U. S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	50-271
Report No:	50-271/99-302
Licensee:	Vermont Yankee Nuclear Power Corporation
Facility:	Vermont Yankee
Location:	Vernon, Vermont
Dates:	May 10-11, 1999
Examiner:	Julian H. Williams, Senior Operations Engineer
Approved By:	Richard J. Conte, Chief Human Performance and Emergency Preparedness Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Vermont Yankee
Examination Report No. 50-271/99-302

Operations

- Two reactor operator applicants were administered initial licensing exams. One applicant was administered only the written examination, as all other portions of the exam were previously passed and were waived for this exam. Both reactor operator applicants passed the examination.

- Overall, the as-submitted examination materials were acceptable. Few changes to the proposed exam were requested by the NRC staff. Two questions were replaced and six questions were revised to meet the examination standards. Additionally, the operating test contained two administrative job performance measures which needed to be replaced. Facility personnel agreed with the written and operating test comments and subsequently incorporated them adequately in the final exam.

Report Details

Operations

05 Operator Training and Qualifications

05.1 Reactor Operator Initial Exam

a. Scope

An NRC examiner reviewed the written and operating initial examination submitted by the facility staff to ensure that they were in accordance with the guidelines of the "Examination Standards for Power Reactors" (NUREG-1021, Interim Revision 8). The review was conducted in the Region 1 office. The NRC examiner administered the operating portion of the exam to one applicant. The written exam was administered by the facility's training organization to two applicants.

b. Observations and Findings

Grading and Results

The results of the exam are summarized below:

	RO	
	Pass	Fail
Written	2	0
Operating	1	0
Overall	2	0

Examination Preparation and Quality

The written exam, job performance measures (JPMs) and simulator scenarios were developed by the facility using the guidelines of the examination standards. All individuals signed onto a security agreement once the development of the exam commenced. The NRC subsequently reviewed and approved all portions of the proposed exam.

Few changes to the proposed exam were requested by the NRC. Eighteen questions on the written exam were discussed with the facility. Two questions were replaced and six questions were revised. These changes were made to conform with the guidance in the examination standards. The operating test contained two administrative JPMs which were also replaced. Facility personnel agreed with the written and operating test comments and incorporated them into the final exam.

No changes were made to the scenarios before the exam. Operator actions were well defined in the writeups.

No post exam comments were made by the facility.

Written Test Performance

The facility training department performed an analysis of questions missed on the written exam for generic weaknesses. The facility noted five examples where both applicants missed the same question. The training staff subsequently determined the questions met the guidance of NUREG 1021, Appendix B, and were technically accurate. Facility staff stated they would review these questions with the applicants and make changes to the training program as appropriate. This action was determined to be acceptable.

Operating Test Administration and Performance

The applicant demonstrated good communications and teamwork (with the surrogates) during the simulator exercises. Briefings were routinely conducted by the control room supervisor. The applicant also effectively practiced self checking when performing JPMs.

The JPMs and simulator scenarios ran very well, indicating effective quality control by the facility.

c. Conclusions

Two RO applicants were administered initial licensing exams. One RO applicant had previously passed the operating portion of the exam and took only the written exam. Both applicants successfully passed the exam.

Overall, the as-submitted examination materials were acceptable. Few changes to the proposed exam were requested by the NRC staff. Two questions were replaced and six questions were revised to meet the examiner standards. Additionally, the operating test contained two administrative JPMs which were replaced. Facility personnel agreed with the written and operating test comments and incorporated them into the final exam.

X1 Exit Meeting Summary

On May 11, 1999, exam-related observations were discussed with the manager of Operations and the manager of Training. The NRC expressed appreciation for the cooperation and assistance that was provided by the facility.

There were no observed discrepancies between the simulator and the plant. Therefore, simulator fidelity was not discussed at the exit meeting or in this report.

Attachment:
RO Written Exam w/Answer Key

Attachment 1

RO WRITTEN EXAM W/ANSWER KEY

Vermont Yankee Licensed Operator Initial Examination Answer Key

Title: Reactor Operator Initial Exam

Name: _____

SSN: _____ - ____ - _____

Date: 5/10/99

Total Points: 100

Score: _____

Supervisor Approval: _____ Date: _____

RO Initial Exam Answer Sheet

Name_____ **SSN**_____

Date_____

1. ____	26. ____	51. ____	76. ____
2. ____	27. ____	52. ____	77. ____
3. ____	28. ____	53. ____	78. ____
4. ____	29. ____	54. ____	79. ____
5. ____	30. ____	55. ____	80. ____
6. ____	31. ____	56. ____	81. ____
7. ____	32. ____	57. ____	82. ____
8. ____	33. ____	58. ____	83. ____
9. ____	34. ____	59. ____	84. ____
10. ____	35. ____	60. ____	85. ____
11. ____	36. ____	61. ____	86. ____
12. ____	37. ____	62. ____	87. ____
13. ____	38. ____	63. ____	88. ____
14. ____	39. ____	64. ____	89. ____
15. ____	40. ____	65. ____	90. ____
16. ____	41. ____	66. ____	91. ____
17. ____	42. ____	67. ____	92. ____
18. ____	43. ____	68. ____	93. ____
19. ____	44. ____	69. ____	94. ____
20. ____	45. ____	70. ____	95. ____
21. ____	46. ____	71. ____	96. ____
22. ____	47. ____	72. ____	97. ____
23. ____	48. ____	73. ____	98. ____
24. ____	49. ____	74. ____	99. ____
25. ____	50. ____	75. ____	100. ____

_____ **SCORE**_____

Examinee Signature **Graded By**_____

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 1 Exam Bank Question No.: 3473 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-212 Objective: 3

****

Select the correct answer:

With the Reactor at 75% power a main turbine trip occurs. The Reactor Protection System will:

a. initiate a scram signal to prevent exceeding the fuel cladding integrity safety limit.

b. initiate a scram signal to prevent exceeding the reactor coolant system pressure safety limit.

c. NOT initiate a scram signal since the reactor system pressure safety limit will NOT be exceeded

d. NOT initiate a scram signal since the fuel cladding integrity safety limit will NOT be exceeded.

****

Answer

a. initiate a scram signal to prevent exceeding the fuel cladding integrity safety limit.

****

References: T.S. 2.1
Justification: Higher Level
A is correct per T.S. 2.1, trip settings bases;

B & C are incorrect, not based on pressure safety limit;
D is incorrect, a scram signal will be initiated
Last Revised: 4/9/99 8:39:25 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 2 Exam Bank Question No.: 3474 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-600 Objective: CRO A3

****

Select the correct answer:

A manual reactor scram is inserted at 100% power. Immediately following the scram reactor water level will initially:

a. rise due to the effect of three element reactor level control.

b. lower due to collapse of voids in the reactor vessel.

c. rise due to the in rush of water from the downcomer region to the core region.

d. lower due to excessive void formation in the downcomer region.

****

Answer

b. lower due to collapse of voids in the reactor vessel.

****

References: VY FSAR
Justification: a is incorrect, level initially decreases; b is correct per observed response at VY; c is same as a; d is incorrect, little or no voids in downcomer region
Last Revised: 4/9/99 8:40:27 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 3 Exam Bank Question No.: 3475 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 4, 5

****

Select the correct answer:

The reactor is operating at 100% power, when the controlling reactor level instrument fails downscale. Which of the following is correct?

a. Reactor water level will lower. The operator should immediately transfer to Single-Element feedwater control.

b. Reactor water level will rise. The operator should immediately transfer to Single-Element feedwater control.

c. Reactor water level will lower. The operator should immediately transfer the reactor vessel feedwater Master Controller to Manual.

d. Reactor water level will rise. The operator should immediately transfer the reactor vessel feedwater Master Controller to Manual.

****

Answer

d. Reactor water level will rise. The operator should immediately transfer the reactor vessel feedwater Master Controller to Manual.

****

References: LOI EB 1053
OT 3114
Justification: Higher Level
A is incorrect, level will rise, not an immediate action;
B is incorrect, not an immediate action;
C is incorrect, level will rise;
D is correct
Last Revised: 4/9/99 8:40:45 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 4 Exam Bank Question No.: 3476 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: CRO 1

****

Select the correct answer:

The crew is responding to an ATWS event and the CRO has commenced boron injection with Standby Liquid Control (SLC) system 1 per EOP-2, ATWS RPV Control. The Shift Engineer reports that the Reactor Water Cleanup System (RWCU) is still in service.

The CRO's first action must be to:

a. isolate RWCU from CRP 9-4.

b. immediately secure SLC injection.

c. secure SLC system 1 and start system 2.

d. open CU-74, demineralizer bypass.

****

Answer

a. isolate RWCU from CRP 9-4.

****

References: EOP-2
Justification: Higher Level
A is correct, RWCU isolation is expected and operators are required by AP 0151 to backup automatic actions which should occur but have failed ;
B is incorrect, SLC injection is required by the ATWS condition and should not be secured ;
C is incorrect,SLC injection should continue;
D is incorrect, RWCU should be isolated.
Last Revised: 4/8/99 2:06:46 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 5 Exam Bank Question No.: 3477 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: CRO 2

****

Select the correct answer:

EOP-2, ATWS RPV Control, requires Boron injection if power oscillations occur greater than 25% peak to peak. The reason for this is to:

a. allow reactor cooldown to commence.

b. preclude localized fuel failure.

c. minimize thermal stresses to the CRD stub tubes.

d. prevent a rapid heatup of the torus.

****

Answer

b. preclude localized fuel failure.

****

References: PP 7018 Att 9, Rev 8
Justification: a is incorrect, will prevent cooldown until CSDBW; b is correct per AP 7018 Att 9, Rev 8; c is incorrect, no relation to CRD stub tubes; d is incorrect, basis for BIIT
Last Revised: 3/11/99 3:02:22 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 6 Exam Bank Question No.: 3478 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-607 Objective: A.3

****

Select the correct answer:

Failure of the primary containment downcomers due to "chugging" is precluded by which EOP directed action?

a. Initiating RPVED when torus pressure cannot be maintained below the primary containment pressure limit.

b. Initiating RPVED when drywell pressure cannot be maintained below primay containment pressure limit.

c. Initiating drywell sprays when torus pressure exceeds 10 psig.

d. Securing drywell sprays prior to drywell pressure reaching 0 psig.

****

Answer

c. Initiating drywell sprays when torus pressure exceeds 10 psig.

****

References: PP 7018 Att 9, Rev 8
Justification:
A and B are incorrect; PCPL-A is unrelated to chugging ;
C is correct;
D is incorrect, prevents exceeding DW-Torus vacuum breaker capacity
Last Revised: 4/8/99 2:09:23 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 7 Exam Bank Question No.: 3479 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-239 Objective: 5

****

Select the correct answer:

The amber light above SRV-71C is lit and annunciator 9-3-B-8, RX RELIEF VLV BELLOWS LEAKAGE, is alarming.

How will this condition affect the operation of SRV-71C?

a. SRV-71C cannot be opened by an ADS signal.

b. SRV-71C will not respond to any overpressure condition.

c. SRV-71C can only be operated from the alternate shutdown panel.

d. SRV-71C lift setpoint will not be as designed.

****

Answer

d. SRV-71C lift setpoint will not be as designed.

****

References: LOI EB 493
OP 2122
Justification: Higher Level
A is incorrect, ADS function is unaffeced;
B is incorrect, SRV C will open open on overpressure, but lift setpoint is affected
C is incorrect, SRV C not connected to Alt S/D;
D is correct, RPV pressure > A, B & D SRV setpoints, C SRV will not open on overpressure
Last Revised: 4/8/99 2:14:24 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 8 Exam Bank Question No.: 3480 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: CRO 3

****

Select the correct answer:

A failure to scram has occurred and the crew is taking actions per EOP-2, ATWS RPV Control. The following conditions exist:

RPV pressure being maintained 800-1000 psig with SRVs
RPV level being maintained -22" to +90" with feedpumps
Hot Shutdown Boron Weight has been injected into the RPV
Rods are being inserted manually, 40 rods still at position 48

Which of the following statements is true?

a. The reactor is shutdown and will remain shutdown only if pressure is maintained within current limits.

b. The reactor is NOT shutdown since more than one rod is NOT fully inserted.

c. The reactor is shutdown and operators must commence a plant cooldown.

d. The reactor will NOT be shutdown until the Cold Shutdown Boron Weight has been injected.

****

Answer

a. The reactor is shutdown and will remain shutdown only if pressure is maintained within current limits.

****

References: LOI EB 3220
EOP-2, Rev 0
Justification: Higher Level
A is correct per PP 7018 Att 9, Rev 8 page 13-18/Hot SD Boron Weight definition;
B is incorrect, same as a;
C is incorrect, cannot cooldown until CSDBW injected;
D is incorrect, at rated pressure the Rx is S/D with HSDBW
Last Revised: 4/9/99 8:43:52 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 9 Exam Bank Question No.: 3481 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: Cro 1

****

Select the correct answer:

The plant is operating at power when a spurious Group I isolation occurs.

All control rods remain at their original positions.
APRMs indicate approximately 96% power.
All 4 SRVs have opened automatically and RPV pressure is >1200 psig.
Core flow is 45 mlb/hr.

The CRO attempts a manual scram which fails to insert control rods and scram air header pressure remains at 75 psig.

The CRO must:

a. await direction from the SCRO to implement OE 3107 Appendix G.

b. manually initiate ARI/RPT immediately.

c. run recirc flow to minimum using individual manual control.

d. immediately commence control rod insertion per the rapid shutdown sequence.

****

Answer

b. manually initiate ARI/RPT immediately.

****

References: EOP-2, Rev 0
Justification: Higher Level
a is incorrect, Appendix G not highest priority due to ARI/RPT failure;
B is correct, conditions indicate automatic ARI/RPT failed, CRO required by DP 0166 to manually initiate ARI/RPT;
C is incorrect, not procedurally directed;
D is incorrect, must wait for direction from SCRO/RAPID S/D seq not appropriate
Last Revised: 4/8/99 2:22:29 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 10 Exam Bank Question No.: 3482 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: CRO 2, 3

****

Select the correct answer:

Which set of conditions assures adequate core cooling?

a. CS "A": 3500 gpm
CS "B": 3500 gpm
RPV level: -65" steady

b. CS "A": 2000 gpm
CS "B": 1500 gpm
RPV level: -40" steady

c. CS "A": 0 gpm
CS "B": 1650 gpm
RPV level: +6" rising slowly

d. CS "A": 3100 gpm
CS "B": 0 gpm
RPV level: -40 " steady

****

Answer

c. CS "A": 0 gpm
CS "B": 1650 gpm
RPV level: +6" rising slowly

****

References: EOP-1
PP 7018 Att 9
Justification: Higher Level
A is incorrect, level < -48;
B is incorrect, insufficient CS flow;
C is correct, submergence;
D is incorrect, insufficient CS flow
Last Revised: 4/8/99 2:23:27 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 11 Exam Bank Question No.: 3483 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 3, 5

****

Select the correct answer:

A plant startup is in progress with the plant at 10% power when the "A" recirc pump trips. The A recirc discharge valve (RV-53A) is shut by the CRO. Total jet pump flow as indicated on DPR/FR-2-3-91 is to the left of the natural circulation line on the power to flow map.

What is the reason for this indication?

a. The reverse flow summer is subtracting positive flow through the idle loop jet pumps.

b. The jet pump flow instruments are inaccurate at low flows.

c. A jet pump mixer has been displaced.

d. The A recirc MG field breaker needs to be manually opened.

****

Answer

a. The reverse flow summer is subtracting positive flow through the idle loop jet pumps.

****

References: OT 3118 Rev 14
Justification: Higher Level
A is correct per OT 3118 p 2;
B is incorrect, true but not enough to put you below the nat. circ. Line;
C is incorrect, would cause an increase in JP total flow (ON 3141);
D is incorrect, field bkr auto opens on pump trip
Last Revised: 4/8/99 2:26:32 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 12 Exam Bank Question No.: 3484 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 2

****

Select the correct answer:

The reactor is in single loop following a trip of the "A" recirc pump at 100% power. The following conditions exist:

Rx power: 69% and steady
Total jet pump flow: 20.5 mlb/hr
B recirc pump: 70% speed
RV-53A ("A" Recirc pump discharge valve): shut
"A" Recirc pump seal purge secured

Determine the correct action based on this information and the enclosed power to flow map.

a. Increase the speed of the "B" recirc pump.

b. Reopen RV-53A.

c. Insert a manual scram.

d. Insert rods using the rapid shutdown sequence.

****

Answer

d. Insert rods using the rapid shutdown sequence.

****

References: LOI EB 3311
OT 3117, Rev 8
Justification: Higher LEvel
A is incorrect. Limit is 70% single pp;
B is incorrect, cannot reopen in exclusion region;
C is incorrect, conditions do not require scram;
D is correct per OT 3117
Last Revised: 4/9/99 9:02:45 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 13 Exam Bank Question No.: 3485 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 2

****

Select the correct answer:

The SCRO has directed you to reopen RV-53B, Discharge Valve, following a trip of the B recirc pump. The plant is in single loop operation. This action is intended to:

a. minimize thermal stratification in the reactor vessel.

b. minimize cooldown of the B recirc loop.

c. restore valid total jet pump flow indication.

d. minimize vibration of the A recirc pump.

****

Answer

b. minimize cooldown of the B recirc loop.

****

References: LOI EB 1422
OT 3118, Rev 14
Justification:
A is incorrect, no stratification in single loop (i.e. with forced flow);
B is correct, see OT 3118;
C is incorrect, no effect on total flow with Field BKR open;
D is incorrect, not in MGACB ckt
Last Revised: 4/9/99 8:47:37 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 14 Exam Bank Question No.: 3486 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 2

****

Select the correct answer:

The following conditions exist:

Main condenser backpressure: 5.4" Hg and rising rapidly
Circ water in OPEN cycle
CRO is reducing Reactor Power with recirc flow at 9%/min
Annunciator 9-5-K-8, "STOP/CTRL VLV FAST CLOSURE BYP" is clear
TB AO reports visible damage to the LP turbine exhaust boot and the sound of air rushing through
The SCRO directs the crew to transfer station loads, scram the reactor, then trip the turbine.

These actions are required because:

a. the resulting backpressure induced vibration could cause turbine shaft seal failure.

b. an automatic turbine trip due to low vacuum will NOT cause a scram in this condition.

c. turbine blade damage may result from excessive exhaust pressure.

d. a group 1 isolation can be avoided, preserving the main condenser as a heat sink.

****

Answer

c. turbine blade damage may result from excessive exhaust pressure.

****

References: OT 3120, Rev 11
Turbine Manual,GEK 41516A rev A
Justification
a is incorrect, ; b is incorrect, a turbine trip will cause a scram ; c is correct per GEK ; d is incorrect, main condenser is unrecoverable
Last Revised: 4/9/99 8:48:46 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 15 Exam Bank Question No.: 3487 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-612 Objective: 5

****

Select the correct answer:

The control room has been abandoned and a shutdown is being conducted from outside the control room. Reactor pressure is currently 800 psig. You are directed to commence a cooldown. What is the correct method to accomplish this?

(OP 3126, App C, fig. 1, is enclosed)

a. Reduce pressure gradually over the next hour by opening SRVs. At the end of the hour, pressure should be maintained 325 psig +100/-0 psig.

b. Reduce pressure gradually over the next hour by opening SRVs. At the end of the hour, pressure should be maintained 250 psig +100/-0 psig.

c. Reduce pressure to 250 psig by opening an SRV and maintain pressure 250 psig +100/-0 psig.

d. Reduce pressure to 325 psig by opening an SRV and maintain pressure 325 psig +100/-0 psig.

****

Answer

d. Reduce pressure to 325 psig by opening an SRV and maintain pressure 325 psig +100/-0 psig.

****

References: OP 3126 Appendix C, Step 15
Justificaiton: Higher Level
A is incorrect, don't reduce press gradually;
B is incorrect, same as a and wrong pressure-exceeds 100°F/hr;
C is incorrect, press exceeds 100°F/hr;
D is correct per OP 3126 App C, Step 15
Last Revised: 4/8/99 4:24:29 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 16 Exam Bank Question No.: 3488 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-612 Objective: A.2

****

Select the correct answer:

OP 3126, SHUTDOWN USING ALTERNATE SHUTDOWN METHODS, provides direction to isolate and vent the scram air header using the air filter drain petcocks. This action is intended to:

a. provide a continuous Scram Discharge Volume drain path by opening the vent and drain valves.

b. allow control rods to be manually inserted by opening the CRD flow control valves.

c. ensure continued CRD mechanism cooling by closing the CRD flow control valves.

d. cause control rods to insert by depressurizing the scram air header.

****

Answer

d. cause control rods to insert by depressurizing the scram air header.

****

References: OP 3126, rev 15
Justification:
A is incorrect: venting causes sdv vent & drain valves to shut
B is incorrect: manual rod insertion not directed
C is incorrect: would isolate the cooling water header
D is correct: used as backup scram method per OP 3126
Last Revised: 4/8/99 4:30:15 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 17 Exam Bank Question No.: 3489 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: 2

****

Select the correct answer:

A loss of offsite power has occurred and EDG "A" and "B" have failed to start. Busses 1, 2, 3, 4 and 5 are deenergized. All service water pumps have been placed in STOP then NORMAL. All ECCS pumps are in PULL-TO-LOCK. The next immediate operator action is to:

a. attempt to energize Bus 3 or 4 from the Vernon Tie.

b. direct an AO to attempt a local start of EDG "B".

c. minimize DC loads on station batteries.

d. place all reactor feed pumps in PULL-TO-LOCK.

****

Answer

a. attempt to energize Bus 3 or 4 from the Vernon Tie.

****

References: LOI EB 1280
OT 3122 App A, Rev 18
Justification: a is correct per ON 3122 Appendix A immediate actions; b is incorrect, not an immediate action; c is incorrect, same as b; d is incorrect, not required since Bus 1 and 2 will remain deenergized until off site power is restored
Last Revised: 4/9/99 8:51:26 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 18 Exam Bank Question No.: 3490 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO 2, 3

****

Select the correct answer:

The plant is operating with circ water in Hybrid cycle during the summer when a loss of offsite power occurs. EDG "A" and "B" start and supply power to emergency busses. Which statement is true regarding cooling tower fan(s)?

a. All fans must remain deenergized until off-site power is restored via the startup transformers.

b. West Tower fan 2-1 may have power restored by manually transferring to the emergency power.

c. Cooling tower fans will NOT be affected since their normal power supply is still available.

d. West Tower fan 2-1 will automatically transfer to its emergency power supply.

****

Answer

b. West Tower fan 2-1 may have power restored by manually transferring to the emergency power.

****

References: LOI EB 2702
CWD 1467
ARS 6-B-7
Justification:
A is incorrect, CT fan #1 can be repowered manually, see CWD 1467;
B is correct, same reason as a;
C is incorrect, normal P/S is deenergized (bus 5);
D is incorrect, no auto transfer function exists
Last Revised: 4/9/99 8:52:15 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 19 Exam Bank Question No.: 3491 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 1, 4

****

Select the correct answer:

The following indications exist in the Control Room:

EPR and MPR white light on CRP 9-7 OFF
Feed pump recirc valve position indication on CRP 9-6 OFF
Main transformer cooling indicating lights on CRP 9-7 OFF
RCIC system valve position indication on CRP 9-4 OFF

Which of the following conditions caused these indications to occur:

a. Instrument AC is deenergized.

b. DC-1AS is deenergized.

c. DC-2 and DC-3 are deenergized.

d. The vital MG failed to transfer to DC drive.

****

Answer

c. DC-2 and DC-3 are deenergized.

****

References: OT 3160, Rev 2
Justification: Higher Level
A is incorrect, instrument AC not the normal supply to these loads; B is incorrect, DC-1AS is not the normal supply to these loads;
C is correct per OT 3160, indications for loss of DC 2 and 3;
D is incorrect, VITAL AC is not the normal P/S for these loads
Last Revised: 4/8/99 4:36:13 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 20 Exam Bank Question No.: 3492 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 4

****

Select the correct answer:

Following a feedwater level control system failure, reactor level rises to 250" as indicated on the "refuel" level indicator (LI-2-3-86) on CRP 9-4. Decay heat then causes reactor pressure to rise to 1100 psig. Following this transient the following conditions exist:

Drywell pressure: 4.0 psig, rising slowly
Drywell temperature: 135 °F, steady
Torus air space temperature: 170 °F, rising
Torus pressure: 4.2 psig, rising

Which of the statements below is correct?

a. The reactor safety valves have lifted causing drywell pressure to rise.

b. Failure of drywell cooling has caused the rise in containment parameters.

c. The pressure transient has caused a recirc piping rupture inside the drywell.

d. A safety relief valve lift has damaged the downstream piping inside the torus.

****

Answer

d. A safety relief valve lift has damaged the downstream piping inside the torus.

****

References: LOI EB 3434
OT 3114, Rev 9
Justification: Higher Level
a is incorrect, SV setpoint is 1240 psig; b is incorrect, no indications for DW cooling failure exist; c is incorrect, DW press would be higher than Torus pressure, DW temp would be elevated; d is correct, see caution, OT 3114, Rev 9, page 3
Last Revised: 4/6/99 10:17:31 AM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 21 Exam Bank Question No.: 3493 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 3

****

Select the correct answer:

The reactor is at 100% power. The "A" Feedwater Flow detector fails downscale. Assuming no operator action, reactor water level would:

a. rise causing a high level turbine trip and reactor scram.

b. initially rise and then return to the original level band.

c. initially lower and stabilize at a new lower level.

d. rapidly lower causing a low level reactor scram.

****

Answer

a. rise causing a high level turbine trip and reactor scram.

****

References: LOI EB 479
LOT-01-259, FWLC System
Justification: Higher Level
a is correct, observed response at VY; b is incorrect, observed response at VY; c is incorrect, level would increase; d is incorrect, level would increase
Last Revised: 4/9/99 8:53:12 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 22 Exam Bank Question No.: 3494 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-607 Objective: CRO 2

****

Select the correct answer to fill in the blank below:

EOP-3, Primary Containment Control, directs operators to spray the drywell if drywell temperature cannot be maintained below 280°F. This spray operation effects a drywell pressure and temperature reduction predominantly through the combined effects of _____ cooling.

a. convective and conductive

b. convective and evaporative

c. radiative and conductive

d. radiative and evaporative

****

Answer

b. convective and evaporative

****

References: PP 7018 Att 9, Rev 8, page 8-16
Justification:
A,C,& D are incorrect, radiative and conductive cooling modes are insignificant
Last Revised: 4/8/99 4:46:32 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 23 Exam Bank Question No.: 3495 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-607 Objective: CRO 2

****

Select the correct answer:

If torus temperature or RPV pressure cannot be maintained below the Heat Capacity Temperature Limit (HCTL), then EOP-3, Primary Containment Control, requires RPVED. This action is performed to avoid:

a. damaging SRV downstream piping during RPVED.

b. loss of all RPV level instruments after RPVED.

c. overpressurizing the Primary Containment during RPVED.

d. excessive hydrodynamic loading on downcomer piping during RPVED.

****

Answer

c. overpressurizing the Primary Containment during RPVED.

****

References: PP 7018 Att 9, Rev 8, pages 8-10
Justification: a is incorrect, unrelated to SRV tailpipes; b is incorrect, level instrumentation affected by drywell temp; c is correct, highest torus temp which does not exceed PCPL-A on RPVED; d is incorrect, hydrodynamic loading on downcomers not relevant to HCTL
Last Revised: 4/9/99 8:58:10 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 24 Exam Bank Question No.: 3503 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-288 Objective: CRO 5

****

Select the correct answer:

The following conditions exist with the plant at 100% power:

Drywell pressure 2.10 psig
Annunciator 9-5-C-9, CRD CIRCUM TEMP HI, is lit
Steam leak detection panel drywell channels 18, 19 and 20 indicate the undervessel temperatures are approximately 165°F
Drywell RRU Selector Switches are aligned as follows:
RRU 1: A & B RUN
RRU 2: A RUN
RRU 3: A RUN
RRU 4: A & B STBY

No operator action has been taken.

The status of drywell RRU fans is:

a. 1A, 1B, 2A, 2B, 3A, 3B RUNNING; 4A, 4B OFF

b. 1A, 1B, 2A,2B, 3A, 3B, 4A, 4B RUNNING

c. 1A, 1B, 2A, 3A RUNNING; 2B, 3B, 4A, 4B OFF

d. 1A, 1B. 2A, 3A, 4A, 4B RUNNING; 2B, 3B OFF

****

Answer

d. 1A, 1B, 2A, 3A, 4A, 4B RUNNING; 2B, 3B OFF

****

References: LOI EB 1252
Justification: Higher Level
A is incorrect, STBY fans autostart on HI undervessel temp (4A 4B), fans that are OFF do not auto start;
B is incorrect, same as a;
C is incorrect, same as a;

C is correct, same as a
Last Revised: 4/9/99 8:59:01 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 25 Exam Bank Question No.: 3504 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO

****

Select the correct answer:

A plant transient is in progress which has caused ARM #8, RB 303' NW elevator entrance, and ARM #10, RB 318' NW elevator entrance, to indicate 110 mr/hr and 130 mr/hr respectively. Max normal for these channels is 100 mr/hr.

This is indicative of a:

a. potential primary coolant leak inside secondary containment.

b. potential primary coolant leak outside secondary containment.

c. malfunction of the standby gas treatment system.

d. failure of the power supply to these instruments.

****

Answer

a. potential primary coolant leak inside secondary containment.

****

References: EOP-4
Jusitfication: a is correct, definition of max normal per PP 7018 Att 9 Rev 8; b is incorrect, both ARMs are inside secondary containment; c is incorrect, SGT malfunction would not cause these ARMs to indicate Hi; d is incorrect, P/S failure would cause downscale indication
Last Revised: 4/9/99 9:00:45 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 26 Exam Bank Question No.: 3505 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO 2

****

Select the correct answer:

A plant startup is in progress with the reactor at 4% power when a loss of air to the aux feed reg valve (FDW-13) occurs.

What will be the effect of this failure on reactor water level?

a. Level will lower until it stabilizes approximately 10" below the normal band.

b. Level will lower until a reactor scram occurs.

c. Level will rise until a turbine trip and reactor scram occurs.

d. Level will rise until only a turbine trip occurs.

****

Answer

b. Level will lower until a reactor scram occurs.

****

References: Modified LOI EB 1583
ON 3146 Rev 13
Justification: Higher Level
a is incorrect, level will not stabilize since FWD-13 fails shut; b is correct, loss of all feed flow occurs causing low level scram; c is incorrect, level lowers; d is incorrect, level lowers
Last Revised: 3/18/99 11:32:42 AM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 27 Exam Bank Question No.: 3506 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO 2

****

Select the correct answer:

Control room ventillation is in a normal lineup with Control Room Supply Fan SAC-1A running. A rupture of the instrument air system occurs. Instrument air header pressure has dropped to 0 psig.

How will control room ventillation respond?

a. SAC-1A will trip and it's discharge damper remains open.

b. SAC 1A will continue to run and it's discharge damper remains open.

c. SAC-1A will continue to run and it's discharge damper fails shut.

d. SAC-1A will trip and it's discharge damper fails shut.

****

Answer

c. SAC-1A will continue to run and it's discharge damper fails shut.

****

References: ON 3146 Rev 13
OP 3146
Justification:
Per ON 3146, Appendix A, CR ventillation isolates and shifts to emergency recirc, with the fan running and its' damper shut
Last Revised: 4/8/99 4:57:13 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 28 Exam Bank Question No.: 3507 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-276 Objective: CRO 2, 5

****

Select the correct answer:

In the event of a loss of service water as a result of a Vernon Dam failure, Alternate Cooling provides cooling to which of the following components?

a. RWCU non-regenerative heat exchanger

b. Reactor recirc pump coolers

c. Drywell RRUs

d. RHRSW pump motor coolers

****

Answer

d. RHRSW pump motor coolers

****

References: OP 2181 Rev
Justification:
A is incorrect, alt cooling not configured to provide cooling to this component/see OP 2181;
B is incorrect, same as a;
C is incorrect, same as a;
D is correct, alt cooling uses RHRSW pumps to provide flow, pump cooling is provided from discharge of RHRSW pump per OP 2181
Last Revised: 4/8/99 4:59:18 PM by North, Tracy T.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 29 Exam Bank Question No.: 3508 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO

****

Select the correct answer:

The plant is at 100% power when both CRD pumps have failed and cannot be immediately returned to service. CRD accumulator low pressure alarms are lit for control rods 22-11 and 30-15. Using the enclosed figure IV of OP 2450, determine the correct action from the choices below.

a. Initiate a plant shutdown per OP 0105 by reducing core flow to 27.0-27.5 mlb/hr.

b. Immediately insert a manual scram and enter EOP-2, ATWS RPV Control.

c. Declare both control rods inoperable, insert them to position 00 and continue full power operations.

d. No action should be taken until a third CRD accumulator low pressure alarm is lit.

****

Answer

a. Initiate a plant shutdown per OP 0105 by reducing core flow to 27.0-27.5 mlb/hr.

****

References: ON 3145 Rev 9
Justification: Higher Level
A is correct per ON 3145 step 10.a.2 since the alarming accumulators are within 3 rods;
B is incorrect, scram not immediately required, no ATWS condition exists;
C is incorrect, not required;
D is incorrect, 2 CRDs within 3 rods requires shutdown per ON 3145 Rev 9
Last Revised: 4/9/99 9:01:47 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 30 Exam Bank Question No.: 3509 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-206 Objective: CRO 2b, 2c

****

Select the correct answer:

HPCI is injecting to the reactor vessel with the flow controller in MANUAL at 1000 GPM. Reactor pressure rises from 850 psig to 950 psig. What will be the affect on HPCI, steady state to steady state?

a. RPM will rise, pump flow will rise.

b. RPM will rise, pump flow will remain constant.

c. RPM will remain constant, pump flow will remain constant.

d. RPM will remain constant, pump flow will lower.

****

Answer

d. RPM will remain constant, pump flow will lower.

****

References: OP 2120, rev 26
OP 4120, rev 36
Higher Level
Justification:
D is correct; with the controller in manual it mantains a constant RPM. As RPV pressure rises, with the pump at the same RPM, pump flow drops since the higher RPV pressure offers more resistance.
Last Revised: 4/9/99 9:05:43 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 31 Exam Bank Question No.: 3510 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-259 Objective: CRO 5f

****

Select the correct answer:

A failure to scram has occurred and the crew is taking actions per EOP-2, ATWS RPV control. Reactor water level has been reduced to less than 90" using OE 3107, Appendix GG, Terminate and Prevent. The master feedwater level controller and both individual feedwater regulating valve controllers were left in BALANCE.

The expected position of the feedwater regulating valves (FW-12A/B) is:

a. oscillating between full open and full shut as a result of steam pressure fluctuations.

b. locked in mid position due to loss of signal while terminated and prevented.

c. full open as a result of feed flow being terminated and prevented.

d. full shut in accordance with OE 3107, Appendix GG

****

Answer

c. full open as a result of feed flow being terminated and prevented.

****

References: OE 3107 App GG
Higher Level
Justification:
a is incorrect: level below 127" is the dominant effect
b is incorrect: No FRV lockup signal present
c is Correct: FWLC drives FRVs full open due to level below 127"
d is incorrect: App GG does not address FRVs
Last Revised: 4/9/99 9:07:17 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 32 Exam Bank Question No.: 3511 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-261 Objective: CRO 1

****

Select the correct answer:

A small steam leak inside the drywell has caused the following plant conditions to exist:

Drywell Pressure: 3.1 psig, rising slowly
Drywell Temperature: 167°F, rising slowly
Reactor Water Level: 142", steady
Reactor Building Ventilation Exhaust Radiation: 1.2 mr/hr, steady

Assuming all plant equipment operated as designed, the present status of Secondary Containment Atmosphere is:

a. at a positive pressure, being exhausted through a filtered path.

b. at a negative pressure, being exhausted through a filtered path.

c. at a positive pressure, being exhausted through an unfiltered path.

d. at a negative pressure, being exhausted through an unfiltered path.

****

Answer

b. at a negative pressure, being exhausted through a filtered path.

****

References: OP 2117, rev 17
OP 4116, rev 20
Higher Level
Justification:
B is correct, DW press above 2.5 psig results in RB HVAC being isolated and SGT running with suction on the RB. SGT is designed to maintain a negative pressure in the RB and it's discharge is filtered.
Last Revised: 4/9/99 9:08:02 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 33 Exam Bank Question No.: 3470 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-201 Objective: 3

****

Select the correct answer:

The CRD system is operating normally. The drive water pressure control valve fails full open.

If the cooling water pressure control valve was operated, what action will mitigate the drive water pressure transient?

a. Open the cooling water Pressure Control Valve to raise drive water pressure.

b. Open the cooling water Pressure Control Valve to lower drive water pressure.

c. Close the cooling water Pressure Control Valve to raise drive water pressure.

d. Close the cooling water Pressure Control Valve to lower drive water pressure.

****

Answer

c. Close the cooling water Pressure Control Valve to raise drive water pressure.

****

References: LOI EB 1665
GEK 32424
Justification:Higher Level
Closing the cooling water PCV will raise drive water pressure
Last Revised: 4/8/99 9:42:25 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 34 Exam Bank Question No.: 3465 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-02-201 Objective: CRO 3

****

Select the correct answer:

The CRO has just initiated a single notch operation of a control rod. The following response of the lights above the rod movement control switch is observed in the following sequence:

White "Rod Out Permit" light	ON
Green "Rod In" light	ON
Green "Rod In" light	OFF
Red "Rod Out" light	ON
Red "Rod Out" light	OFF
Amber "Settle" light	OFF

What control rod operation was performed?

a. normal single notch withdrawal of a control rod

b. normal single notch insertion of a control rod

c. abnormal single notch withdrawal without a settle function

d. abnormal single notch insertion without a settle function

****

Answer

c. abnormal single notch withdrawal without a settle function

****

References: LOI EB 1084
Justification: An observed response for a single notch withdrawal would also include the settle light turning on then off. Since the settle light failed to operate, this would indicate the failure of the settle function
Last Revised: 4/8/99 9:45:56 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 35 Exam Bank Question No.: 3472 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-301 Objective: 4

****

Select the correct answer:

During a reactor startup following a refueling outage, the SCRO directs the CRO to record when a discernible response of the nuclear instrumentation is not observed during each control rod withdrawal.

The bases for performing this evolution is that it:

a. ensures the control rod is coupled to its drive

b. ensures the nuclear instrumentation is functioning

c. ensures the control rod speeds are not excessive

d. ensures the correct core configuration following refueling

****

Answer

a. ensures the control rod is coupled to its drive

****

References: OP 0105 App "D"
Justification:Tech Specs and OP 0105 require only after RFO or when CR maintenance on first time operation to ensure the control rod is coupled to its drive and to detect the potential for a dropped control rod
Last Revised: 4/9/99 9:09:15 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 36 Exam Bank Question No.: 3459 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-202 Objective: 5

****

Select the correct answer:

The plant is operating at 100% power when a complete loss of DC-1 occurs.

What action is required concerning the Reactor Recirc system?

a. Trip the "A" Recirc MG Drive Breaker locally only if the "A" Recirc Drive Motor amps are NOT pegged.

b. Trip the "B" Recirc MG Drive Breaker locally only if the "B" Recirc Drive Motor amps are NOT pegged.

c. Trip the "A" Recirc MG Drive Breaker locally only if the "A" Recirc Drive Motor amps are pegged.

d. Trip the "B" Recirc MG Drive Breaker locally only if the "B" Recirc Drive Motor amps are pegged.

****

Answer

a. Trip the "A" Recirc MG Drive Breaker locally only if the "A" Recirc Drive Motor amps are NOT pegged.

****

References: ON 3159
Justification: The loss of DC-1 will cause the loss of DC lube oil pumps and control power for the "A" Recirc. The drive motor breaker is tripped only if the amps are not pegged. If the amps are pegged, the reactor is scrammed allowing Bus 1 to be deenergized which deenergizes the "A" recirc MG drive motor
Last Revised: 4/9/99 9:10:04 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 37 Exam Bank Question No.: 3500 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-218 Objective: 2

****

Select the correct answer:

What parameter(s) does the ADS logic monitor to determine RHR pump status?

a. RHR pump discharge pressure only

b. RHR pump discharge pressure and pump breaker contacts

c. RHR pump flow only

d. RHR pump flow and pump breaker contacts

****

Answer

a. RHR pump discharge pressure only

****

References: ARS 3-A-7
Justification: ADS permissive RHR/CS running (ARS 3-A-7) setpoint is 100 psig using pump discharge pressure switches only.
Last Revised: 4/8/99 10:24:11 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 38 Exam Bank Question No.: 3501 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-205 Objective: 2

****

Select the correct answer.

The RHR System has received a valid initiation signal due to high Drywell pressure.
The following conditions exist:

Reactor level is 100" and lowering
Reactor pressure is 400 psig and steady
Bus 9 is unavailable

What is the status of RHR-27A, OUTBD INJECTION Valve?

a. Loop select logic is NOT available to open RHR-27A.

b. Control power is NOT available to open RHR-27A.

c. With RHR-25A, INBD INJECTION Valve, open, manual operation of RHR-27A is blocked until five minutes has passed since receipt of the initiation signal.

d. With RHR-25A open, RHR-27A cannot be opened until RPV pressure is less than 350 psig.

****

Answer

d. With RHR-25A open, RHR-27A cannot be opened until RPV pressure is less than 350 psig.

****

References: LOI EB 366
Justification: Higher Level
Reactor pressure is above the permissive for RHR-27A to open. Power is available to the valve and logic.
Last Revised: 4/9/99 9:11:48 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 39 Exam Bank Question No.: 3498 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-206 Objective: 7

****

Select the correct answer:

A LOCA has occurred with the following plant conditions:

RPV water level	100" lowering
RPV pressure	800 psig
DW pressure	4.0 psig

HPCI has initiated with the following parameters:

HPCI pump flow (F1-23-108B)	0 gpm
HPCI turbine speed (S1-23-2)	2000 rpm
HPCI pump discharge pressure (PI-23-109)	550 psig
HPCI min flow valve	OPEN

What action is required to raise RPV water level?

a. Allow the LOCA to lower reactor pressure below HPCI pump discharge pressure.

b. Raise the auto flow controller setpoint tape until HPCI discharge pressure is greater than reactor pressure.

c. Open an SRV to lower reactor pressure below HPCI pump discharge pressure.

d. Take the flow controller to manual control and raise the manual control potentiometer until HPCI discharge pressure is greater than reactor pressure.

****

Answer

d. Take the flow controller to manual control and raise the manual control potentiometer until HPCI discharge pressure is greater than reactor pressure.

****

References: LOI EB 2964
OP 2120
Justification: Higher Level

Indications provided are for a failed flow controller. OP 2120 provides direction to shift to manual on a failed controller.
Last Revised: 4/9/99 9:54:40 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 40 Exam Bank Question No.: 3499 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-206 Objective: 3

****

Select the correct answer:

During 100% power operations drywell pressure reaches 3.0 psig causing HPCI to inject. With the RFPs available, the SCRO directs the BOP to trip HPCI. The BOP trips HPCI by turning the TURBINE AUTO/PUSH TO TRIP/INHIBIT pushbutton collar to INHIBIT. Subsequent to this action, the following is the status:

HPCI-15, Steam Isolation (Inboard)	OPEN
HPCI-14, Steam Supply	SHUT
Turbine Stop Valve	SHUT
HPCI-19, Pump Discharge	OPEN

HPCI responded as designed:

a. with the exception of HPCI-15.

b. with the exception of HPCI-14.

c. with the exception of the Turbine Stop Valve.

d. with the exception of HPCI-19.

****

Answer

b. with the exception of HPCI-14.

****

References: LOI EB 1196
OP 2120
Justification: Higher Level
HPCI-14 would remain open with an initiation signal.
Last Revised: 4/8/99 9:54:13 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 41 Exam Bank Question No.: 3468 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-209 Objective: 3

****

Select the correct answer:

A valid LOCA signal exists. Due to continued elevated Rx Pressure at ≈ 250 psig, Core Spray "A" flow is approximately 1000 gpm. No operator action has been performed.

The SCRO directs the BOP to increase "A" CS flow due to minimum flow concerns. What action is required?

a. Throttle open FULL FLOW TEST, CS-26A only

b. Take PUMP DISCHARGE, CS-12A to CLOSE momentarily, then throttle open FULL FLOW TEST, CS-26A

c. Throttle open MINIMUM FLOW, CS-5A only

d. Take PUMP DISCHARGE, CS-12A to CLOSE momentarily, then throttle open MINIMUM FLOW, CS-5A

****

Answer

b. Take PUMP DISCHARGE, CS-12A to CLOSE momentarily, then throttle open FULL FLOW TEST, CS-26A

****

References: LOI EB 2935
OP 2123
Justification: OP 2123 Normal OP Sequence guidance to raise flow > 1710 gpm.
Last Revised: 4/9/99 9:14:27 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 42 Exam Bank Question No.: 3469 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-209 Objective: 8

****

Select the correct answer:

A Loss of Normal Power has occurred. Both EDGs have started and are operating as designed. The following plant conditions exist:

RPV Water Level	65 inches and lowering
RPV Pressure	550 psig and lowering
DW Pressure	15 psig and rising slowly

Predict the Core Spray system response.

a. Both Core Spray pumps will start immediately after bus reenergization

b. One Core Spray pump will start immediately and the other will start 15 seconds after bus reenergization

c. Both Core Spray pumps will start 10 seconds after bus reenergization

d. Neither Core Spray pump will start with the given conditions

****

Answer

c. Both Core Spray pumps will start 10 seconds after bus reenergization

****

References: LOI EB 1206
Justification:
OP 2123 Section "D" provides the CS response to an LNP. The CS pumps start 10 seconds after the bus is powered from the D/G.
Last Revised: 4/8/99 10:25:41 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 43 Exam Bank Question No.: 3461 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-211 Objective: 2b, 2d

****

Select the correct answer:

A failure to SCRAM coincident with a loss of Bus 9 occurs. With a high temperature in the Torus, the SCRO has ordered Standby Liquid Control (SLC) injected. The CRO positions the SLC initiation switch to SYS 1. Predict the expected SLC system indication and response.

a. SLC-14A squib valve light will be out and the "A" SLC pump will start.

b. SLC-14A squib valve light will be out and the "A" SLC pump will NOT start.

c. SLC-14A squib valve light will be lit and the "A" SLC pump will start.

d. SLC-14A squib valve light will be lit and the "A" SLC pump will NOTstart.

****

Answer

b. SLC-14A squib valve light will be out and the "A" SLC pump will NOT start.

****

References: LOI EB 481
P&ID G-191171
OP 2114, Rev 22
Justification: Higher Order
Bus 9 powers "A" SLC pump and squib valve. Without power squib light will be out.
Last Revised: 4/9/99 9:15:01 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 44 Exam Bank Question No.: 3463 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-215 Objective: CRO 3

****

Select the correct answer:

During an outage with the shorting links installed, SRM-A is inop and was bypassed. SRM C fails high.

Predict the plant response:

a. Rod Block only

b. Half Scram only

c. Rod Block and a Half Scram

d. Full Scram

****

Answer

a. Rod Block only

****

References: LOI EB 982
OP 2130, Rev 14
Justification: Higher Level
With shorting links installed the SRMs will not initiate an RPS trip. A failed SRM high will result only in a rod block.
Last Revised: 3/24/99 10:47:44 AM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 45 Exam Bank Question No.: 3464 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-212 Objective: CRO 2

****

Select the correct answer:

A full scram occurred due to low RPV water level. During the scram a ground caused a loss of RPS Bus "B". RPV water level has been restored. The CRO initiates action to reset the scram. The SCRAM DISCHARGE INSTRUMENT VOLUME HI LEVEL SCRAM BYPASS switch is then taken to bypass.

Describe the plant response when the operator attempts to reset the scram:

a. all eight RPS "A" and "B" solenoid lights will be lit.

b. only four RPS "A" solenoid lights will be lit.

c. only four RPS "B" solenoid lights will be lit.

d. no RPS solenoid lights will be lit.

****

Answer

d. no RPS solenoid lights will be lit.

****

References: LOI EB 3254
CWD 805
Justification: Higher Level
Both RPS buses are required to bypass SDV hi scram.
Last Revised: 4/8/99 9:59:16 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 46 Exam Bank Question No.: 3467 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-02-215 Objective: CRO 8

****

Select the correct answer:

During a reactor startup, the Mode Switch has just been placed in RUN.

IRM "A" fails upscale.

Predict the effect on the reactor manual control and reactor protection systems.

a. A control rod block only

b. A half scram only

c. Both a control rod block and a half scram

d. Neither a control rod block nor a half scram

****

Answer

d. Neither a control rod block nor a half scram

****

References: LOI EB 1256
OP 2131
Justification: In RUN IRM high flux trips and inop trips are bypassed provided its companion APRM is >2%
Last Revised: 4/9/99 9:15:55 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 47 Exam Bank Question No.: 3458 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-215 Objective: CRO 3, 7

****

Select the correct answer:

During a reactor startup, the following conditions exist:

SRM A	90 cps
SRM B	150 cps
SRM C	100 cps
SRM D	200 cps

All IRMs are on Range 4.

Determine the plant response if "A" SRM detector is withdrawn.

a. SRM "A" detector withdrawal is blocked and a control rod block is generated.

b. SRM "A" detector withdrawal is blocked and a control rod block is NOT generated.

c. SRM "A" detector withdrawal is NOT blocked and a control rod block is generated.

d. SRM "A" detector withdrawal is NOT blocked and a control rod block is NOT generated.

****

Answer

d. SRM "A" detector withdrawal is NOT blocked and a control rod block is NOT generated.

****

References: LOI EB 3154
OP 2130
Justification: With SRM count rate < 100 cps and IRM > Range 3, the withdrawal of the SRM will not cause a RB. The detector withdrawal is not blocked independent of IRM or SRM status.
Last Revised: 4/9/99 2:49:34 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 48 Exam Bank Question No.: 3460 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-129 Objective: 13

****

Select the correct answer:

A reactor start-up is in progress, the reactor is critical. "C" SRM is reading 5000 cps. The CRO determines count rate doubles in 2 minutes. Calculate the reactor's stable period.

a. 120 sec

b. 144 sec

c. 173 sec

d. 288 sec

****

Answer

c. 173 sec

****

References: LOI EB 1242
OP 0150
Justification: Higher Level
Doubling time in seconds (120) times 1.445 = period.
Last Revised: 4/6/99 7:17:22 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 49 Exam Bank Question No.: 3471 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-05-215 Objective: CRO 5

****

Select the correct answer:

The reactor is operating at 50% power with the following LPRM status for "E" APRM:

A Level LPRMs	3
B Level LPRMs	5
C Level LPRMs	2
D Level LPRMs	3

LPRM 5B-08-09 which is assigned to "E" APRM fails downscale. E&C recommends bypassing the failed LPRM.

Predict the plant response when the LPRM is bypassed.

a. "LPRM DOWNSCALE" alarm clears only

b. Control Rod Block only

c. Half Scram only

d. Control Rod Block and a Half Scram

****

Answer

d. Control Rod Block and a Half Scram

****

References: LOI EB 2968
T.S. Table 3.1.1 and 3.2.5
Justification: Higher Order
With less than 13 LPRMs an INOP condition will exist on "E" APRM causing a control rod block and a half scram
Last Revised: 4/8/99 10:04:41 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 50 Exam Bank Question No.: 3466 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-05-215 Objective: CRO 3, 4

****

Select the correct answer:

The Mode Switch is in the START & HOT STANDBY position with APRM D indicating 1%. Reactor power is approximately midscale on Range 7 of the IRMs. APRM C begins to fail upscale. Predict the RPS response.

a. Half scram when "C" APRM reads 15%

b. Half Scram when "C" APRM reads 92%

c. Full scram when "C" APRM reads 15%

d. Full scram when "C" APRM reads 92%

****

Answer

a. Half scram when "C" APRM reads 15%

****

References: LOI EB 2948
OP 2132, Rev 15
CWD 804, 807, 811, 814
Justification: Higher Level
Startup Hot Standby 15% scram setpoint "D" APRM will cause only a rod block. "C" APRM will cause a half scram. The 92% distractor is the approximate flow scram setpoint for minimum flow with the Mode Switch in RUN.
Last Revised: 4/8/99 10:06:42 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 51 Exam Bank Question No.: 3457 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-216 Objective: 11c

****

Select the correct answer:

As a result of a small steam leak in the DW, DW Temperature becomes elevated. Indicated vessel level will be:

a. the same as actual level.

b. higher than actual level.

c. lower than actual level.

d. significantly lower than actual level.

****

Answer

b. higher than actual level.

****

References: LOI EB 2926
Design Basis Calc VYC-332
LOR Exam Record 8
Justification: Due to the density change in the reference leg, the D/P will decrease resulting in indicating level > actual level.
Last Revised: 3/9/99 9:22:43 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 52 Exam Bank Question No.: 3518 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-217 Objective: 10

****

Select the correct answer:

With the reactor operating at 100% power, RCIC is operating in full flow test for a surveillance.

A LOCA occurs resulting in a reactor scram and a drywell pressure of 5 psig. RPV water level is 130 inches and steady.

Predict the response of RCIC-30, Full Flow Test Valve and RCIC-21, Pump Discharge Valve.

a. RCIC-30 will close
RCIC-21 will open

b. RCIC-30 will close
RCIC-21 will remain closed

c. RCIC-30 will remain open
RCIC-21 will open

d. RCIC-30 will remain open
RCIC-21 will remain closed

****

Answer

d. RCIC-30 will remain open
RCIC-21 will remain closed

****

References: OP 2121
Justification: Higher Order
High drywell pressure is not an initiation signal, therefore, neither the full flow test valve or the pump discharge valve will reposition. HPCI-24 will shut removing the system from full flow test.
Last Revised: 4/9/99 3:01:50 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 53 Exam Bank Question No.: 3462 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-218 Objective: CRO 2

****

Select the correct answer:

A LOCA outside the drywell has occurred. The following conditions exist:

Drywell pressure is 1.8 psig and steady
Reactor level is 82.5" and lowering

Predict the ADS system response.

a. ADS blowdown will occur in 2 minutes.

b. ADS blowdown will occur in 8 minutes.

c. ADS blowdown will occur in 10 minutes.

d. ADS blowdown will not occur.

****

Answer

c. ADS blowdown will occur in 10 minutes.

****

References: CWD 750, 751: OP 2122
Justification: Higher Level
ADS blowdown will occur in 10 minutes because a high drywell condition does not exist. After the 8 minute timer times out the equivalent of a high drywell pressure condition will exist.
Last Revised: 4/8/99 10:08:10 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 54 Exam Bank Question No.: 3497 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-223 Objective: 4

****

Select the correct answer:

While operating at 100% power, the plant has experienced a loss of DC-2. While responding to the loss of DC-2, a fuel failure occurs causing Main Steam Line Radiation monitors to increase to 500 mR/hr.

Which one of the following describes the response of the MSIVs?

a. All MSIVs close.

b. Inboard MSIVs close only.

c. Outboard MSIVs close only.

d. All MSIVs remain open.

****

Answer

a. All MSIVs close.

****

References: LOI EB 141
ON 3159
ARS 5-H-6
Justification: Higher Level
A Group I isolation on HI-HI MSL radiation exists. The loss of DC-2 will not affect the isolation capability; therefore, all MSIVs will close.
Last Revised: 3/23/99 9:31:50 AM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 55 Exam Bank Question No.: 3513 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-239 Objective: 7

****

Select the correct answer:

The (CAC) containment air receiver pressure as read locally on PI-105-18 is 20 psig and lowering.

How is the manual operation of the SRVs affected in the condition?

a. SRV cycles are limited. More cycles are available at a high drywell pressure condition.

b. SRV cycles are limited. Less cycles are available at a high drywell pressure condition.

c. SRV cycles are unaffected by drywell pressure because instrument air will realign automatically on lowering containment air receiver pressure.

d. SRV cycles are unaffected by drywell pressure because the nitrogen bottle will realign automatically on lowering containment air receiver pressure.

****

Answer

b. SRV cycles are limited. Less cycles are available at a high drywell pressure condition.

****

References: OT 3122
Justification: OT 3122 App A provides direction to manually align nitrogen for SRV operation making c & d incorrect. There are more cycles available at lower DW pressure.
Last Revised: 4/6/99 7:19:50 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 56 Exam Bank Question No.: 3515 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-249 Objective: CRO 4

****

Select the correct answer:

The plant is operating normally at 100% power when the Speed Load Changer is taken to lower and held there.

What is the effect on reactor pressure?

a. Reactor pressure will rise. The control valves close and the bypass valves remain as-is.

b. Reactor pressure will lower. The control valves remain as-is and the bypass valves open.

c. Reactor pressure will remain constant. The control valves close and the bypass valves open.

d. Reactor pressure will remain constant. The control valves and bypass valves remain as-is.

****

Answer

c. Reactor pressure will remain constant. The control valves close and the bypass valves open.

****

References: LOI EB 1789
GEK 5585 VYNPC Turbine Tech Manual
Justification: Higher Order
Observed plant response is for the bypass valves to open and the control valves to close and RPV pressure remains approximately constant.
Last Revised: 4/9/99 9:16:59 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 57 Exam Bank Question No.: 3512 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-259 Objective: 6

****

Select the correct answer:

A complete loss of service water to the TBCCW HXs has occurred.

Predict the effect on the reactor feedwater system.

a. Feed pump bearing temperature rises only.

b. Feed pump motor winding temperature rises only.

c. Feed pump bearing and motor winding temperature rises.

d. Feed pump bearing and motor winding temperature will not be affected.

****

Answer

a. Feed pump bearing temperature rises only.

****

References: OT 3165
Justification: OT 3165 indicates RFP bearings will be affected
Last Revised: 4/9/99 9:17:34 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 58 Exam Bank Question No.: 3516 Revision: 3 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-259 Objective: CRO 3

****

Select the correct answer:

The reactor is operating at 40% power when Reactor Feedwater Pump "A" trips as a result of an electrical fault. No operator action is performed.

What is the procedure directed control switch positions for the "B" and "C" Reactor Feedwater Pumps and how will feedwater system respond?

a. Both RFP control switches are in AUTO. Both RFPs will auto start.

b. Both RFP control switches are in Pull-to-lock. No RFPs will be running.

c. One pump control switch are in AUTO and the other pump control switch in Pull-to-lock. The pump in AUTO will auto start.

d. One pump control switch are in AUTO and the other pump control switch in Pull-to-lock. No RFPs will be running.

****

Answer

c. One pump control switch are in AUTO and the other pump control switch in Pull-to-lock. The pump in AUTO will auto start.

****

References: LOI EB 343
OP 2172 Rev 20
Justification: Higher Order
Procedure direction is to maintain only 1 pump in AUTO/OFF making a/b incorrect. An electrical fault will enable the auto start feature of the standby pump making c correct and d incorrect.
Last Revised: 4/9/99 9:18:27 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 59 Exam Bank Question No.: 3514 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-261 Objective: 5

****

Select the correct answer:

During two different events the following SBGT flows were observed:

Event	SBGT Combined Flow Rate
HPCI surveillance	500 cfm
RPV low water level	2500 cfm

The reason the SBGT flow associated with HPCI is lower is because:

a. only one train of SBGT initiates for HPCI operation.

b. a system failure in either SBGT or plant HVAC has occurred.

c. SGT-1A/B, Inlet Bypass, are closed.

d. RTF-5, CTMT Purge Fan, is still operating.

****

Answer

c. SGT-1A/B, Inlet Bypass, are closed.

****

References: LOI EB 301
OP 2117
Justification:Higher Order
HPCI Gland Exhaust blower only starts the SBGT fans and opens inlet and outlet dampers. SGT-1A/B remain closed allowing SGT to only draw from HPCI and not the Rx Bldg . The flowrates provided are from observed conditions. RTF-5 would not be operating during either event.
Last Revised: 4/8/99 10:13:56 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 60 Exam Bank Question No.: 3517 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-264 Objective: CRO 7

****

Select the correct answer:

An AO has been directed to perform an air roll on "B" D/G. After placing the engine control to "AT ENGINE", a LOCA occurs resulting in a DW pressure of 15 psig. The AO performs no additional actions.

Predict the "B" D/G response.

a. The Diesel will start and the output breaker will close.

b. The Diesel will start but the output breaker will NOT close.

c. As a result of the LOCA signal, the Diesel will roll but will NOT start.

d. As a result of the LOCA signal, the Diesel will NOT roll.

****

Answer

d. As a result of the LOCA signal, the Diesel will NOT roll.

****

References: LOI EB 3421
OP 2126 Rev 31
Justification: Higher Order
With the the controls are AT ENGINE the D/G will not respond to the auto start signal.
Last Revised: 4/9/99 9:19:30 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 61 Exam Bank Question No.: 3519 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-611 Objective: CRO 3

****

Select the correct answer:

A leak into the Secondary Containment has resulted in entry into EOP-4, Secondary Containment Control. Two area temperatures have exceeded their Maximum Safe Operating Limit. As a result, the SCRO has directed an RPV-ED.

What is the basis for performing an RPV-ED?

a. Precludes further area temperature increases, which will prevent operator access required for safe shutdown of the plant.

b. Precludes further area temperature increases, which will pose a threat to environmental qualifications of equipment required for safe shutdown.

c. Rejects heat to the suppression pool in preference to outside the secondary containment.

d. Rejects heat to the main condenser in preference to the primary containment.

****

Answer

b. Precludes further area temperature increases, which will pose a threat to environmental qualifications of equipment required for safe shutdown.

****

References: LOI EB 3202
VY EOP Study Guide
Justification: EOP Study Guide supports 'b' as the correct answer. Operator access is not a reason for RPV-ED. Heat is rejected to suppression pool in preference to outside primary containment. The main condenser should not be used.
Last Revised: 4/8/99 10:19:02 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 62 Exam Bank Question No.: 3520 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-611 Objective: 1

****

Select the correct answer:

A fire protection header rupture has resulted in 5 inches of water in the RCIC Room.

Entry into EOP-4 is:

a. required immediately.

b. required when water level reaches 12 inches.

c. not required because only one area was affected.

d. not required because the Fire Protection System is not a primary system.

****

Answer

a. required immediately.

****

References: LOI EB 1299
VY EOP Man Vol 4
Justification: Water level is above max Normal Operating Water Level of 1" in the RCIC room, which is an EOP-4 entry condition.
Last Revised: 4/8/99 10:20:53 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 63 Exam Bank Question No.: 3502 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: 3

****

Select the correct answer:

The reactor is in COLD SHUTDOWN. A loss of shutdown cooling occurred. Based on the direction in ON-3156, Loss of Shutdown Cooling, the SCRO directs a feed and bleed. RWCU letdown is established as the bleed method.

What system should be directed as the feed method?

a. Condensate Transfer through the CS system

b. Injection by using CS pumps

c. Condensate and Feed using the condensate pumps

d. Injection by using the RHR pumps in the LPCI mode

****

Answer

a. Condensate Transfer through the CS system

****

References: ON 3156
Justification: ON 3156 directs the use of Condensate Transfer through the CS system or CRD flow as one of the feed methods. CRD is not one of the available answers and the other systems are not procedurally directed.
Last Revised: 4/8/99 10:21:38 PM by Murphy, Kevin

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 64 Exam Bank Question No.: 3496 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO 1

****

Select the correct answer:

The reactor is in Cold Shutdown five days after plant shutdown. RHR pump A is operating in the shutdown cooling mode. Maintenance requests permission to open the Reactor Recirculation loop A discharge valve RV-53A to verify proper operation after maintenance.

Predict the effect on shutdown cooling performance.

a. RHR A heat exchanger outlet temperature will rise, reactor vessel metal temperatures will rise.

b. RHR A heat exchanger outlet temperature will rise, reactor vessel metal temperatures will lower.

c. RHR A heat exchanger outlet temperature will lower, reactor vessel metal temperatures will lower.

d. RHR A heat exchanger outlet temperature will lower, reactor vessel metal temperatures will rise.

****

Answer

d. RHR A heat exchanger outlet temperature will lower, reactor vessel metal temperatures will rise.

****

References: LOI EB 1363
ON 3156
Justification: Higher Level
Opening the RR discharge valve will result in flow bypassing the core. With less heat load the Hx outlet temperature will decrease while the vessel metal temperatures will increase due to the reduced cooling.
Last Revised: 4/9/99 9:21:20 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 65 Exam Bank Question No.: 3544 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-283 Objective: CRO 7

****

Select the correct answer:

I & C is working on a level instrument and have removed the data point from ERFIS. If you looked at this point on the ERFIS screen it should be:

a. green.

b. white.

c. red.

d. purple.

****

Answer

d. purple.

****

References: Justification: Green - dynamic information in normal range; White - primary static display information and some dynamic digital; Red - abnormal or beyond alarm; Purple - questionable data including removed from screen
Last Revised: 4/9/99 9:23:15 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 66 Exam Bank Question No.: 3545 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-400 Objective: CRO 1

****

Select the correct answer:

The SS has ordered the control room evacuated per OP 3126, "Shutdown Using Alternate Methods" (a continuous use procedure). The SS has directed you to start RCIC from the Alternate Shutdown Panel. In this situation this means you:

a. must have the procedure in hand and referenced for each step.

b. must have the procedure nearby and referenced periodically.

c. can start RCIC and refer to the procedure as time permits.

d. can start RCIC and never have to refer to the procedure.

****

Answer

a. must have the procedure in hand and referenced for each step.

****

References: AP 37 Rev 10; AP 151 Rev 8
Justification: A continuous use procedure requires it to be in hand. If in the control room, the RCIC procedure is reference use and requires periodic checks. If starting RCIC for the EOPs, it can be done from memory. There is no special exception for RCIC start in Alt. S.D.
Last Revised: 3/24/99 11:34:20 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 67 Exam Bank Question No.: 3541 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-613 Objective: CRO 2

****

Select the correct answer:

The plant is at 100% power when a feedwater reg valve malfunction causes level to lower. You enter OT 3113, "Reactor Low Level", but a reactor scram signal occurs on low level. Both the automatic and manual scram signals fail. The SCRO enters the EOPs but has not issued any orders.

Which one of the following should be your default level band?

a. Maintain level -22" to current level

b. Maintain level -22' to +90"

c. Maintain level TAF to current level

d. Maintain level 127" to 177"

****

Answer

d. Maintain level 127" to 177"

****

References: DP 166
Justification: DP 166 provides a level band of 127-177" unless directed otherwise. TAF and -22 to 90 are directions that may be received during an ATWS.
Last Revised: 3/29/99 1:20:34 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 68 Exam Bank Question No.: 3542 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-400 Objective: CRO 1

****

Select the correct answer:

You are the CRO and the plant is at full power ops. You notice APRM oscillations and enter OT 3117, "Reactor Instability". The oscillations don't require a reactor scram but you have noticed both Main Steam Line Rad and Off Gas Rad activity increasing.

In this situation, which one of the following is the lowest authority that can determine the reactor is unsafe and scram the reactor? (Positions listed from lowest authority to highest)

a. CRO - Control Room Operator

b. SCRO - Senior Control Room Operator

c. SS - Shift Supervisor

d. PM - Plant Manager

****

Answer

a. CRO - Control Room Operator

****

References: DP 166 ; AP 151 8
Justification: CRO always maintains authority for safe reactor operations
Last Revised: 4/7/99 12:50:54 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 69 Exam Bank Question No.: 3543 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-400 Objective: CRO 10

****

Select the correct answer:

You are the CRO and designated as the operator at the controls. Without turning over, which one of the following actions may you perform?

a. Sit at the SE desk to use ERFIS

b. Sit at the SS desk to use ERFIS

c. Acknowledge AOG alarms during normal operations

d. Acknowledge AOG alarms during EOP usage

****

Answer

a. Sit at the SE desk to use ERFIS

****

References: AP 0894
Justification: The OATC can go into the "Limited Time Access Area" for short durations. Only the SE desk is in this area.
Last Revised: 4/9/99 10:43:47 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 70 Exam Bank Question No.: 3555 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-308 Objective: CRO 2

****

Select the correct answer:

A Limiting Safety System Settings utilizes _____ to protect the plant from exceeding the _____.

a. scrams, Radioactive Release Limits

b. scrams, Safety Limits

c. isolations, Radioactive Release Limits

d. isolations, Safety Limits

****

Answer

b. scrams, Safety Limits

****

References: Justification: Isolations protect against radioactive releases but are not LSSS.
Last Revised: 4/8/99 7:04:55 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 71 Exam Bank Question No.: 3546 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-400 Objective: CRO 3

****

Select the correct answer:

Electrical Maintenance wants to inspect and work on a 480V breaker cubicle. They want the breaker racked out to the disconnect position and then will remove it. How should tagging of this breaker be handled?

a. Place a caution tag on the cubicle door.

b. Place a caution tag on the breaker handle.

c. Place a white tag on the cubicle door.

d. Place a white tag on the breaker handle.

****

Answer

c. Place a white tag on the cubicle door.

****

References: AP 140 Rev 21
Justification: A white tag is required because it involves personnel protection. Caution tags can not be used in lieu of a white tag. The cubicle door is tagged when a breaker is removed.
Last Revised: 3/23/99 12:52:56 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 72 Exam Bank Question No.: 3548 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-229 Objective: CRO 5

****

Select the correct answer:

With the plant at 100% power, which one of the following systems has an hours-per-year limit on its operaton?

a. Control Room Ventilation (in "Emergency")

b. Containment Nitrogen purge (with 18" valves)

c. Standby Gas Train (suction from Rx Bldg)

d. Drywell HVAC (fan runtime)

****

Answer

b. Containment Nitrogen purge (with 18" valves)

****

References: Justification: Opening of containment vent and purge valves is limited to 90 hrs/year in any condition other than cold shutdown.
Last Revised: 4/9/99 10:07:51 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 73 Exam Bank Question No.: 3549 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-603 Objective: CRO 3

****

Select the correct answer:

The plant has entered ON 3152, "Offgas High Radiation". Plant conditions are:

Reactor power: 1593 MWt
SJAE Off Gas Rad: 500 mR/hr
K-Factor (from Chemistry): 2

The SCRO directs you to determine the uci/sec activity using Figure 1 of ON 3152 (attached).

Which one of the following is the correct activity?

a. 59,800

b. 68,734

c. 72,348

d. 86,649

****

Answer

c. 72,348

****

References: ON 3152 Rev 10
Justification:Higher Level
Calculation yields correct answer. Graph can be used for correct answer. Incorrect intersections leads to answers: a: k1.6 + 500; b: k1.6 + 600; d: k2 + 600
Last Revised: 4/9/99 10:41:44 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 74 Exam Bank Question No.: 3550 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-223 Objective: CRO 2c

****

Select the correct answer:

The plant has experienced a LOCA with fuel failure. We are currently in the SAGs and have direction to vent the drywell. Which one of the following vent paths will both vent the drywell and minimize radioactive releases? (Assume each vent path passes identical CFM.)

a. Open AC-7B Torus vent and vent through the SGT.

b. Open AC-7A Drywell vent and vent through the SGT.

c. Open AC-7B Torus vent and vent through Rx Bldg Exhaust.

d. Open AC-7A Drywell vent and vent through Rx Bldg Exhaust.

****

Answer

a. Open AC-7B Torus vent and vent through the SGT.

****

References: Justification: Higher Level
The SGT has a HEPA and charcoal bed. The Rx Bldg Exhaust is not treated. Venting the torus vents the drywell through the downcomers. The torus water provides additional scrubbing of gasses.
Last Revised: 3/29/99 1:14:28 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 75 Exam Bank Question No.: 3553 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-900 Objective: 3

****

Select the correct answer:

During a General Emergency, the _____ will be an assembly area for operators, maintenance, radiation protection and chemistry personnel. The _____ will assist in accident assessment and provide advice.

a. Ops Support Center, Tech Support Center

b. Ops Support Center, Emergency OPS Facility

c. Control Room, Tech Support Center

d. Control Room, Emergency OPS Facility

****

Answer

a. Ops Support Center, Tech Support Center

****

References: LOI EB 188
VY Emergency Plan
Justification:
Last Revised: 3/22/99 11:26:49 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 76 Exam Bank Question No.: 3552 Revision: 3 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-607 Objective: 2

****

Select the correct answer:

A LOCA has occurred and EOP-3, "Primary Containment Control", has been entered. The SCRO is about to order you to spray the drywell but first asks you to verify torus level is below 22.8 ft. The concern for this is that if we spray now the:

a. Torus level will cause RHR to cavitate.

b. Torus capacity is insufficient to accept spray water.

c. Torus-Drywell vacuum breakers will be submerged.

d. Torus spray header will be submerged.

****

Answer

c. Torus-Drywell vacuum breakers will be submerged.

****

References: LOI EB 1290
EOP Study Guide
Justification: High torus water level provides increased NPSH and prevents cavitation. No outside source of water is used to spray the drywell so level won't rise. The torus spray header won't be placed in service.
Last Revised: 4/8/99 7:08:28 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 77 Exam Bank Question No.: 3551 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-622 Objective: CRO 1

****

Select the correct answer:

The plant is experiencing an ATWS and torus temperature is 90°F. The SCRO enters EOP-2 "ATWS RPV Control". He comes to a step which requires SLC to be injected before torus temperature reaches 110°F. In this case the word BEFORE means injection:

a. must be done immediately when the step is read but is NOT allowed after 110°F.

b. must be done immediately when the step is read but is allowed after 110°F.

c. is required to be done prior to 110°F but is NOT allowed after 110°F.

d. is required to be done prior to 110°F but is allowed after 110°F.

****

Answer

d. is required to be done prior to 110°F but is allowed after 110°F.

****

References: Justification:
Last Revised: 4/7/99 12:03:54 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 78 Exam Bank Question No.: 3521 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-602 Objective: CRO 2

****

Select the correct answer:

The plant is at full power operations when the control rod drift alarm annunciates. The CRO notices that two control rods are drifting in. The proper response to this is to:

a. Select each rod and fully insert them to position 00.

b. Select each rod and return them to their original positions.

c. Individually scram each rod from CRP 9-16.

d. Manually insert a full reactor scram from CRP 9-5.

****

Answer

d. Manually insert a full reactor scram from CRP 9-5.

****

References: OT 3167
Justification: Multiple rod drifts require a manual scram. A single drift in would be inserted to 00. A single drift out would be returned to its original position. If the rod continued to drift out then it would be individually scrammed.
Last Revised: 4/8/99 7:09:56 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 79 Exam Bank Question No.: 3454 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-201 Objective: 2a

****

Select the correct answer:

The reactor is at 100% power when the scram outlet valve of a single control rod fails open. Which one of the following is the effect of this failure?

a. The control rod slowly drifts in and its white light on the Full Core Display does not illuminate.

b. The control rod rapidly inserts and its white light on the Full Core Display does not illuminate.

c. The control rod slowly drifts in and its white light on the Full Core Display illuminates.

d. The control rod rapidly inserts and its white light on the Full Core Display illuminates.

****

Answer

b. The control rod rapidly inserts and its white light on the Full Core Display does not illuminate.

****

References: LOI EB 219
Justification: Higher Level
The opening of the outlet valve vents the over piston area. The ball check lifts and reactor pressure scrams the rod. At 100% power reactor pressure is greater than 1000 psig. A reactor pressure of 800 psig is sufficient to meet scram insertion times, thus the rod does not drift in. The full core display white light requires both inlet and outlet valves to be open to illuminate.
Last Revised: 4/8/99 7:11:39 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 80 Exam Bank Question No.: 3537 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-04-201 Objective: 5

****

Select the correct answer:

A startup is underway and reactor power is 3%. The RWM is latched to a group of 4 rods whose withdraw limits are 12-18. Currently all rods are at position 12. Which one of the following will cause a RWM withdraw error?

a. Inserting 3 of the latched rods to position 10

b. Running a RWM diagnostic

c. Selecting a non-latched rod

d. Placing the RWM keylock switch to Bypass

****

Answer

b. Running a RWM diagnostic

****

References: Justification: Higher Level
A diagnostic routine generates a select block. A select block generates an insert and withdraw block. A withdraw block would be generated if there were 3 insert errors and a non-insert error rod is selected. Selecting a non-latched rod causes a select block. The RWM in Bypass will bypass all blocks.
Last Revised: 4/9/99 9:25:01 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 81 Exam Bank Question No.: 3453 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-202 Objective: CRO 5, 6

****

Select the correct answer:

A plant startup is underway. One recirc pump is already running and the CRO is about to start the second pump. Which of the following conditions would allow a Recirc. Pump start?

a. Suction valve closed and discharge bypass open

b. Suction valve open and discharge bypass open

c. Discharge valve closed and discharge bypass closed

d. Discharge valve open and discharge bypass closed

****

Answer

b. Suction valve open and discharge bypass open

****

References: LOI EB 1659
OP 2110, Rev 31
Justification: To start a pump the following must be aligned: suction-open; discharge-closed; discharge bypass-open.
Last Revised: 4/8/99 7:14:38 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 82 Exam Bank Question No.: 3522 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-204 Objective: AO 2, 3; CRO 2

****

Select the correct answer:

The plant is in HOT SHUTDOWN and the RWCU system has been manually shutdown due to a loss of instrument air. If RWCU were to be restarted in this situation you would have to direct flow through the _____ and return flow to the _____. (Reference attached print).

a. Filter Demin Bypass Valve, Vessel

b. Filter Demin Bypass Valve, Main Condenser

c. Filter Demins, Vessel

d. Filter Demins, Main Condenser

****

Answer

a. Filter Demin Bypass Valve, Vessel

****

References: ON 3146
Justification: A loss of air affects the FCVs for the demins and the dump valve for flow to the main condenser/radwaste. The flowpaths for the bypass valve and return to the vessel are motor operated and unaffected by loss of air.
Last Revised: 4/8/99 1:30:07 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 83 Exam Bank Question No.: 3557 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-205 Objective: CRO 2, 5

****

Select the correct answer:

The plant has shutdown to fix a leaking SRV. The current plant status is:

RHR "A" - Shutdown Cooling
RHR "B" - Torus Cooling
Rx Level - 185"
Rx Pressure - 50 psig

The SCRO directs the CRO to lower torus level. Predict the plant response if the CRO were to only open RHR-57 and RHR-66, the RHR to RW Discharge valves.

a. Torus level lowers, reactor level remains constant.

b. Torus level lowers, reactor level lowers.

c. Torus level remains constant, reactor level lowers.

d. Torus level remains constant, reactor level remains constant.

****

Answer

c. Torus level remains constant, reactor level lowers.

****

References: Justification: Higher Level
RHR-66 and 57 are normally aligned with "A" loop RHR. For "B" loop discharge to RW, manual bypass valves must be open. These valves are normally closed. Opening RHR-66 and 57 will drain the vessel until the 127" isolation occurs.
Last Revised: 4/8/99 7:16:35 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 84 Exam Bank Question No.: 3523 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-03-201 Objective: CRO 2

****

Select the correct answer:

A plant startup is in progress with reactor power at 32%. APRM "B" has failed downscale and is bypassed. The CRO continues the startup and selects rod 22-23, a center rod, for withdrawal. He notices that the RBM selected LPRM strings show that a single level "A" and a single level "C" LPRMs have been bypassed.

Which one of the following is the current status of the RBM system?

a. RBM "A" is inoperable and RBM "B" is inoperable.

b. RBM "A" is inoperable and RBM "B" is operable.

c. RBM "A" is operable and RBM "B" is inoperable.

d. RBM "A" is operable and RBM "B" is operable.

****

Answer

d. RBM "A" is operable and RBM "B" is operable.

****

References: Justification: Higher Level
APRM "B" is the normal reference APRM to RBM "B". If reading less than 30% then RBM "B" would be inoperable. When APRM "B" is bypassed, APRM "D" automatically becomes the referenced APRM. A center rod uses all 16 LPRM inputs with levels "A" and "C" inputting into RBM "A". An inop trip signal is generated with less than 50% of the LPRM inputs. With 6 of 8 LPRM inputs available to RBM "A", it remains operable.
Last Revised: 4/8/99 7:17:38 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 85 Exam Bank Question No.: 3524 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-205 Objective: CRO 2

****

Select the correct answer:

The plant has experienced a LOCA. Currently reactor pressure is 300 psig, reactor level is +7 inches by shroud indication and drywell pressure is 5 psig. The SCRO directs you to place "A" loop of RHR in suppression pool cooling and secure any injection flow. The RHR A/C LOGIC LIMIT SPRAY VLV LPCI SIG BYPASS SWITCH (pistol grip) has been placed to Bypass but no other operator actions have been taken on the RHR System.

What other switches will you need to manipulate?

a. UPS FDR BLOCK KEYLOCK SWITCH and RHR A/C LOGIC CTMT SPRAY VLV SHROUD OVRD

b. UPS FDR BLOCK KEYLOCK SWITCH and RHRSW PP A & C LPCI AUTOSTOP OVERRIDE SWITCH

c. RHR-89A TEST SWITCH and RHR A/C LOGIC CTMT SPRAY VLV SHROUD OVRD

d. RHR-89A TEST SWITCH and RHRSW PP A & C LPCI AUTOSTOP OVERRIDE SWITCH

****

Answer

b. UPS FDR BLOCK KEYLOCK SWITCH and RHRSW PP A & C LPCI AUTOSTOP OVERRIDE SWITCH

****

References: Justification: Higher Level
A LPCI initiation signal has been generated by both drywell pressure and vessel level. The LPCI signal trips the RHRSW pumps (required for Torus Cooling) and thus the LPCI signal needs to be overridden for RHRSW. The LPCI signal, with reactor pressure less than 350 psig, has caused the RHR-27A valve to come open. To secure injection flow to the torus this valve needs to be closed. To close the valve a 5 minute time delay has to pass and the UPS FDR Block keylock taken to bypass. The containment override switch is only required if drywell or torus spray are desired and level is less

than 2/3 rds core height. The RHR-89A Test Switch bypasses the auto valve closure when an RHRSW pump is shutdown and is not required for torus cooling.
Last Revised: 4/8/99 7:18:56 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 86 Exam Bank Question No.: 3554 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-233 Objective: CRO 3

****

Select the correct answer:

The plant is in a refuel outage with fuel movement between the vessel and the fuel pool underway. The Fuel Pool Cooling System is aligned to draw a suction from the reactor well and discharge to the spent fuel pool. If a leak were to develop on the suction from the reactor well you would expect Fuel Pool level to decrease to approximately _____ and the FPC pumps will _____. (Reference attached print.)

a. 17 ft (3 ft over active fuel), trip

b. 17 ft (3 ft over active fuel), continue to run

c. 37 ft (23 ft over active fuel), trip

d. 37 ft (23 ft over active fuel), continue to run

****

Answer

a. 17 ft (3 ft over active fuel), trip

****

References: Justification: Higher Level
The 220/221 valves close at 37 ft but only isolate Fuel Pool Suction. Water flows through the cattle chute as the reactor well level drops. Eventually the FDC pumps trip on low suction pressure and the fuel pool level is even with the cattle chute.
Last Revised: 4/8/99 1:28:18 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 87 Exam Bank Question No.: 3535 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-234 Objective: CRO 1

****

Select the correct answer:

The plant is in a refueling outage with the mode switch in refuel and all rods inserted. The refuel bridge crew has used the grapple to pick up a fuel bundle. They start to move towards the core when the control room operator withdraws a control rod. When the bridge reaches the core area you would expect the bridge to:

a. stop and a hoist block would be generated.

b. stop and the hoists would remain operable.

c. continue and a hoist block would be generated.

d. continue and the hoists would remain operable.

****

Answer

a. stop and a hoist block would be generated.

****

References: Justification: Higher Level
The conditions for a platform travel block and a hoist block coincide in this case with the conditions of: any grapple/hoist loaded, not all rods in and platform near/over the core. The grapple is loaded with the weight of the fuel bundle. The platform travel stops since it is moving towards the core. If the platform was moving away from the core then travel would continue.
Last Revised: 4/8/99 7:23:18 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 88 Exam Bank Question No.: 3556 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-249 Objective: CRO 3

****

Select the correct answer:

The plant is at 100% power. The MHC System is transferred from the EPR to the MPR and the operator notices the MPR stroke is drifting higher. Assuming no operator action, which one of the following would occur?

a. Reactor pressure goes up and the reactor scrams on high pressure.

b. Reactor pressure goes down and the MSIVs close on low pressure.

c. Reactor pressure goes up and the EPR assumes control.

d. Reactor pressure goes down and the EPR assumes control.

****

Answer

b. Reactor pressure goes down and the MSIVs close on low pressure.

****

References: Justification: Higher Level
A higher setpoint causes reactor pressure to increase. The MHC System accepts the controller set to the lowest pressure. The EPR takes over when the MPR setpoint exceeds the EPR setpoint
Last Revised: 4/8/99 7:25:21 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 89 Exam Bank Question No.: 3526 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-26? Objective: CRO 15

****

Select the correct answer:

The plant is at normal full power operations with the Aux. Transformer powering Busses 1 and 2. Breaker 12, Aux Transformer Supply to Bus 1, inadvertently trips. The expected plant response to this is:

a. Bus 1 deenergizes and EDG "B" automatically supplies Bus 3.

b. Bus 1 deenergizes and EDG "B" remains in a standby condition.

c. a Residual Bus Transfer occurs and the Startup Transformer supplies the bus.

d. a Fast Bus Transfer occurs and the Startup Transformer supplies the bus.

****

Answer

d. a Fast Bus Transfer occurs and the Startup Transformer supplies the bus.

****

References: Justification: A fast transfer is initiated by any manual trip of Breaker 12. This occurs fast enough (in a couple of cycles) to prevent an LNP signal.
Last Revised: 4/9/99 9:26:59 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 90 Exam Bank Question No.: 3527 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-03-262 Objective: CRO 7

****

Select the correct answer:

The plant is operating at normal 100% power when a full Loss of Normal Power (LNP) occurs. The "B" EDG fails to start but the "A" EDG operates as designed. Five minutes after the event an A.O. is looking at the "A" RUPS and MCC-89A. He should find the _____ driving the AC Generator and the Maintenance Tie _____.

a. DC Motor, available

b. DC Motor, unavailable

c. AC Motor, available

d. AC Motor, unavailable

****

Answer

c. AC Motor, available

****

References: Justification: A full LNP causes bus 9 to deenergize. Bus 9 feeds the "A" RUPS AC motor. The motor shifts to the DC motor when it reaches < 85% voltage. The "A" EDG starts and supplies Bus 9 within 13 secs. The AC motor starts again (its breaker never trips) and RUPS automatically shifts back to the AC motor. Bus 9 also supplies MCC 9B which supplies the Maintenance Tie.
Last Revised: 4/9/99 9:27:27 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 91 Exam Bank Question No.: 3529 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO 2

****

Select the correct answer:

With the plant at 100% power a loss of DC-2 and DC-3 occurs. You would expect vessel level to initially _____ and the "B" Recirc MG set to _____.

a. lower, trip

b. lower, remain running

c. rise, trip

d. rise, remain running

****

Answer

b. lower, remain running

****

References: ON 3160
Justification: Higher Level
The loss of DC-2 causes the feed pump recirc valves to fail open and the "B" Recirc MG lube oil pumps to shutdown. With the recirc valves open a portion of feedflow is not sent to the vessel. Steam flow exceeds feed flow and level initially decreases until the FW flow control system compensates. The loss of RR MG lube oil pumps causes a low oil pressure trip signal for the MG set. However, the loss of DC also causes a loss of control power and the breaker can not be tripped electrically.
Last Revised: 4/9/99 9:27:59 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 92 Exam Bank Question No.: 3528 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-263 Objective: CRO 5

****

Select the correct answer:

A plant scram has occurred. RCIC was controlling level but received a spurious isolation signal. A control room evacuation is ordered and RCIC is to be run from the Alternate Shutdown panel.

Which of the following control/valve power supplies must be available to unisolate RCIC?

a. DC-1AS and MCC 8B

b. DC-1AS and MCC 9B

c. DC-2AS and MCC 8B

d. DC-2AS and MCC 9B

****

Answer

d. DC-2AS and MCC 9B

****

References: Justification: Higher Level
The only valves that isolate are RCIC-15 and 16. These valves normally receive power from MCC 8B and DC-2 respectively. They can not be operated from the Alt. SD panel without throwing the emergency switches. The switches disconnect normal power and enable the emergency power. DC-1AS is used by RCIC in Alt SD but is not needed to unisolate RCIC.
Last Revised: 3/19/99 1:38:51 PM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 93 Exam Bank Question No.: 3530 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-255 Objective: CRO 2, 4, 5

****

Select the correct answer:

The plant is at normal full power operations when a main steam line 3x normal high rad signal is received. All automatic actions occur but no manual operator actions are taken. If directed to start the Mechanical Vacuum Pump you would have to:

a. reduce reactor power and reposition the reactor mode switch.

b. ensure the high rad signal is clear and reposition the reactor mode switch.

c. reduce reactor power and insure AOG in service.

d. insure the high rad signal is clear and insure AOG is in service.

****

Answer

b. ensure the high rad signal is clear and reposition the reactor mode switch.

****

References: Justification: Higher Level
The 3x normal signal caused a reactor scram, MSIV isolation and MVP trip/isolation. Administratively, to operate the MVP, the mode switch has to be out of RUN and power less than 5 %. The scram reduced the power but the mode switch must still be moved out of RUN. The discharge of the MVP bypasses the AOG system.
Last Revised: 4/8/99 7:39:33 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 94 Exam Bank Question No.: 3531 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-212 Objective: CRO 5

****

Select the correct answer:

The control room is about to transfer RPS "A" from the MG set to it's alternate power supply. A review of the RPS "A" loads shows that the Rx Bldg Vent Rad Monitor "A" is powered from RPS "A". When RPS "A" is placed on its alternate power supply you should expect the Rx Bldg Vent Rad Monitor "A" to:

a. remain energized without causing a Group III isolation signal.

b. deenergize without causing a Group III isolation signal.

c. deenergize, cause a 1/2 Group III isolation signal and reenergize.

d. deenergize, cause a full Group III isolation signal and reenergize.

****

Answer

d. deenergize, cause a full Group III isolation signal and reenergize.

****

References: OP 2134
Justification: Higher Level
The transfer of RPS is a break before make so the monitor deenergizes. This causes an isolation signal to be generated. The isolation signals for the "A" and "B" Rx Bldg Vent Rad Monitors are wired in series so it only takes one to cause a full Group III.
Last Revised: 4/9/99 9:28:29 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 95 Exam Bank Question No.: 3538 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-272 Objective: CRO 2; SCRO 2; SE 2; AO 2

****

Select the correct answer:

The ARM DNSCL and the TURBINE BLDG RAD HI annunciators have just alarmed. ARM #24, TURBINE BLDG TURBINE DECK, has both its upscale and downscale lights energized. No other ARM's are alarming. This situation indicates that:

a. the installed bug source is exposed.

b. the indicator/trip unit has been placed to ZERO.

c. a loss of power to the indicator and trip units has occurred.

d. the detector has lost argon gas pressure.

****

Answer

c. a loss of power to the indicator and trip units has occurred.

****

References: LOI EB 1128
OP 2135
Justification: Higher Level
The downscale and hi trip units are fed from the same power supply. Loss of power causes them to go into the trip condition. An installed check source would not cause the downscale alarm. The ZERO position does not activate alarms. The loss of argon gas would cause the meter to read lower and would not activate the hi trip.
Last Revised: 3/22/99 9:55:52 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 96 Exam Bank Question No.: 3540 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-279 Objective: 3

****

Select the correct answer:

Station air compressors C and D are running in when a Service Air line break and Loss of Normal power (LNP) occurs. The plant conditions are as follows:

- Emergency Diesel Generators running
- SA-PCV-1, Service Air Pressure Control Valve, in mid-position

Which one of the following is the status of the Air System?

a. A and B compressors are available, Instrument Air is available.

b. A and B compressors are available, Instrument Air is NOT available.

c. C and D compressors are available, Instrument air is available.

d. C and D compressors are available, Instrument Air is NOT available.

****

Answer

a. A and B compressors are available, Instrument Air is available.

****

References: LOI EB 173
Justification: Higher Level
An LNP only allows the diesel backed compressors to be started, A and B. The purpose of PCV-1 is to control a service air line break to maintain instrument air header pressure. The valve will be full closed at 80 psig and full open at 85 psig. In mid-position the leak is still being "fed" but the PCV is performing it's design function.
Last Revised: 4/9/99 9:28:56 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 97 Exam Bank Question No.: 3539 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-286 Objective: 2b

****

Select the correct answer:

The Fire Brigade is fighting a fire in the south warehouse. The Electric Fire Pump started and immediately tripped on overcurrent. The Diesel Fire Pump is running and supplying the fire system with system pressure at 90 psig. The following stable parameters are observed on the Diesel Fire Pump Control Panel:

Diesel lube oil pressure	32 psig
Diesel cooling water temperature	185°F

At the same time these reading are taken, the overcurrent trip of the Electric Fire Pump is reset. Which one of the following describes the system response?

a. The Electric Fire Pump starts and the Diesel Fire Pump continues to run.

b. The Electric Fire Pump starts and the Diesel Fire Pump trips.

c. The Electric Fire Pump remains in standby and the Diesel Fire Pump continues to run.

d. The Electric Fire Pump remains in standby and the Diesel Fire Pump trips.

****

Answer

c. The Electric Fire Pump remains in standby and the Diesel Fire Pump continues to run.

****

References: LOI EB 1186
Justification: Higher Level
Although the start of the electric pump normally occurs first both pumps start on low pressure signal and are independent of each other. The diesel parameters are normal and if abnormal provide alarms only.
Last Revised: 3/22/99 10:05:20 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 98 Exam Bank Question No.: 3533 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-288 Objective: CRO 5

****

Select the correct answer:

Reactor Building Ventilation is in service with Supply Fan RSF-1A and Exhaust Fan REF-1A running. RSF-1B and REF-1B are in their normal standby lineup. HVAC-9, Reactor Building Supply Isolation Valve, has developed an air supply line leak. HVAC-10, Reactor Building Supply Isolation Valve, remains unaffected.

If the leak worsens, how would you expect the system to respond?

a. RSF-1A will trip and RSF-1B will auto start

b. RSF-1A will trip and REF-1A will trip.

c. RSF-1A will run and REF-1A will run.

d. RSF-1A will run and RSF-1B will receive a trip signal.

****

Answer

b. RSF-1A will trip and REF-1A will trip.

****

References: Justification: Higher Level
The 9 and 10 are PCIS valves, in series and are part of the common RSF supply line. An air leak causes the valves to go closed. Normally the standby supply fan will start if the running fan trips. However, the 9 valve going closed sends a trip signal to both supply fans. The Exhaust Fans trip if, with a 7 sec time delay, there are no Supply Fans running.
Last Revised: 4/8/99 8:04:52 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 99 Exam Bank Question No.: 3532 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-02-288 Objective: CRO 2

****

Select the correct answer:

Maintenance is welding some seismic supports in the control room backpanels when a leak develops in the acetylene tank. The SCRO evacuates non essential personnel and orders control room ventilation be placed in EMERGENCY mode. When done this will _____ the air quality because_____.

a. worsen, all air is being recirculated

b. worsen, forced air circulation is lost

c. improve, more air is exhausted

d. improve, all air is being filtered

****

Answer

a. worsen, all air is being recirculated

****

References: Justification: Higher Level
Normally, the control room supply fan draws in a combination of outside air and recirculated air. Exhaust fans are provided in both the kitchen and bathroom. When taken to emergency the fresh air, kitchen and bathroom dampers go closed. The supply fan continues to run, thus all air is recirculated., The recirculation worsens the situation since both the fresh air and exhaust paths are lost and there is no carbon filtering of recirculated air/gases.
Last Revised: 4/8/99 7:48:54 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 100 Exam Bank Question No.: 3534 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-202 Objective: CRO 5

****

Select the correct answer:

The plant is at full power when a scram and trip of both Reactor Recirc pumps occurs. In preparation for a restart of one pump a check of the vessel bottom head to saturation temperature shows a delta of 150°F. In order to reduce this temperature difference the operator should:

a. lower CRD Cooling Water flow and lower RWCU bottom drain flow.

b. lower CRD Cooling Water flow and raise RWCU bottom drain flow.

c. raise CRD Cooling Water flow and lower RWCU bottom drain flow.

d. raise CRD Cooling Water flow and raise RWCU bottom drain flow.

****

Answer

b. lower CRD Cooling Water flow and raise RWCU bottom drain flow.

****

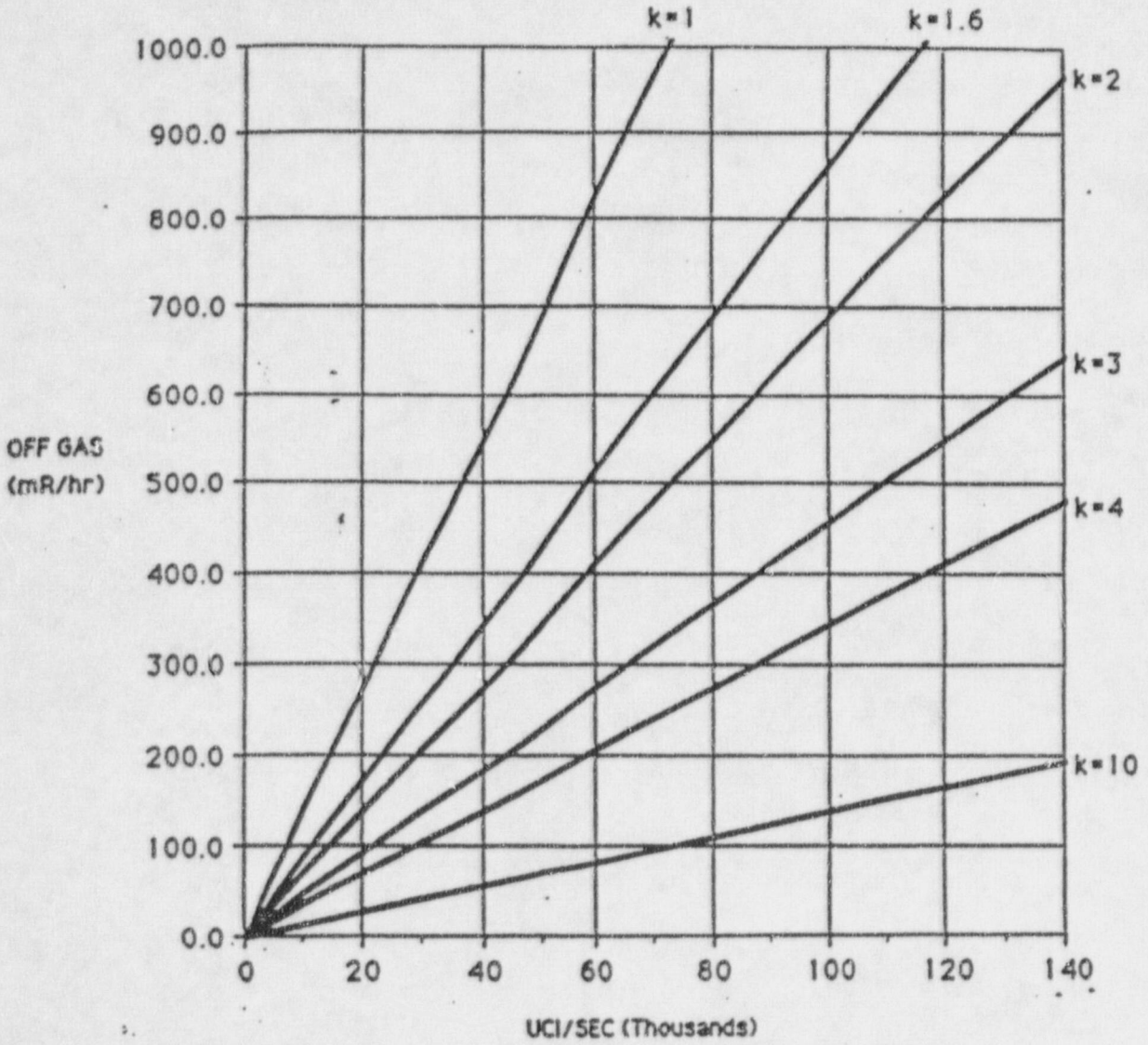
References: OP 2110
Justification: Higher Level
CRD cooling water flow is colder than vessel water and enters the vessel in the bottom head region. Stratification occurs as colder (denser) water sinks to the bottom head region. The RWCU bottom drain draws water from the bottom head and is replaced by the warmer water from the downcomer region.
Last Revised: 4/9/99 9:30:14 AM by Hallonquist, Nora E.

FIGURE 1

CONVERSION OF MR/HR TO UCI/SEC

This conservatively assumes full power operation, and condenser air in-leakage of 15 cfm.

$$\frac{uci/sec}{[(Rx\ Pwr\ x\ .036\ \frac{CFM}{MW_t}) + 15\ cfm]\ x\ K} = mR/hr^*$$



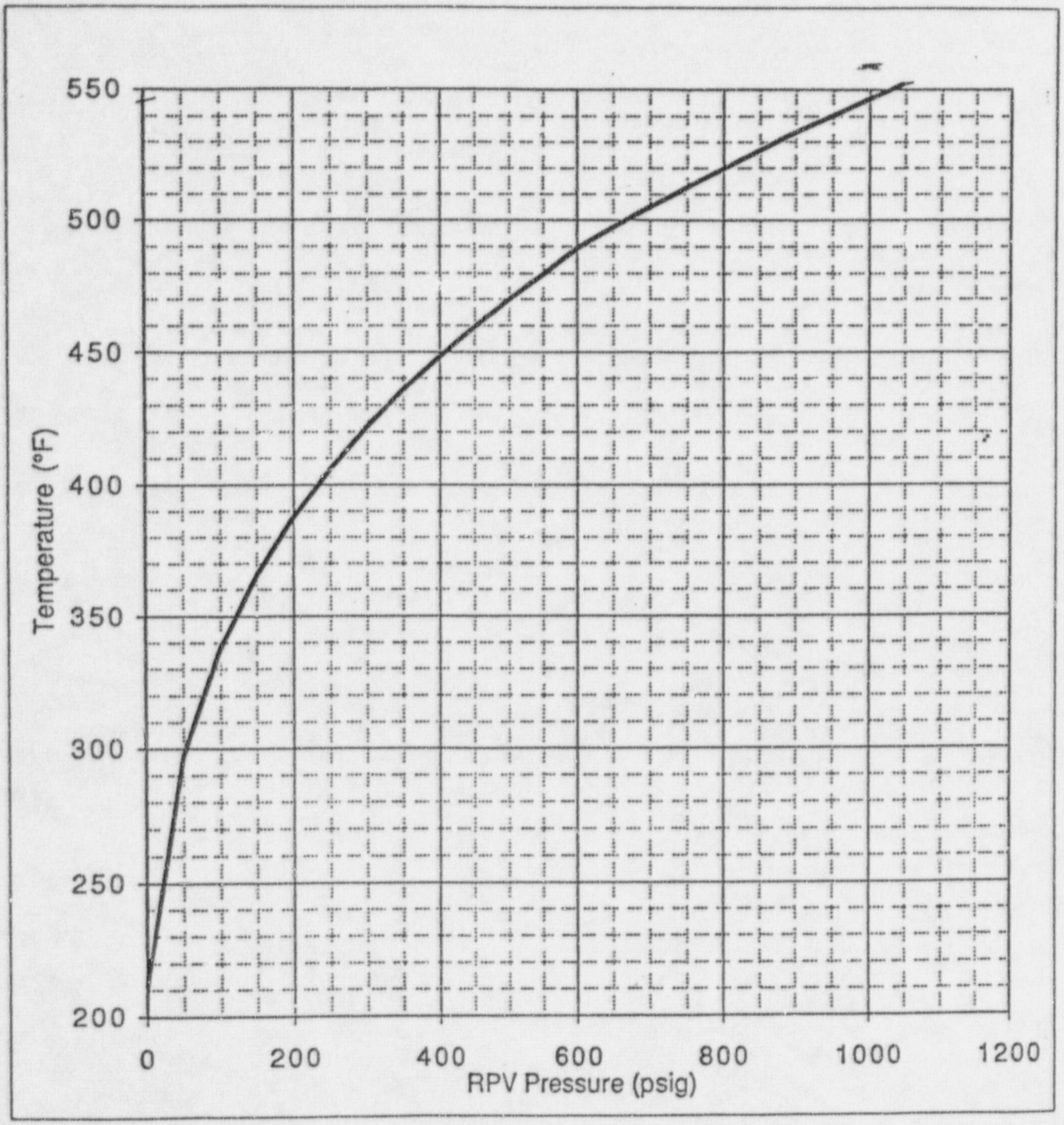
* Request the latest K Factor from Chemistry.

K Factor Units are: $\frac{uci/sec}{(mR/hr)\ (cfm)}$

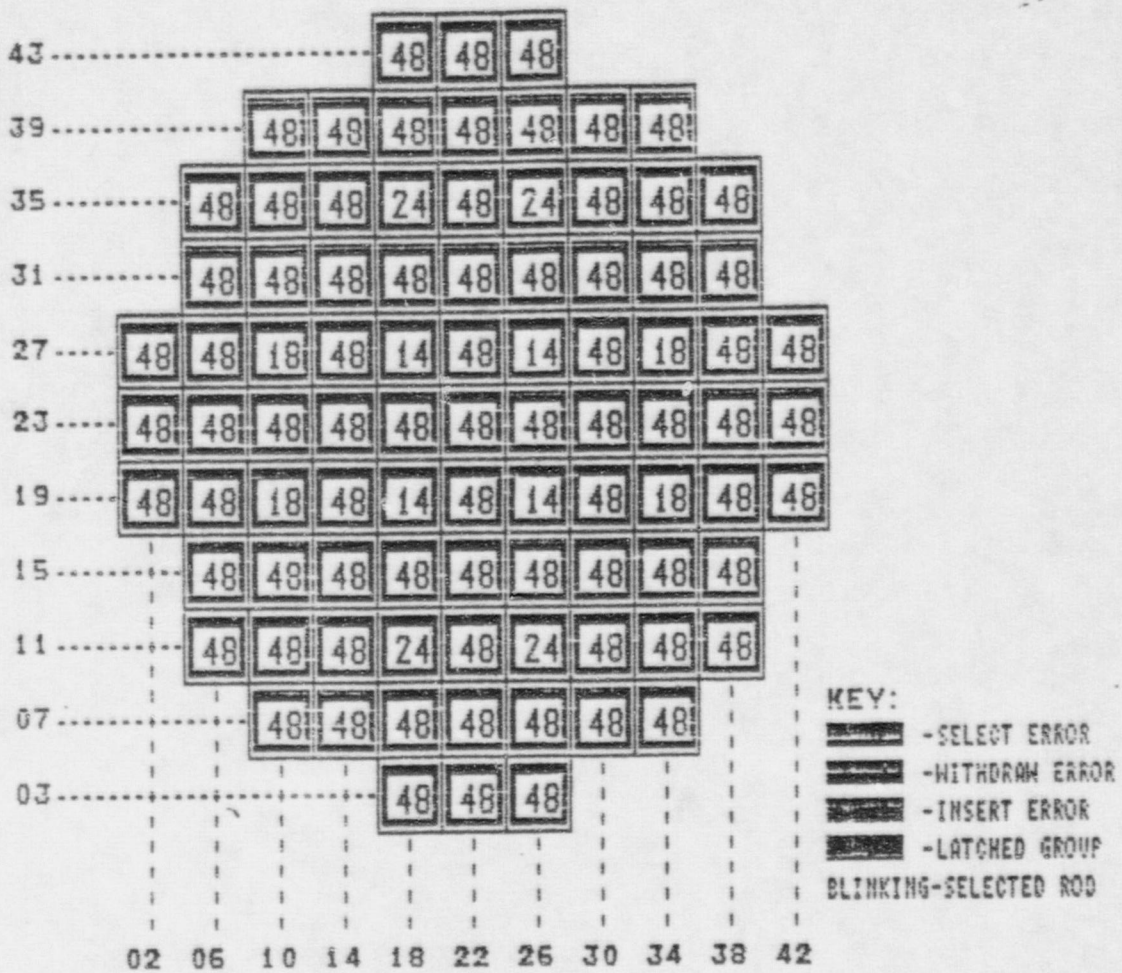
Rx Pwr Units are: MWt

Figure 1

RPV SATURATION CURVE



PLANT MODE	RWM CORE MAP	ON-LINE 05/13/94 15:28:06
RUN		REM



NORMAL	AUTO BYPASS

SELECT BLOCK	INSERT BLOCK
SELECT ERROR	WITHDRW BLOCK

SELECTED ROD	-1 - -1
LTCH/SELC ROD GROUP	132 -1
INSERT LIMIT	-1
CURRENT POSITION	-1
WITHDRAW LIMIT	-1

ACTIVE OPERATING SEQUENCE	
A1	B1
A2	B2
PATTERN EXCHANGE	
RAPID SHUTDOWN	

Figure IV
OP 2450 Rev. 16
Page 1 of 1

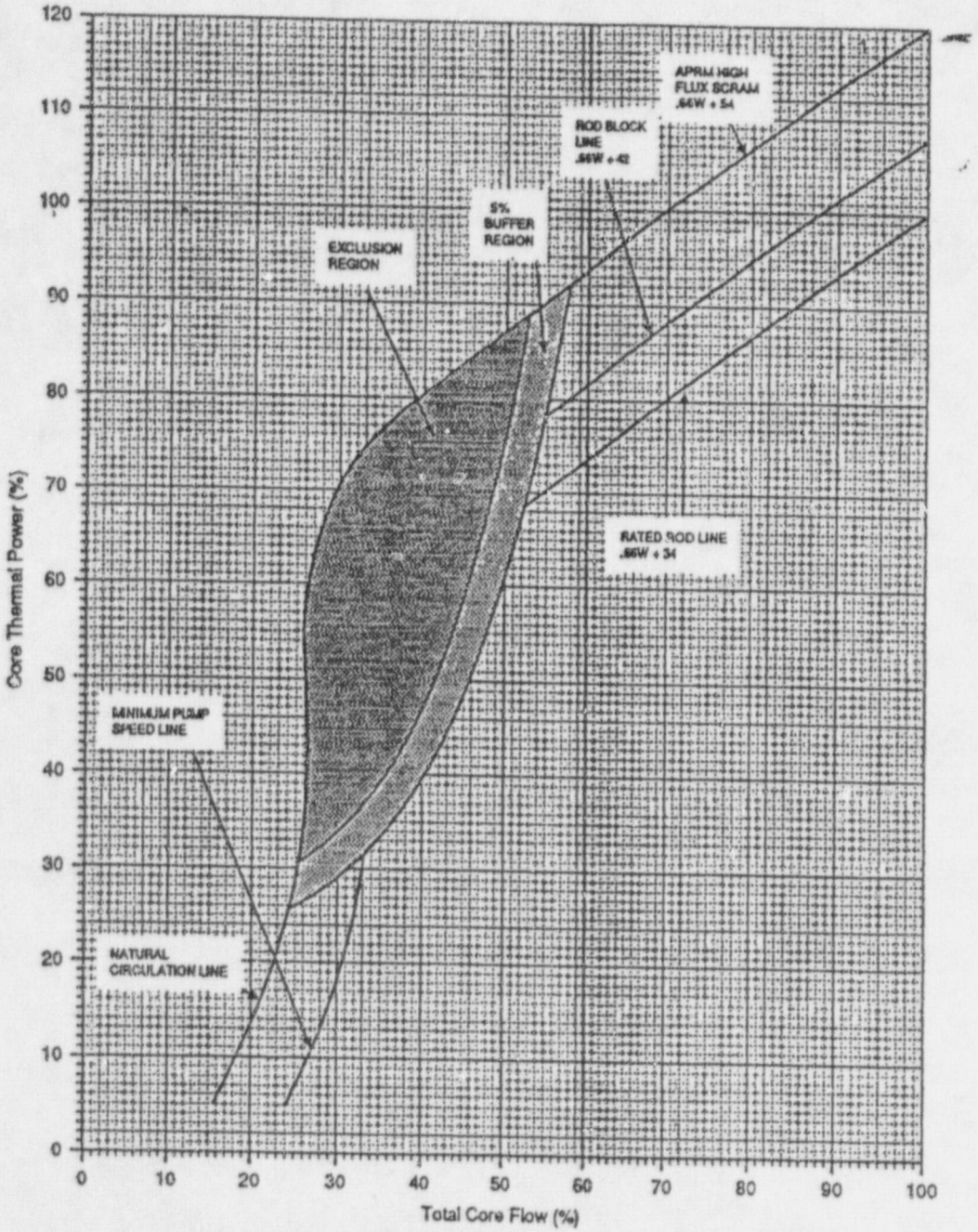


Figure 2.4-1

Limits of Power/Flow Operation
(Technical Specification Reference 3.6.J)