **Unit 2** which resulted in the following Oxygen/Hydrogen concentrations in both the Drywell and Torus spaces:

TIME	OXYGEN %	HYDROGEN %
0100	4	3
0130	5	4
0200	6	5
0230	7	6

IAW 31EO-PCG-001-2, "Primary Containment Gas Control", which ONE of the following identifies the EARLIEST time that torus spray is required, irrespective of Adequate Core Cooling?

REFERENCE PROVIDED

A. 0100

B. 0130

C. 0200

D. 0230

64.

Which ONE of the following plant fire locations requires a manual reactor scram IAW 34AB-X43-001-2, "Fire Procedure", when a major fire exists.

A. Unit Auxilary Transformer

B. Turbine Building Unit 2 East Cableway

C. Oil Storage Tank Room

D. Intake Structure

65.

Both units are operating at 100% power. On panel 1H11-P653, the 230 KV voltmeter 1S40-R600 indicates 228 KV and is fluctuating $\pm$2 KV.

The NCC has notified the control room crews that 230 KV Bus voltage cannot be maintained above the normal minimum voltage.

Which ONE of the following identifies how reactive load can be raised AND a required action IAW 34AB-S11-001-0, "Operation With Degraded System Voltage"?

A. Placing the REGULATOR VOLTAGE ADJUST control switch to the RAISE position; Initiate a one hour Required Action Statement.

B. Selecting LOAD SET and then RAISE at the HMI Screen; Initiate a one hour Required Action Statement.

C. Placing the REGULATOR VOLTAGE ADJUST control switch to the RAISE position; Transfer Station Service Busses to their alternate supply.

D. Selecting LOAD SET and then RAISE at the HMI Screen; Transfer Station Service Busses to their alternate supply.

66.

Which ONE of the following identifies the required communication protocol during transients in accordance with DI-OPS-59-896, Operations Management Expectations, Attachment 5, Strategies For Successful Transient Mitigation?

A. A crew update is required to be preceded by an annunciator check. A crew update is a tool used primarily by the Shift Supervisor.

B. A crew update is required to be preceded by an annunciator check. A crew update is a short transfer of information from anyone on the crew to the rest of the crew.

C. A crew brief is required to be preceded by an annunciator check. A crew brief is a tool used primarily by the Shift Supervisor.

D. A crew brief is required to be preceded by an annunciator check. A crew brief is a short transfer of information from anyone on the crew to the rest of the crew.

67.

Unit 2 is in a plant startup with the following conditions:

- o RWCU "A" pump in service
- o RWCU Filter Demineralizer (F/D) "A" is out of service
- o RWCU Filter Demineralizer (F/D) "B" is being placed in service

Which ONE of the choices below answers both of the following statements?

IAW 34SO-G31-003-2 "Reactor Water Cleanup System":

As the Systems Operator increases flow through the "B" F/D, the Control Room Operator is required to throttle closed 2G31-F044, Demin Bypass valve, with a final position of _____ when the "B" F/D is fully in service.

As F/D flow is increased, if annuciator "RWCU FILTER DEMIN FAILURE" (602-433) alarms, the cause can be determined by looking for additional alarms on panel _____ .

A. partially closed;
2H11-P602

B. partially closed;
2G31-P001

C. fully closed;
2H11-P602

D. fully closed;
2G31-P001

68.

Unit 1 has experienced a transient. HPCI has failed to start and reactor water level (RWL) is decreasing.

IAW DI-OPS-59-0896, Operations Management Expectations, which ONE of the choices below completes BOTH of the following statements?

When reporting the HPCI failure to the Shift Supervisor, the operator _____ required to use the Shift Supervisor's name or title.

If the operator provides the exact value of RWL to the Shift Supervisor, then the operator _____ required to provide the trend direction.

A. is;
is still

B. is;
is NOT

C. is NOT;
is still

D. is NOT;
is NOT

69.

Unit 1 is in cold shutdown with:

- o Mode Switch in SHUTDOWN
- o Pre-startup activities underway

Which ONE of the choices below completes the following statement?

IAW 34GO-OPS-001-1, "Plant Startup", in order to perform RWM Operability Check the refuel bridge is required to be _____ and the mode switch is required to be placed in _____.

A. de-energized;
REFUEL

B. de-energized;
START /HOT STBY

C. energized;
REFUEL

D. energized;
START /HOT STBY

70.

During performance of 34SV-R43-001-2, "Diesel Generator 2A Monthly Surveillance", in preparation for barring over Diesel Generator 2A, the Systems Operator has just placed the local switch for Diesel Generator 2A to "AT ENG" and depressed the emergency stop pushbutton.

Which ONE of the below choices completes the following statements?

The 2A Diesel Generator _____ REQUIRED to be declared inoperable.

The 2A Diesel Generator _____ automatically start.

A. is NOT;
can NOT

B. is NOT;
can still

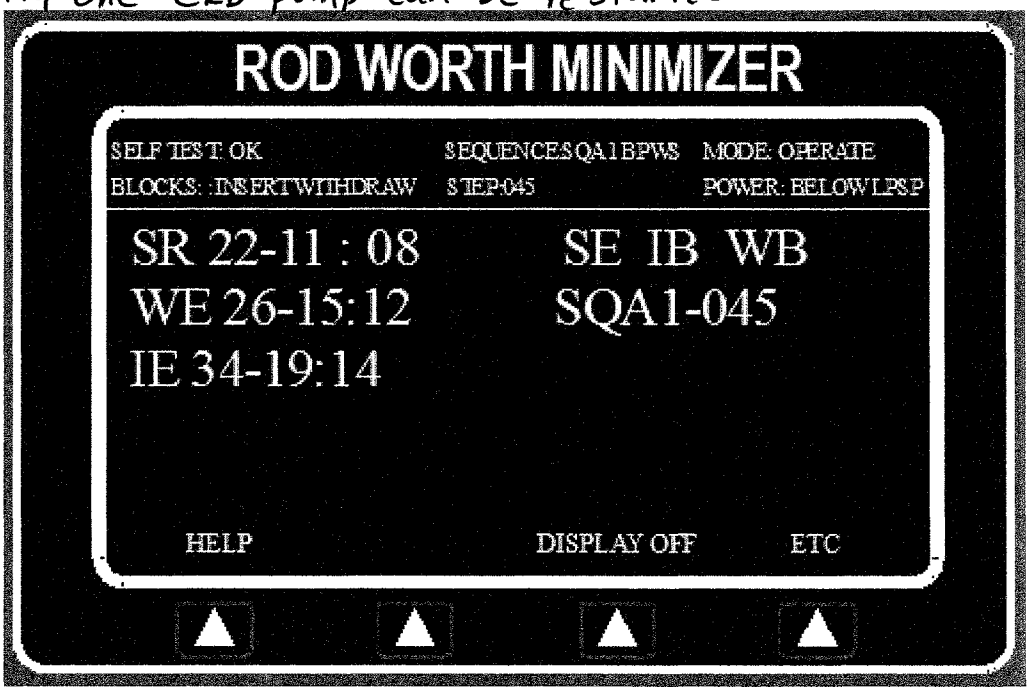
C. is;
can NOT

D. is;
can still

71.

Unit 1 was at 100% power when a scram condition occurred.

- o All control rods did NOT fully insert (distributed at various levels in the core)
- o Reactor power is 19%
- o The Reactor scram has NOT been reset
- o The RWM display indicates as follows:
- o only one CRD pump can be restarted



Which ONE of the following correctly states the operation of the RWM AND identifies a REQUIRED action to insert control rods?

RWM _____ allow control rod insertion using the "Emergency-In Notch Override Switch".

IAW 31EO-EOP-103-1, "Control Rod Insertion Methods", the _____ to INSERT control rods.

A. will;
reactor mode switch is required to be placed in the "Shutdown" position

B. will NOT;
1C11-F034, Charging Water Header Isolation Valve, will be closed

C. will NOT;
reactor mode switch is required to be placed in the "Shutdown" position

D. will;
1C11-F034, Charging Water Header Isolation Valve, will be closed

72.

Unit 2 has been at 100% power for 7 days.

- Steam Tunnel Normal Full Power Background (FPB) radiation is 1,000 mr/hr.
- Main Steam Tunnel radiation increases to 2,800 mr/hr.

Which ONE of the choices below completes the following statements?

The "MAIN STEAM LINE RADIATION HIGH" (601-425) annunciator _____ alarming.

If radiation levels continued to rise, the LOWEST radiation level at which the MAIN STEAM LINE RADIATION HIGH-HIGH" (603-125) annunciator will alarm is _____.

A. is;
3,000 mr/hr

B. is;
9.9E+5 mr/hr

C. is NOT;
3,000 mr/hr

D. is NOT;
9.9E+5 mr/hr

73.

Unit 1 is shutting down for a refueling outage.

- o A normal "Initial" Drywell (DW) entry at power is required.

Which ONE of the choices below completes the following statement IAW 31GO-OPS-005-0, "Primary Containment Entry."

Before a normal "Initial" DW entry is allowed, Oxygen (O_2) concentration must be at least _____ and reactor power must be less than or equal to _____.

A. 19.5%;
15%

B. 19.5%;
10%

C. 23.5%;
15%

D. 23.5%;
10%

74.

Which ONE of the choices below completes the following two statements?

The Cable Spreading Room is equipped with a _____ fire suppression system.

The Cable Spreading Room fire suppression system _____ initiate without operator action.

A. Dry pipe sprinkler;
will

B. Dry pipe sprinkler;
will NOT

C. CO_2;
will

D. CO_2;
will NOT

75.

Unit 2 is at 100% power when a loss of feedwater heating event occurs.

Which ONE of the following completes the following statement IAW 34AB-N21-001-2, "Loss Of Feedwater Heating" Section 3.0 Immediate Operator Actions?

Maintain Reactor power BELOW _____ using _____

A. 60%;
recirc

B. 60%;
control rods

C. the steady state power level prior to the feedwater temperature reduction;
recirc

D. the steady state power level prior to the feedwater temperature reduction;
control rods

End of Exam