



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30323

ENCLOSURE 1

EXAMINATION REPORT - 50-395/OL-90-01

Facility Licensee: South Carolina Electric and Gas Company  
P.O. Box 88  
Jenkinsville, SC 29065

Facility Name: V. C. Summer Nuclear Station

Facility Docket No.: 50-395

Facility License No.: NPF-12

Examinations were administered at V. C. Summer Nuclear Station near Jenkinsville, South Carolina.

Chief Examiner:	<u>Michael E. Ernstes</u>	<u>12-17-90</u>
	Michael E. Ernstes	Date Signed
Approved By:	<u>Lawrence L. Lawyer</u>	<u>12/17/90</u>
	Lawrence L. Lawyer, Chief Operator Licensing Section 1 Division of Reactor Safety	Date Signed

SUMMARY

Examinations were administered on November 26-29, 1990.

Written examinations and operating tests were administered to seven SRO applicants, six of whom passed.

## REPORT DETAILS

### 1. Facility Employees Attending Exit

D. R. Moore, General Manager, Station Support  
R. M. Fowlkes, Associate Manager, Shift Engineering  
K. W. Woodward, Manager, Nuclear Operations Education  
and Training  
G. J. Taylor, Manager, Operations  
V. J. Kelly, Supervisor, Nuclear Operator Training  
G. A. Lippard, Lead Instructor, Reactor Operator Training

### 2. Examiners:

\*M. E. Ernstes, NRC, Region II  
R. F. Aiello, NRC, Region II  
T. P. Guilfoil, Sonolysts

\*Chief Examiner

### 3. Exit Meeting:

At the conclusion of the site visit, the examiners met with representatives of the plant staff to discuss the results of the examinations. The examiners made the following observations concerning your training program:

- a. The number of post exam comments on the written examination was indicative of an ineffective facility pre-review. The principal examiner will review your proposed corrective actions prior to your next scheduled exam.
- b. Two out of three crews prematurely tripped the reactor and a reactor coolant pump while carrying out the actions of ARP-001, XCP-618. There was a lack of understanding of the system response to shutting the seal leakoff isolation (PVT-8141) which led the operators to an unnecessary reactor trip. After the simulator examinations, a procedure change was initiated by the Operations Manager to clarify the actions to be taken and the expected system response in ARP-001, XCP-618.
- c. The simulator examinations were adversely impacted by problems with the simulator. Although adequate evaluations were obtained, the scheduled scenarios were not able to be run as planned. These simulator problems may prohibit effectively training operators in (emergency, abnormal and alarm response) procedures. Licensee representatives stated that the current simulator modifications will alleviate these problems.

The licensee did not identify as proprietary any material provided to or reviewed by the examiners.

ENCLOSURE 2

U. S. NUCLEAR REGULATORY COMMISSION  
SENIOR REACTOR OPERATOR LICENSE EXAMINATION  
REGION 2

FACILITY: V. C. Summer 1

REACTOR TYPE: PWR-WEC3

DATE ADMINISTERED: 90/11/26

CANDIDATE:

INSTRUCTIONS TO CANDIDATE:

Points for each question are indicated in parentheses after the question. To pass this examination, you must achieve an overall grade of at least 80%. Examination papers will be picked up four and one half (4 1/2) hours after the examination starts.

NUMBER QUESTIONS	TOTAL POINTS	CANDIDATE'S POINTS	CANDIDATE'S OVERALL GRADE (%)
94	100.00		

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

\_\_\_\_\_  
Candidate's Signature

QUESTION: 001 (2.00)

MATCH the correct rod speeds in Column B with the appropriate rod bank and mode of operation in Column A. (Items in Column B may be used more than once) [0.5 each]

COLUMN A	COLUMN B
-----	-----
a. WITHDRAWING control bank "B" in control bank "B" position _____	1. 0 spm
b. Automatic INSERTION with TAVG greater than TREF by 0.5 degrees _____	2. 8 spm
c. Automatic INSERTION with TAVG greater than TREF by 2 degrees _____	3. 40 spm
d. Automatic INSERTION with TAVG greater than TREF by 5 degrees _____	4. 48 spm
	5. 68 spm
	6. 72 spm

ANSWER: 001 (2.00)

- a. 4 [0.5 each]
- b. 1
- c. 2
- d. 6

REFERENCE:

VCS: IC-5 Rod Control, p. 31. Enabling Objective # 4 and 5.  
 KA:001010K404 (2.6/2.8)  
 001010K404 ..(KA's)

QUESTION: 002 (1.00)

Which ONE of the following statements regarding RCP seals is correct?

- a. The floating seal ring, located between the pump radial bearing and the #1 seal, will limit RCS leakage to 50 gpm in the event of a #1 seal failure.
- b. If the #1 seal leakoff bypass valve is opened at normal operating pressure, the #1 seal will shut causing damage to the #2 seal because of a high dP across the seal.
- c. The seal leakoff line exists to maintain a constant pressure across the #1 seal.
- d. The #2 seal was designed so that in an emergency, it can operate with full system pressure across its face in either the rotating or stationary state.

ANSWER: 002 (1.00)

(d)

REFERENCE:

VCS: AB-4, Reactor Coolant Pumps, p.9, Enabling Obj. #7

KA:003000K602 (2.7/3.1)

003000K602 ..(KA's)

QUESTION: 003 (1.00)

Which one of the following is a correct statement concerning RCP seal failure?

- a. Failure of No.2 seal would be indicated by a high No.2 seal leakoff flow condition with a corresponding increase in No.1 seal leakoff flow.
- b. Failure of No.1 seal would be indicated by a low No.1 seal leakoff flow condition with a corresponding change in No.2 seal leakoff flow.
- c. Failure of the No.3 seal would be indicated by an increase in makeup requirement to the standpipe.
- d. Failure of the No.2 seal would be indicated by a significant increase in No.3 seal leakoff.

ANSWER: 003 (1.00)

(c)

REFERENCE:

VCS: AB-4, Reactor Coolant Pumps, p.32, Enabling Obj. #7

KA:003000A201 (3.5/3.9)

003000A201 ..(KA's)

QUESTION: 004 (1.00)

If flashing is occurring in the letdown line, then charging flow is too \_\_\_\_\_ or PCV-145 (letdown pressure control valve) is \_\_\_\_\_ too far.

- a. low, open
- b. low, closed
- c. high, open
- d. high, closed

ANSWER: 004 (1.00)

(a)

REFERENCE:

VCS:AB-3, CVCS, p.11, Enabling Objective 7  
KA:004020K612 (2.9/3.1)  
004020K612 ..(KA's)

QUESTION: 005 (1.00)

An undervoltage on a 7.2 kV safeguards bus occurs 20 seconds after the receipt of a Safety Injection signal. Which one of the following statements describes the correct sequencing of loads onto the safeguards bus?

- a. All loads except Load Block #1 are stripped and the ESF Loading Sequence is re-initiated once the DG output breaker is closed.
- b. Sequencing stops until the DG output breaker is closed at which time it continues from the point at which the undervoltage occurs.
- c. Sequencing stops until the DG output breaker is closed at which time only the ECCS-related equipment sequence will be re-initiated.
- d. All loads except the ECCS related equipment are stripped and only the ECCS related equipment sequence will be continued once the DG output breaker is closed.

ANSWER: 005 (1.00)

(a)

REFERENCE:

VCS: 69-2, Safeguard Power, p.41, Enabling Objective #5  
KA:013000A403 (4.5/4.7)  
013000A403 ..(KA's)





QUESTION: 007 (2.00)

Match the Digital Rod Position Indication System (DRPIS) alarms in COLUMN A with their correct function in COLUMN B. (each alarm has only one correct function)

COLUMN A	COLUMN B
-----	-----
___ a. "CMPTR ROD DEV/SEQ NIS PR TILTS"	1. Indicates banks B,C,D on bottom with bank A above six steps.
___ b. "DRPI ALARM URGENT"	2. Indicates + or - 12 step deviation between a rod and its bank
___ c. "ONE ROD ON BOTTOM"	3. Indicates error or failure from both data cabinets.
___ d. "DRPI ALARM NON-URGENT"	4. Indicates dropped rod or rod with DRPI urgent failure.
	5. Indicates + or - 12 step deviation between any two rods in a bank.
	6. Indicates a loose central control card.

ANSWER: 007 (2.00)

- a. 2 (.5 each)  
 b. 3  
 c. 4  
 d. 6

REFERENCE:

VCS: IC-4, Rod Position Indication System, pp.10-11, Enab. Obj. #7  
 KA:014000K406 (3.4/3.7)  
 014000K406 ..(KA =)

QUESTION: 008 (1.00)

Following a calorimetric at 100% power, the gain potentiometer on Power Range N-41 drawer B is adjusted. Which one of the following components is DIRECTLY affected by this adjustment?

- a. indicating meter NI-41B
- b. differential amplifier
- c. summing amplifier
- d. high volt power supply

ANSWER: 008 (1.00)

(c)

REFERENCE:

VCS:IC-8, Nuclear Inst., p.24, Enabling Objective #4

KA: 015000A101 (~ 5/3.8)

015000A101 ..(KA's)

QUESTION: 009 (2.00)

MATCH the correct detection instrument from Column B with the correct range in Column A. (Items in Column B may be used more than once) (0.5 each)

COLUMN A	COLUMN B
_____ a. Source Range detectors N31 and N32	1. BF3 proportional detector
_____ b. Source Range detector N33	2. U-235 Fission Chamber
_____ c. Intermediate Range detectors N-35 and N-36	3. Uncompensated Ion Chamber
_____ d. Power Range detectors N41, N42, N43, N44	4. Compensated Ion Chamber
	5. Li crystal detector

ANSWER: 009 (2.00)

- a. 2 [0.5 each]
- b. 1
- c. 2
- d. 3

REFERENCE:

VCS: IC-8, Nuclear Inst., p. 4-10, Enabling Objective #3.  
KA:015000K601 (2.9/3.2)  
015000K601 ..(KA's)

QUESTION: 010 (1.00)

Which one of the following statements is permissible per GDP-3 concerning the requirements for the Nuclear Instrumentation Recorder NR-45, in order to perform a reactor startup?

- a. BOTH source range channels are selected.
- b. The LOWEST indicating source range channel and the HIGHEST indicating intermediate range channel are selected.
- c. The HIGHEST indicating source range channel and the LOWEST indicating intermediate range channel are selected.
- d. BOTH intermediate range channels are selected.

ANSWER: 010 (1.00)

(c)

REFERENCE:

VCS: IC-8, Nuclear Instrumentation System, p. 40. Enabling Objective # 4,5.  
KA:015000A402 (3.9/3.9)  
015000A402 ..(KA's)

QUESTION: 011 (1.00)

The power range nuclear instrumentation channel current comparator compares:

- a. Lower detector normalized signal to upper detector normalized signal and generates an alarm when  $> 2\%$  difference.
- b. Each upper (lower) detector normalized signal to average of upper (lower) detector normalized signal and generates an alarm when any one is  $> 2\%$  of average.
- c. Total power from each channel to average power and generates an alarm when any one is  $> 2\%$  of average.
- d. Each channel to the remaining three and generates an alarm if a deviation  $> 2\%$  occurs.

ANSWER: 011 (1.00)

(d)

REFERENCE:

VCS:IC-8, Nuclear Instrumentation, p.34, Enabling Objective #4  
KA:015000K603 (2.6/3.0)  
015000K603 ..(KA's)

QUESTION: 012 (1.00)

Which one of the following is a function of the Incore Thermocouple System?

- a. Used to determine subcooling margin
- b. Used to calibrate excore thermocouples
- c. Used for calorimetric calculations
- d. Used as density compensation to RVLIS

ANSWER: 012 (1.00)

(a)

REFERENCE:

VCS: IC-7, Incore Instrumentation System, p.26, Enabling Obj. #1  
KA:017020K401 (3.4/3.7)  
017020K401 ..(KA's)

QUESTION: 013 (1.00)

Which one of the following signals will give an immediate Feedwater Isolation Signal?

- a. Reactor trip
- b. Both main feedwater pumps trip
- c. Low - low level in any steam generator (2/3 detectors at setpoint)
- d. High - high level in any steam generator (2/3 detectors, at 82.4%)

ANSWER: 013 (1.00)

(d)

REFERENCE:

VCS: IC-9, RPS, p.40 Enabling Objective #5  
KA:059000K419 (3.2/3.4)  
059000K419 ..(KA's)

QUESTION: 014 (1.00)

Which one of the following is the input signal that controls the position of the governor valve on the Turbine Driven Auxiliary Pump?

- a. Turbine speed
- b. Discharge flow
- c. S/G level
- d. Main steam pressure

ANSWER: 014 (1.00)

(a)

REFERENCE:

VCS: IB-3, Emergency Feedwater System, p.10, Enabling Objective #4  
KA:061000K103 (3.5/3.9)  
061000K103 ..(KA's)

QUESTION: 015 (1.00)

The Balance of Plant 125 VDC battery (XBA-1X) has adequate capacity to power its DC loads for a(n) \_\_\_\_\_ hour period following a loss of AC power.

- a. one
- b. two
- c. three
- d. eight

ANSWER: 015 (1.00)

(b)

## REFERENCE:

VCS: GS-3, DC Power, p.7, Enabling Objective #6  
 KA:063000A101 (2.5/3.3)  
 063000A101 ..(KA's)

QUESTION: 016 (2.00)

MATCH the RCS loop segments from Column B with the RCS penetrations in Column A. (Items in Column B may be used more than once). (0.5 each)

COLUMN A	COLUMN B
___ a. CVCS Normal Charging	1. Loop A cold leg
___ b. Normal Letdown	2. Loop A hot leg
___ c. Excess Letdown	3. Loop A intermediate leg
___ d. RHR pump B suction (for normal cooldown)	4. Loop B cold leg
	5. Loop B hot leg
	6. Loop B intermediate leg
	7. Loop C cold leg
	8. Loop C hot leg
	9. Loop C intermediate leg

ANSWER: 016 (2.00)

- a. 4 [+0.5 each]  
 b. 3  
 c. 9  
 d. 8

## REFERENCE:

VCS: AB-2, Reactor Coolant System, Fig AB2.3, Enabling Obj. #3, 4.  
 KA:002000K109 (4.1/4.1)  
 002000K109 ..(KA's)



QUESTION: 017 (1.00)

Which one of the following is the pressure at which the RHR will first start injecting following a LOCA?

- a. 104 psig
- b. 152 psig
- c. 250 psig
- d. 650 psig

ANSWER: 017 (1.00)

(b)

REFERENCE:

VCS: AB-10, ECCS, p.28, Enabling Objective 4

KA:006000K103 (4.2/4.3)

006000K103 ..(KA 4)

QUESTION: 018 (1.00)

Which one of the following describes the interlock between the VCT outlet valves to the suction of the charging pumps (115 C & E) and the RWST suction valves (115 B & D)?

- a. 115C & E CLOSE on an SI signal and then 115B & D OPEN.
- b. 115C & E CLOSE on an SI signal and VCT low level and then 115B & D OPEN
- c. 115B & D OPEN on an SI signal and/or VCT low level and then 115C & E CLOSE.
- d. 115B & D OPEN on an SI signal and then 115C & E CLOSE.

ANSWER: 018 (1.00)

(d)

## REFERENCE:

VCS:AP-3, CVCS, p.20, Enabling Objective #5  
KA:006030K404 (3.9/4.1)  
006030K404 ..(KA's)

## QUESTION: 019 (1.00)

Which one of the following is the basis for requiring at least two groups of pressurizer heaters each having a capacity of at least 125KW?

- a. To control Reactor Coolant System pressure and establish natural circulation.
- b. To maintain sufficient Reactor Coolant System pressure to establish letdown and CVCS degassification.
- c. To sustain a steam bubble in the pressurizer during an insurge to the upper Tech. Spec. limit of 92%.
- d. To maintain sufficient Reactor Coolant System pressure to prevent reactor coolant pump cavitation during normal operations.

## ANSWER: 019 (1.00)

(a)

## REFERENCE:

VCS: Tech. Specs. 3.4.3  
AB-2, RCS, Enabling Objective #7  
KA:010000K603 (3.2/3.6)  
010000K603 ..(KA's)

QUESTION: 020 (1.00)

Which one of the following is the basis for Pressurizer Operability Tech. Spec. 3.4.3 which sets an upper level limit of 92% (1288 cubic feet) in the pressurizer?

- a. Prevents uncovering the pressurizer heaters on a reactor trip.
- b. Ensures that a steam bubble is formed and that the RCS is not a hydraulically solid system.
- c. Prevents lifting the pressurizer code safety valves on a turbine trip without a reactor trip.
- d. Ensures an adequate steam bubble to enable the sprays and heaters to perform as designed.

ANSWER: 020 (1.00)

(b)

REFERENCE:

VCS: Tech. Spec. 3.4.3

AB-2, RCS, pp. 23-24, Enabling Objective #7

KA: 011000G006 (2.6/3.7)

011000G006 ..(KA's)

QUESTION: 021 (1.00)

Which one of the following setpoint permissive statements is correct?

- a. - The P-7 bistable which blocks low power trips, requires input from either 10% power range (P-10) OR 10% turbine load (P-13).  
- The P-11 bistable permits block of pressurizer SI AND blocks PORVs 1985 psig.
- b. - The P-7 bistable which blocks low power trips, requires input from either 10% power range (P-10) OR 10% turbine load (P-13).  
- P-11, permits block of pressurizer SI ONLY
- c. - The P-7 bistable which blocks low power trips, requires input from both 10% power range (P-10) AND 10% turbine load (P-13).  
- P-11 blocks pressurizer PORVs at 1985 psig ONLY.
- d. - The P-7 bistable which blocks low power trips, requires input from both 10% power range (P-10) AND 10% turbine load (P-13).  
- P-11, permits block of pressurizer SI AND blocks PORVs at 1985 psig.

ANSWER: 021 (1.00)

(a)

REFERENCE:

VCS: IC-9, Permissives, p.45, LD 5.

KA:012000K&amp;10 (3.3/3.5)

012000K&amp;10 ... (KA's)

QUESTION: 022 (1.00)

Which one of the following conditions or events will result in a DECREASE in the OP-delta T setpoint?

- a. A power ascension from 75% to 100% power.
- b. Feed flow to a steam generator is increased.
- c. A reactor boration is initiated at 50% power.
- d. Pressurizer spray valve sticks open for 15 seconds (assume no reactor trip).

ANSWER: 022 (1.00)

(a)

REFERENCE:

VCS: IC-9, Reactor Protection and Safeguards System, p. 31, Enabling Objective #7.

KA.012000K611 (2.9/2.9)

012000K611 ..(KA's)

QUESTION: 023 (1.00)

Which one of the following describes the effect that actuation of the containment spray system has upon containment hydrogen concentration during a LOCA?

- a. DECREASES due to the decrease in containment temperature.
- b. DECREASES due to the "scrubbing" action of the water droplets.
- c. INCREASES due to the increase in containment humidity.
- d. INCREASES due to a chemical reaction between NaOH and aluminum.

ANSWER: 023 (1.00)

(d)

## REFERENCE:

VCS: AB-9, ESF, p. 38, Enabling Obj. #13  
 KA: 028000K503 (2.9/3.6)  
 028000K503 ..(KA's)

QUESTION: 024 (1.50)

MATCH the hydrogen level in Column A with its appropriate value in Column B. (Items in Column B may be used more than once) (0.5 each)

Column A -----	Column B -----
___ a. explosive limit	1. 1 %
___ b. lower flammability limit	2. 3 %
___ c. Post Accident Hydrogen Analyzer High H <sub>2</sub> alarm	3. 4 %
	4. 6 %
	5. 12 %
	6. 18 %

ANSWER: 024 (1.50)

a. 6 [0.5 each]  
 b. 3  
 c. 3

## REFERENCE:

VCS: AB-9, ESF, p.38, Enabling Obj. #13  
 ARP XCP-609 (1-5)  
 KA: 028000K502 (3.4/3.9)  
 028000K502 ..(KA's)

QUESTION: 025 (1.00)

Which one of the following is the purpose of the slack cable interlock on the manipulator crane?

- a. Ensure that the gripper is fully engaged.
- b. Prevent continuing to pull on a stuck fuel assembly.
- c. Prevent pushing down of a fuel assembly with the hoist.
- d. Ensure that a slow speed is used when the bottom of the fuel assembly is about to be seated on the lower core plate.

ANSWER: 025 (1.00)

(c)

REFERENCE:

VCS: GS-4, Fuel Handling System, p. 23, Enabling Obj. #5  
KA:034000K401 (2.6/3.4)  
034000K401 ..(KA's)

QUESTION: 026 (1.00)

At which one of the following levels is the top of the Steam Generator tube bundle located?

- a. 5 inches ABOVE the NARROW range detector lower tap
- b. 5 inches BELOW the NARROW range detector lower tap
- c. 5 inches ABOVE the WIDE range detector lower tap
- d. 5 inches BELOW the WIDE range detector lower tap

ANSWER: 026 (1.00)

(b)

## REFERENCE:

VCS: TC-2, Steam Generator Water Level Control, p.15  
KA:035010K109 (3.8/4.0)  
035010K109 ..(KA's)

QUESTION: 027 (1.00)

Which one of the following statements is correct concerning paralleling the main turbine generator with the grid per SOP-301?

- a. If resistances are not matched when the synchronizing switch is closed, heavy currents will flow and speed up the incoming machine to synchronous speed.
- b. If voltages are not matched when the synchronizing switch is closed, there will be VAR flow from the lower voltage source to the higher one.
- c. If the incoming machine is in phase but slightly faster than synchronous speed when paralleled, the system will tend to speed up to synchronous speed.
- d. If the incoming machine is at synchronous speed but out of phase with the running bus when the breaker is closed, heavy currents will flow to either accelerate or retard the incoming machine.

ANSWER: 027 (1.00)

(d)

## REFERENCE:

VCS: SOP-301  
KA:062000A215 (2.8/3.2)  
062000A215 ..(KA's)



QUESTION: 028 (1.00)

Which one of the following signals is disabled when the diesel generator operates in the EMERGENCY START mode?

- a. overspeed
- b. low lube oil pressure
- c. differential current
- d. high jacket coolant temperature

ANSWER: 028 (1.00)

(d)

REFERENCE:

VCS: IB-5, Diesel Generator System, p.37 Enabling Objective #5  
KA:064000K402 (3.9/4.2)  
064000K402 ..(KA's)

QUESTION: 029 (1.00)

Which one of the following correctly completes the following statement? The main steam line high range monitors RM - G19 are located \_\_\_\_\_ of the relief and safety valves \_\_\_\_\_ the main steam lines.

- a. upstream, inside
- b. upstream, outside
- c. downstream, inside
- d. downstream, outside

ANSWER: 029 (1.00)

(b)

## REFERENCE:

VCS: BS-7, Radiation monitoring, p.12, Enabling Objective #7  
KA:073000K101 (3.6/3.9)  
073000K101 ..(KA's)

QUESTION: 030 (1.50)

State ALL automatic actions, if any, associated with each of the following Process Radiation Monitoring channels. Do not include alarms or annunciators. [0.5 points each]

- a. Steam Generator Blowdown Monitor (RM-L3)
- b. Iron Recycle System Monitor (RM-L6)
- c. Condenser Air Ejector Gas Monitor (RM-A9)

ANSWER: 030 (1.50)

[0.5 each]

- a. Diverts blowdown flow to Nuclear Blowdown Tank.
- b. Diverts discharge flow (from RMST) to Recycle Holdup Tank
- c. No actions.

## REFERENCE:

VCS: BS-9, Radiation Monitoring, pp. 14,15,21; Enabling Obj. #4  
OPS-40305A, Radiation Monitoring, pp. 14-18, Obj 6  
KA:073000K401 (4.0/4.3)  
073000K401 ..(KA's)

QUESTION: 031 (1.00)

List TWO signals that will automatically start the diesel fire pump if selected to AUTO mode. (Do not include local or remote start push button.)

ANSWER: 031 (1.00)

- Header pressure decreases (to 85 psig.) [0.5]
- Loss of AC power to diesel fire pump [0.5]

## REFERENCE:

VCS: 05-11, Fire Protection System, pp. 7-8, Enabling Objective #5  
KA:086000A401 (3.3/3.3)  
086000A401 ..(KA's)

QUESTION: 032 (1.00)

Which one of the following is the primary function of the Component Cooling Water System during the injection phase of a plant condition warranting a safety injection?

- a. Provide cooling water to the residual heat removal pumps.
- b. Provide cooling water to the catalytic hydrogen recombiners.
- c. Provide cooling to the Reactor Coolant Pump thermal barriers.
- d. Remove heat from the RHR heat exchanger.

ANSWER: 032 (1.00)

(a)

## REFERENCE:

VCC: 1B-2, CCW, p.26 Enabling Objective #1  
KA:0080300004 (3.1/3.2)  
0080300004 ..(KA's)

QUESTION: 033 (1.00)

Which one of the following is NOT an arming signal for the steam dumps? (Assume the condenser available interlock is satisfied.)

- a. Reactor trip
- b. Turbine trip
- c. Load rejection
- d. Steam dump mode selector switch in STEAM PRESSURE

ANSWER: 033 (1.00)

(b)

REFERENCE:

VCS: IC-1, Steam Dumps, Fig. IC 1.11, Enabling Objective #5  
KA:041020A408 (3.0/3.1)  
041020A408 ..(KA's)

QUESTION: 034 (1.00)

Which one of the following sets of signals is sent to the Reactor Protection System to indicate a Turbine Trip?

- a. Governor valves closed & Auto Stop Oil pressure low
- b. Governor valves closed & EHC pressure low
- c. Stop valves closed & Auto Stop Oil pressure low
- d. Stop valves closed & EHC pressure low

ANSWER: 034 (1.00)

(d)

REFERENCE:

VCS: IC-9, RPS, p.59, Enabling Objective #5  
KA:045010K111 (3.6/3.7)  
045010K111 ..(KA's)

QUESTION: 035 (1.00)

WHICH ONE (1) of the following reactor building instrument air discharge header pressures is the setpoint at which the Backup Instrument Air Valve (PVA-2659) will automatically open to provide backup instrument air?

- a. 60 psig
- b. 75 psig
- c. 90 psig
- d. 105 psig

ANSWER: 035 (1.00)

(c)

REFERENCE:

VCS: AB-14, Reactor Building Inst. Air, p. 6, Enabling Obj. #5.

KA: 078000K402 (3.2/3.5)

078000K402 ..(KA's)

QUESTION: 036 (1.00)

Given the following conditions:

- Reactor power is 43%.
- Control bank rod A-2 is a dropped rod.

Which one of the following actions will cause a "ROD CONTROL URGENT FAILURE" alarm during the dropped rod recovery?

- a. Resetting the P/A converter to zero.
- b. Placing rod control in manual.
- c. Placing the lift coil disconnect switches for the dropped rod to off.
- d. Withdrawing the dropped rod to its bank position.

ANSWER: 036 (1.00)

(d)

REFERENCE:

VCS: IC-5, p.29, LO-5,7,8.

KA:000003A202 (2.7/2.8)

000003A202 ..(KA's)

QUESTION: 037 (1.00)

Which one of the following actions must be performed per AOP 403.5, "Stuck or Misaligned Control Rod", if during the process of returning the rest of the affected bank to its original position, the misaligned control rod moved?

- a. Drive the control bank to align with the misaligned control rod.
- b. Drive the misaligned rod in the direction of the bank to properly align the rods.
- c. Manually trip the reactor.
- d. Within one hour, complete a SDM calculation.

ANSWER: 037 (1.00)

(b)

REFERENCE:

VCS: AOP-403.5, p.3,4.

KA:000003K304 (3.8/4.1)

000003K304 ..(KA's)

QUESTION: 038 (1.00)

Which one of the following requires Technical Specification action to be taken within one hour?

- a. In Mode 1 with ONE full-length rod immovable but within 12 steps of the group counter demand position.
- b. In Mode 5 with ONE pressurizer code safety valve inoperable.
- c. In Mode 2 with ONE pressurizer PORV block valve inoperable, closed and power removed.
- d. In Mode 1 with ONLY ONE operable charging pump.

ANSWER: 038 (1.00)

(a)

REFERENCE:

VCS: TS, p. 3/4 1-10 & 14 and 3/4 4-7 & 10.

KA:0000056003 (3.1/ 3.6)

0000056003 ..(KA's)

QUESTION: 039 (1.00)

Which one of the following is NOT an immediate action in accordance with AOP-106.1, Emergency Boration?

- a. Place FCV-122, Charging Flow Control, in auto.
- b. Open MVT-8104, Emergency Borate.
- c. Verify XPP-13B, Boric Acid Transfer Pump B, started.
- d. Verify flow on FI-110, Emergency Borate flow (gpm).

ANSWER: 039 (1.00)

(a)

## REFERENCE:

VCS: AOP-106.1, p.1.  
KA:0000246010 (4.0/4.0)  
0000246010 ..(KA's)

## QUESTION: 040 (1.00)

List a control room indication that can be used to distinguish in-leakage of radioactive fluid to the CCW system from thermal expansion.

## ANSWER: 040 (1.00)

- RM-L2A/B high radiation alarm -OR-
- illumination of the PVV-7096 (CCW surge tank vent valve) closed position indication light (1.0)

## REFERENCE:

VCS: IB-5, CCW system, p.7, Enabling Objective #8  
KA:000026A201 (2.9/3.5)  
000026A201 ..(KA's)

## QUESTION: 041 (1.00)

If the SUBCRITICALITY critical safety function indicates a dashed path, which one of the following actions is required?

- a. Go immediately to the referenced procedure.
- b. Go to the referenced procedure as time permits.
- c. Monitor other status trees and if no higher priority condition exist, then go immediately to the referenced procedure.
- d. Monitor other status trees and if no higher priority condition exist, then go to the referenced procedure as time permits.

## ANSWER: 041 (1.00)

(c)



## REFERENCE:

VCS: EOP-12, p.3  
KA:0000296012 (4.1/4.2)  
0000296012 ..(KA's)

QUESTION: 042 (1.00)

Which one of the following is NOT an "Alternate Action" to be taken in the control room if during a response to abnormal power generation (ATWS) the turbine had not automatically tripped?

- a. Manually trip the turbine from the MCB.
- b. Runback the turbine.
- c. Close all main steam isolation and bypass valves.
- d. Trip the excitor field breaker.

ANSWER: 042 (1.00)

(d)

## REFERENCE:

VCS: EOP-13.0, p.3.  
KA:0000296010 (4.5/4.5)  
0000296010 ..(KA's)

QUESTION: 043 (1.00)

Which one of the following is the basis for NOT manually initiating a safety injection during an ATWS?

- a. It would result in motor driven EFW pump starts, causing overcooling of the RCS.
- b. It would trip the RCPs, causing a loss of RCS flow.
- c. It would automatically trip the turbine, causing a reduction in heat sink.
- d. It would result in a feedwater isolation, causing a loss of heat sink.

ANSWER: 043 (1.00)

(d)

REFERENCE:

VCS: ERG BG Document for E-0.

KA: 000029K312 (4.4/4.7)

000029K312 ..(KA's)

QUESTION: 044 (1.00)

Which one of the following procedures requires you to initially check if RCPs should be stopped?

- a. EOP-2.0 "Loss of Reactor or Secondary Coolant" and EOP-1.3 "Natural Circulation Cooldown".
- b. EOP-2.0 "Loss of Reactor or Secondary Coolant" and EOP-4.0 "Steam Generator Tube Rupture".
- c. EOP-4.0 "Steam Generator Tube Rupture" and EOP-1.3 "Natural Circulation Cooldown".
- d. EOP-1.3 "Natural Circulation Cooldown" and EOP-1.2 "SI Termination".

ANSWER: 044 (1.00)

(b)

REFERENCE:

VCS: EOP-2.0, p.2

KA: 0000400010 (4.5/4.5)

0000400010 ..(KA's)

QUESTION: 045 (1.00)

Which one of the following correctly list the four SI termination criteria as stated in EOP-1.2, "SI Termination"?

- a. -RCS pressure stable or increasing  
-RCS subcooling based on core exit T/Cs is greater than 130 degrees F  
-pressurizer level is greater than 4%  
-total EFW flow to intact SGs is greater than 425 gpm OR narrow range level is greater than 4% in at least one SG.
- b. -RCS pressure stable or increasing  
-RCS subcooling based on core exit T/Cs is greater than 30 degrees F  
-pressurizer level is greater than 4%  
-total EFW flow to intact SGs is greater than 425 gpm OR narrow range level is greater than 4% in at least one SG.
- c. -RCS pressure stable or increasing  
-RCS subcooling based on core exit T/Cs is greater than 130 degrees F  
-pressurizer level is greater than 4%  
-total EFW flow to intact SGs is greater than 390 gpm AND narrow range level is greater than 38% in at least one SG.
- d. -RCS pressure stable or increasing  
-RCS subcooling based on core exit T/Cs is greater than 30 degrees F  
-pressurizer level is greater than 4%  
-total EFW flow to intact SGs is greater than 390 gpm AND narrow range level is greater than 30% in at least one SG.

ANSWER: 045 (1.00)

(b)

REFERENCE:

VCS, EOP-1.2, SI Termination, p.1.

KA:000040A205 (4.1/4.5)

000040A205 ..(KA's)

QUESTION: 046 (1.00)

Which one of the following statements regarding operation of the main condenser vacuum pump is correct as a result of excessive water in the vacuum pump suction header?

- a. The standby main condenser vacuum pump may start prematurely.
- b. The standby main condenser vacuum pump may not start at all.
- c. The vacuum pump may be damaged subsequent to starting.
- d. The automatic "Low Vacuum Main Turbine Trip" setpoint will increase proportionally to the amount of water in the vacuum pump suction header.

ANSWER: 046 (1.00)

(c)

REFERENCE:

VCS, AOP-206.1, p.1  
KA:000051A101 (2.3/2.5)  
000051A101 ..(KA's)

QUESTION: 047 (1.00)

EDP-6.0 "Loss Of All ESF AC Power" is entered from step 3 EDP-1.0 when it is determined that 1DA and 1DB have no power. Which one of the following applies to the Critical Safety Function status trees?

- a. Monitor status trees for information only.
- b. Transition from this procedure on a RED or ORANGE path.
- c. Transition from this procedure for a RED path on subcriticality ONLY.
- d. Perform referenced procedures in conjunction with the actions of EDP-6.0 as time permits.

ANSWER: 047 (1.00)

(a)

REFERENCE:

VCS: EOP 6.0 p.2  
KA:000055G012 (3 4/4.0)  
000055G012 ..(KA's)

QUESTION: 048 (1.00)

Which one of the following is the basis for shutting XVT08100-CS, "RC PUMP SEAL RETURN HDR ISOL" in step 10 of EOP-6.0 "Loss of All ESF AC Power"?

- a. Prevent filling the VCT with seal leakage.
- b. Prepare for recovery once power is restored.
- c. Protect the CCW system from steam formation due to RCP thermal barrier heating.
- d. Protect the RCPs from seal and shaft damage that may occur when a charging pump is started.

ANSWER: 048 (1.00)

(a)

REFERENCE:

VCS: EOP-6.0, P.7  
Westinghouse Background Document, ECA 0.0, p. 19  
KA:000055K302 (4.3/4.6)  
000055K302 ..(KA's)

QUESTION: 049 (1.00)

While performing steps in EDP 6.0, "Loss of All A/C Power", a Safety Injection signal may be generated when power is restored. If a SI signal is generated, which action below is required by the procedure?

- a. Reset the SI to permit the EDGs to energize the emergency buses.
- b. Place SI in test to prevent an overpressurization of the RCS.
- c. No action is necessary as it has no effect.
- d. Reset the SI to permit manual loading of equipment on an A/C emergency bus.

ANSWER: 049 (1.00)

(d)

REFERENCE:

VCS, EDP-6.0, p.6  
KA:000055A206 (3.7/4.1)  
000055A206 ..(KA's)

QUESTION: 050 (1.00)

With respect to the EDG, which one of the following constitutes a Valid Test Failure?

- a. Malfunction of equipment that is not part of the defined generator unit (e.g. ESF Load Sequencer).
- b. Successful starts that are intentionally terminated without loading.
- c. Successful starts followed by an unsuccessful load attempt.
- d. Test performed in the process of maintenance troubleshooting.

ANSWER: 050 (1.00)

(c)

REFERENCE:

VCS, SAP-204, p.9.

KA:0000570003 (3.3/3.7)

0000570003 ..(KA's)

QUESTION: 051 (1.00)

Which one of the following is the alarm setpoint for the liquid waste effluent (channel RM-L5) based upon?

- a. The pipe size to provide a sound representative sample which is subsequently drawn through an isokinetic nozzle.
- b. The maximum release activity and dilution of the discharge stream.
- c. An 8 hour sample rate and the MPC for iodine which is (10 exp -10 uci/cc).
- d. A gaseous activity level of approximately two times the expected back ground at the monitor location.

ANSWER: 051 (1.00)

(b)

REFERENCE:

VCS, GS-9, p.15, LO-5.

KA:000059K301 (3.5/3.9)

000059K301 ..(KA's)

QUESTION: 052 (1.00)

Which one of the following is the immediate action to a total loss of service water?

- a. Isolate all unnecessary Component Cooling Water System heat loads.
- b. Shut down all HVAC chiller units.
- c. Isolate all unnecessary HVAC Chilled Water System loads.
- d. Attempt to restore at least one train of Service Water to operation.

ANSWER: 052 (1.00)

(d)

REFERENCE:

VCS, AOP-117.1, p.1.  
KA:000062K303 (4.0/4.2)  
000062K303 ..(KA's)

QUESTION: 053 (1.00)

The electric fire pump is designed to auto start when the electric fire pump discharge pressure switch (IPS-4049) senses system pressure at which one of the following?

- a. 65 psig
- b. 75 psig
- c. 85 psig
- d. 95 psig

ANSWER: 053 (1.00)

(d)



## REFERENCE:

VCS, 6S-11, p.7, LO-5.

KA:0000676009

0000676009 ..(KA's)

## QUESTION: 054 (1.00)

Which one of the following is an Immediate Action assigned to the Shift Supervisor by ADP-600.1, "Control Room Evacuation"?

- a. Activate the Radiation Emergency alarm.
- b. Announce the control room evacuation over the plant page.
- c. Direct implementation of the Control Room Evacuation procedure.
- d. Obtain the Station Log Book, Plant Master Keys, and Portable Radios.

## ANSWER: 054 (1.00)

(c)

## REFERENCE:

VCS: ADP-600.1, Rev.0, p.1

KA: 000068K318 (4.2/4.5)

000068K318 ..(KA's)

QUESTION: 055 (1.00)

In accordance with EOP-12, "Monitoring of Critical Safety Functions", which one of the following correctly list the C in DESCENDING order of priority?

- a. Subcriticality, Core Cooling, Heat Sink, RCS Inventory, Containment, RCS Integrity.
- b. Subcriticality, Containment, Heat Sink, RCS Integrity, Core Cooling, RCS Inventory.
- c. Subcriticality, Core Cooling, Heat Sink, RCS Integrity, Containment, RCS Inventory.
- d. Subcriticality, Containment, Heat Sink, RCS Inventory, Core Cooling, RCS Integrity.

ANSWER: 055 (1.00)

(c)

REFERENCE:

VCS, EOP-12, p.1, EP-1 LO-4.

KA:0000746012 (4.3/4.4)

0000746012 ..(KA's)

QUESTION: 056 (1.00)

Which one of the following lists the correct five parameters (conditions) that support or indicate Natural Circulation flow during cooldown?

- a. -RCS subcooling (based on core exit TC greater than 30 degrees F)  
-SG pressure (stable or decreasing)  
-HOT leg RTD (stable or decreasing)  
-core exit T/Cs (stable or decreasing)  
-cold leg temperature (constant or slowly decreasing).
- b. -RCS subcooling (based on core exit TC greater than 130 degrees F)  
-SG pressure (stable or decreasing)  
-COLD leg RTD (stable or decreasing)  
-core exit T/Cs (stable or decreasing)  
-cold leg temperature (constant or slowly decreasing).
- c. -RCS subcooling (based on core exit TC greater than 30 degrees F)  
-SG pressure (stable or decreasing)  
-COLD leg RTD (stable or increasing)  
-core exit T/Cs (stable or decreasing)  
-cold leg temperature (constant or slowly decreasing).
- d. -RCS subcooling (based on core exit TC greater than 130 degrees F)  
-SG pressure (stable or decreasing)  
-HOT leg RTD (stable or decreasing)  
-core exit T/Cs (stable or decreasing)  
-cold leg temperature (near saturation pressure for steam generator temperature).

ANSWER: 056 (1.00)

(a)

REFERENCE:

VCS, TH SCI, TS-14, p.14-24.  
EOP-1.3, Reference Pages  
KA:000074K103 (4.5/4.9)  
000074K103 ..(KA's)

~~QUESTION: 057 (1.00)~~      **DELETE**      *omr 11/1/90*

Which one of the following is the minimum level at which steam generators must be maintained above to ensure adequate heat transfer area and the continuation of the decay heat removal process following a reactor trip?

- a. 38% NARROW range level
- b. 4% NARROW range level
- c. 50% WIDE range level
- d. 20% WIDE range level

ANSWER: 057 (1.00)

(d)

REFERENCE:

VCS: IB-3, EFW p.2, Enabling Objective #8  
KA:000074K302 (3.7/4.2)  
000074K302 ..(KA's)

QUESTION: 058 (1.00)

With respect to EOP-9.0, "High Activity in Reactor Coolant", an RM-L1 alarm (Primary Coolant Letdown Liquid Monitor) is indicative of which one of the following?

- a. A rupture in the letdown heat exchanger.
- b. A fuel clad defect or failure.
- c. A prompt reduction in letdown flow rate causing a subsequent increase in coolant activity levels.
- d. A radioactive leak into the component cooling system.

ANSWER: 058 (1.00)

(b)

## REFERENCE:

VCS, EOP-9.0, p.7,8 and 9.  
KA:0000766011 (3.4/3.6)  
0000766011 ..(KA's)

## QUESTION: 059 (1.00)

Which one of the following statements regarding RCP Trip Criteria is correct, following a reactor trip per EOP-1.0 (Reactor Trip/Safety Injection Actuation)?

- a. -Trip ALL RCPs if phase A Containment Isolation has actuated.  
-Trip ALL RCPs if the following conditions occur: SI flow is indicated on FI-943 (CHG LOOP B CLD/HOT LG FLOW) OR RCS Wide Range pressure is less than 1380 psig.
- b. -Trip ALL RCPs if phase A Containment Isolation has actuated.  
-Trip ALL RCPs if the following conditions occur: SI flow is indicated on FI-943 (CHG LOOP B CLD/HOT LG FLOW) AND RCS Wide Range pressure is less than 1380 psig.
- c. -Trip ALL RCPs if phase B Containment Isolation has actuated.  
-Trip ALL RCPs if the following conditions occur: SI flow is indicated on FI-943 (CHG LOOP B CLD/HOT LG FLOW) AND RCS Wide Range pressure is less than 1380 psig.
- d. -Trip ALL RCPs if phase B Containment Isolation has actuated.  
-Trip ALL RCPs if the following conditions occur: SI flow is indicated on FI-943 (CHG LOOP B CLD/HOT LG FLOW) OR RCS Wide Range pressure is less than 1380 psig.

## ANSWER: 059 (1.00)

(c)

OP-1.0, Ref Page, (RCP Trip Criteria)  
0007A104 (3.6/3.7)  
0007A104 ..(KA's)

QUESTION: 060 (1.00)

Which one of the following applies if a SEVERE CHALLENGE is diagnosed to one of the CSF status trees? The operator should:

- a. Continue to check the status of all critical safety functions, stop optimal recovery and initiate function restoration.
- b. Immediately stop optimal recovery.
- c. Terminate on going response and initiate function restoration.
- d. Continue optimal recovery or initiate function restoration.

ANSWER: 060 (1.00)

(a)

REFERENCE:

VCS, EP-1, p.17, EP-1, LO-7.  
KA:0000076011 (4.1/4.3)  
0000076011 ..(KA's)

QUESTION: 061 (1.00)

In accordance with EOP 1.3, Natural Circulation, which one of the following determines the amount of RCS subcooling required during a Natural Circulation cooldown following a reactor trip?

- a. Pressurizer pressure
- b. Number of CRDM fans running
- c. Pressurizer level
- d. RCS T-cold

ANSWER: 061 (1.00)

(b)

## REFERENCE:

VCS: EOP-1.3, p.8  
KA:000009K326 (4.4/4.5)  
000009K326 ..(KA's)

QUESTION: 062 (1.00)

Which one of the following, according to EOP-18.2 (Response to Voids in the Reactor Vessel), is the correct method to be used to collapse a void in the reactor vessel with all RCPs stopped?

- a. Increase system pressure using pressurizer heaters while maintaining pressurizer level.
- b. Dump steam to increase subcooling and control RCS Thot.
- c. Initiate reactor vessel head venting and continue venting until PRT pressure increases to 80 psig.
- d. Initiate reactor vessel head venting and continue venting until PRT level increases to 110 percent.

ANSWER: 062 (1.00)

(a)

## REFERENCE:

VCS, EOP-18.2, p.7-13.  
KA:000009A201 (4.2/4.8)  
000009A201 ..(KA's)

QUESTION: 063 (1.00)

Given the following conditions:

- Reactor power is 43%.
- Pressurizer level is DECREASING.
- VCT level is INCREASING.
- RCP SEAL WTR LO FLOW alarm is lit.
- LETDN HX OUTLET HI TEMP alarm is lit.
- CHARGING FLOW HI/LO alarm is lit.
- Other plant systems are responding normally.

Which one of the following explains the conditions?

- a. Loss of charging
- b. Letdown isolation
- c. Small break LOCA
- d. Pressurizer PORV failed open

ANSWER: 063 (1.00)

(a)

REFERENCE:

VCS, SOP-102, EOP-18.1  
KA:000022K103 (3.0/3.4)  
000012K103 ... (KA's)

QUESTION: 064 (1.00)

Which one of the following is an immediate action that must be taken according to ADP-115.4, "Loss of Residual Heat Removal System while Refueling", if low flow is indicated on loop A and B?

- a. Verify reactor vessel level at half-pipe or greater.
- b. Maintain refueling reactor building integrity.
- c. Stop any core alterations in progress.
- d. Reduce demand on HCV-603A(B) (A,B RHR HX outlet).



ANSWER: 064 (1.00)

(c)

REFERENCE:

VCS, ADP-115.4, p.1  
KA:0000250010 (3.9/3.9)  
0000250010 ..(KA's)

QUESTION: 065 (1.00)

Which one of the following components receives its input from Pressurizer pressure transmitter PT-445?

- a. P-11 interlock
- b. "PZR PRESS LO" annunciator
- c. Both Pressurizer Spray controllers
- d. Proportional heater controller

ANSWER: 065 (1.00)

(b)

REFERENCE:

VCS: IC-3, Pressurizer Pressure and Level Control, p. 11-21.  
Enabling Objective #2,3, and 4.  
KA:000027A211 (4.0/4.1)  
000027A211 ..(KA's)



ANSWER: 067 (1.00)

(b)

REFERENCE:

Westinghouse EOP Basis, E-2  
KA:000038K306 (4.2/4.5)  
000038K306 ..(KA's)

QUESTION: 068 (1.00)

Which one of the following is the basis for adjusting the "PWR RELIEF SETPT" controller to 1150 psig in step 3 of EOP-4.0 "Steam Generator Tube Rupture"?

- a. Prevent the Pwr Relief valve from lifting prior to the code safety valves.
- b. To maintain ruptured steam generator pressure less than the non-ruptured generators.
- c. Minimize any challenges to the steam generator code safeties.
- d. Initiate a controlled cooldown of the ruptured steam generator.

ANSWER: 068 (1.00)

(c)

REFERENCE:

VCS:EOP-4.0 Steam Generator Tube Rupture  
KA:000038K302 (4.4/4.5)  
000038K302 ..(KA's)

QUESTION: 069 (1.00)

Which one of the following radiation monitors can be used to detect primary to secondary leakage?

- a. Main Plant Vent (RM-A13)
- b. Particulate and Gaseous activity (RM-A2)
- c. Main Steam Line (RM-019 A,B,C)
- d. Reactor Building Purge Supply & Exhaust System (RM-A14)

ANSWER: 069 (1.00)

(c)

REFERENCE:

VCS, TS 3.3.3.1, p.3/4 3-41,  
KA:000038A110 (3.7/3.7)  
000038A110 ..(KA's)

QUESTION: 070 (1.00)

Which one of the following is the reason all reactor coolant pumps are tripped according to EOP-15.0, "Response to Loss of Heat Sink"?

- a. To get increased safety injection flow by decreasing RCS cold leg pressure.
- b. To conserve reactor coolant inventory by reducing seal leak off.
- c. To conserve steam generator secondary inventory by reducing heat input to the RCS.
- d. To minimize the possibility of a tube rupture as EFW is restored to the S/G.

ANSWER: 070 (1.00)

(c)

## REFERENCE:

Westinghouse EOP Basis FR-H.1, p. B.  
 KA:000054K304 (4.4/4.6)  
 000054K304 ..(KA's)

## QUESTION: 071 (1.50)

Match the valves in Column A with the proper description and failure mode in Column B. (Items in Column B may be used more than once.) (0.5 each)

COLUMN A -----	COLUMN B -----
___ a. Turbine driven EFW pump steam supply isolation (PVG-2030)	1. air-operated, fails open
___ b. Motor driven EFW pump flow control valves (IFV-3531, 3541, 3551)	2. air operated, fails closed
___ c. Service water to EFW isolation valves (MVG-1001A,B)	3. air-operated, fails as-is
	4. motor-operated, fails open
	5. motor-operated, fails closed
	6. motor-operated, fails as-is

## ANSWER: 071 (1.50)

- a. 1 (0.5 each)
- b. 1
- c. 6

## REFERENCE:

VCS: IB-3, Emergency Feedwater System, pp.10,15,16  
 KA:000054A101 (4.5/4.4)  
 000054A101 ..(KA's)

QUESTION: 072 (1.00)

Which one of the following is an immediate action to a loss of instrument air per AOP-220.1, Loss of Instrument Air?

- a. Verify the ID Emergency Feedwater Pump has started.
- b. Verify the MD Emergency Feedwater Pumps have started.
- c. Trip the MFPs by momentarily turning all 3 TRIP/RESET switches to trip.
- d. Start the Sullair diesel air compressor.

ANSWER: 072 (1.00)

(d)

REFERENCE:

VCS, AOP-220.1, p.1,2.

KA:0000656010 (3.2/3.3)

0000656010 ..(KA's)

QUESTION: 073 (1.00)

Which one of the following is the expected sequence of events on lowering instrument air pressure?

- 1. Station Instrument Air Compressor auto starts
- 2. SUPP INST AIR COMPRESSOR auto starts
- 3. Service Air isolates from Instrument Air

~~4. Station air supply header pressure control valve closes~~ ME 11/26/90

- a. 4,3,2,1     3,2,1
- b. 3,1,4,2     2,1,3
- c. 4,3,1,2     1,3,2
- d. 3,4,1,2     1,2,3

ANSWER: 073 (1.00)

(d)

REFERENCE:

VCS:ADP-220.1, p.1

XCP-607 (2-6)

KA:000065A104 (3.5/3.4)

000065A104 ..(KA's)

QUESTION: 074 (1.50)

List the THREE conditions which require a reactor trip in accordance with ADP-220.1 on a loss of Instrument Air.

ANSWER: 074 (1.50)

1. Any Main Steam Isolation Valve indicates intermediate or closed position.(0.5)
2. Any Main Feedwater Regulating Valve indicates closed.(0.5)
3. Inst. Air pressure drops to 50 psig (0.25) and there is erratic valve operation.(0.25)

REFERENCE:

VCS: ADP-220.1, p.1

KA:000065A206 (3.6/4.2)

000065A206 ..(KA's)

QUESTION: 075 (1.00)

Which one of the following pressurizer water levels is the setpoint for the "PZR LVL HI" annunciator.

- a. + 5% level deviation
- b. 70%
- c. 88%
- d. 92%

ANSWER: 075 (1.00)

(b)

REFERENCE:

VCS, AB-3, p.58

KA:000028A210 (3.3/3.4)

000028A210 ..(KA's)

QUESTION: 076 (1.00)

WHICH ONE (1) of the following is an automatic action that will occur on a loss of normal letdown according to AOP-102.1, "Loss of All Letdown Capability?"

- a. FCV-122 (Charging flow) will modulate open.
- b. PCV-145 (Pressure Control) will modulate closed.
- c. TCV-144 (Temperature Control) will modulate open.
- d. LCV-115A (Divert valve) will start to divert.

ANSWER: 076 (1.00)

(b)

REFERENCE:

VCS: AOP-102.1, "Loss of All Letdown Capability," pp. 1 and 2.

KA:000028A210 (3.3/3.4)

000028A210 ..(KA's)



QUESTION: 077 (1.00)

Which one of the following MAY proceed, given that a Technical Specification LCD Action Statement has been entered which requires "suspension of all core alterations"?

- a. Removal of any neutron sources from the reactor core area.
- b. Use of the refueling bridge provided that the bridge "low load limit" is bypassed (or "jumpered").
- c. "Shuffling" of the control rods and burnable poison assemblies provided that Keff is less than or equal to 0.95.
- d. Completion of a component "movement" to a "safe" (i.e. conservative) position within the reactor pressure vessel.

ANSWER: 077 (1.00)

(d)

REFERENCE:

VCS, TS Def 1.9

KA:000036008 (2.9/3.8)

000036008 ..(KA's)

QUESTION: 078 (1.00)

In accordance with SAP-153 and SI-90-4, "Control Of Locked Valves", which one of the following states the proper way to confirm a locked valve position?

- a. Turn the valve hand wheel in the OPEN direction, confirm the locking device integrity and proper installation by visual inspection.
- b. Turn the valve hand wheel in the CLOSED direction, confirm the locking device integrity and positively verify the valve position.
- c. Turn the valve hand wheel in the DESIRED POSITION direction, confirm the locking device integrity and proper installation by visual inspection.
- d. Turn the valve hand wheel in the DESIRED POSITION direction, confirm the locking device integrity and positively verify the valve position.

ANSWER: 078 (1.00)

(b)

REFERENCE:

VCS, SI-90-4, SAP-153, p.8  
KA:194001K101 (3.6/3.7)  
194001K101 ..(KA's)

QUESTION: 079 (1.00)

Which one of the following describes how an independent verification of position for a manually operated "Locked Throttled" safety injection valve must be done? (Assume process parameters indicate that the valve is indeed throttled and not closed.)

- a. Move the valve slightly in the closed direction and then return it to its original position.
- b. Inspect the last valve lineup sheet for verification signature and compare recorded valve position with the required position.
- c. Observe initial placement of the valve in the position the valve is to be throttled to.
- d. Verify the tamper seal is properly installed and has not been broken.

ANSWER: 079 (1.00)

(d) or (c) *me 12/7/90*

REFERENCE:

VCS, SAP 153, p.9  
KA:194001K101 (3.6/3.7)  
194001K101 ..(KA's)

QUESTION: 080 (1.00)

In which one of the following areas must maintenance personnel be qualified, in order to perform independent verification regarding installation or removal of danger tags?

- a. Electrical components only
- b. All electrical and mechanical components
- c. All safety related equipment and components
- d. All electrical and mechanical components important to the safe shutdown of the plant

ANSWER: 080 (1.00)

(a)

REFERENCE:

VCS, SAP-201, p.3

KA:194001K102 (3.7/4.1)

194001K102 ..(KA's)

QUESTION: 081 (1.00)

Which one of the following is NOT a correct action performed by an operator qualified as "Danger Tagger" when clearing a tagout?

- a. Forward white copies of the tagout paper work to the Associate Manager, Operations.
- b. Initial tag removal on the white copy of the component log.
- c. Realign "non-tagged" components after removal of danger tag.
- d. Verify component restored to required operable position.

ANSWER: 081 (1.00)

(c)

REFERENCE:

VCS: SAP-201 "Danger Tagging," p. 11.

KA:194001K102 (3.7).

194001K102 ..(KA's)

QUESTION: 082 (1.00)

Which one of the following planned exposure limits is correct for company employees in an emergency situation?

- a. 3 REM, if there is an adequate number of personnel so that rotation MAY BE accomplished.
- b. 5 REM, if the number of personnel is limited such that rotation CANNOT be accomplished.
- c. 5(N-10) REM to save a life.
- d. 25 REM to save or mitigate significant damage to vital equipment.

ANSWER: 082 (1.00)

(d)

REFERENCE:

VCS, EPP-020, p.3.

KA:194001K103 (2.8/3.4)

194001K103 ..(KA's)

QUESTION: 083 (1.00)

Which one of the following is the administrative exposure limit for accumulated exposure to the skin of the whole body at the V.C. Summer Plant?

- a. 500 mRem per quarter
- b. 6000 mRem per quarter
- c. 7500 mRem per quarter
- d. 12,000 mRem per quarter

ANSWER: 083 (1.00)

(b)

## REFERENCE:

VCS, HPP-153, p.3  
KA: 194001K104 (3.3/3.5)  
194001K104 ..(KA's)

QUESTION: 084 (1.00)

In accordance with EPP-012, Onsite Personnel Accountability and Evacuation, which one of the following correctly lists the reasons that personnel should be evacuated to an offsite holding area?

- a. Potential personnel and/or vehicle contamination, radiation exposure considerations ONLY.
- b. Need for additional personnel on short notice, radiation exposure considerations ONLY.
- c. Potential personnel and/or vehicle contamination, need for additional personnel on short notice, radiation exposure considerations ONLY.
- d. Potential personnel and/or vehicle contamination, need for additional personnel on short notice, radiation exposure considerations, a bomb threat in an unidentified area inside the protected area.

ANSWER: 084 (1.00)

(c)

## REFERENCE:

VCS, EPP-012, p.6  
KA: 194001K104 (3.3/3.5)  
194001K104 ..(KA's)

QUESTION: 085 (1.00)

Which one of the following statements regarding equipment key logs is NOT correct?

- a. Equipment key logs will be ledger type books which can readily indicate tampering or page removal.
- b. Log books which are filled may be destroyed once all keys logged therein have been returned or accounted for in a new log book.
- c. Equipment key logs will be utilized to issue all security keys.
- d. It is permissible to use any key log format which ensures accountability.

ANSWER: 085 (1.00)

(c)

REFERENCE:

VCS, SAP-140, p.5  
KA:194001K105 (3.1/3.4)  
194001K105 ..(KA's)

QUESTION: 086 (1.00)

Which one of the following is NOT true regarding Fire Emergency Procedures (FEPs)?

- a. Direct the plant personnel how to shutdown the plant from inside the Control Room.
- b. Should only be implemented when the fire is of such a nature that the ability to maintain the safe control of the plant is affected.
- c. Require implementation of EPP-001 and declaration of an Alert when entered.
- d. Direct Fire Brigade members' activities in restoring fire fighting equipment.

ANSWER: 086 (1.00)

(d)

REFERENCE:

VCS: GS-11, Fire Protection System, p.29 Enabling Objective #6  
EPP-013, p.4

KA:194001K116 (3.5/4.2)  
194001K116 ..(KA's)

QUESTION: 087 (1.00)

In accordance with SAP 200, "Conduct of Operations", which one of the following statements is correct regarding the Operator At The Controls (DATC)?

- a. Only licensed operators are permitted to manipulate the controls that directly affect reactivity and power level of the reactor.
- b. Operation of mechanisms and apparatus other than controls, which may indirectly affect the power level or reactivity of the reactor, shall only be accomplished with the knowledge and consent of the shift supervisor.
- c. During plant operations in Mode 5 or 6, the DATC may momentarily enter the area of Secondary Attention in order to verify receipt of an annunciator alarm or initiate corrective actions.
- d. During plant operations in Mode 1 or 2 only, the DATC should not, under any circumstances, leave the surveillance area defined as Area of Continuous Attention for any non-emergency reason.

ANSWER: 087 (1.00)

(c)

REFERENCE:

VCS, SAP-200, p.13,14.

KA:194001A103 (2.5/ 3.4)  
194001A103 ..(KA's)



QUESTION: 088 (1.00)

Which one of the following statements is correct regarding the Station Orders? The Station Orders:

- a. Provide a means to assist the Shift Supervisor and management in disseminating information to future shifts.
- b. Provide a means of disseminating short duration information and instructions of a general nature to shift personnel.
- c. Are primarily used to established Operations Department standard operating policy.
- d. Provide directions from operations management on critical path items to be performed.

ANSWER: 088 (1.00)

(b)

REFERENCE:

VCS, SAP-204, p.7  
KA:194001A103 (2.5/3.4)  
194001A103 ..(KA's)

QUESTION: 089 (1.00)

The oncoming shift supervisor, based on his judgement of projected plant evolutions, may request selected outgoing personnel to remain on watch for up to an additional \_\_\_\_ hour(s) provided the guidelines of SAP-152 are not exceeded.

- a. 1
- b. 2
- c. 4
- d. 6



QUESTION: 091 (1.00)

Which one of the following is NOT required to be reviewed by the oncoming operator at the controls (OATC) upon shift relief?

- a. Tag Out Log
- b. Station Log
- c. Special Instruction Log
- d. Surveillance Requirements

ANSWER: 091 (1.00)

(c)

REFERENCE:

VCS:SAP-200, "Conduct of Operations", p.5 and attachments II and III.  
KA:194001A106 (3.4).  
194001A106 ..(KA's)

QUESTION: 092 (1.00)

Which one of the following is added to the steam generator bulk water to limit corrosion due to hideout?

- a. hydrazine
- b. ammonia
- c. boron
- d. silicon

ANSWER: 092 (1.00)

(c)

## REFERENCE:

VCS: 1B-4 Secondary Chemistry and Chemistry Control, p. 16.  
Enabling Objective #3.  
KA:194001A114 (2.5/2.9).  
194001A114 ..(KA's)

## QUESTION: 093 (1.00)

Which one of the following is covered by V. C. Summer Techni Specifications when in Mode 1?

- a. Dissolved Oxygen in RCS
- b. Flouride in RCS
- c. Dissolved Oxygen in steam generators
- d. Hydrazine in steam generators

## ANSWER: 093 (1.00)

(b) or (a) me 11/29/90

## REFERENCE:

VCS: Tech. Specs. 3.4.7  
KA:194001A114 (2.5/2.9)  
194001A114 ..(KA's)

## QUESTION: 094 (1.00)

According to EPP-001, which one of the following is the lowest Emergency Action Level which requires sounding of the Radiation Emergency Alarm?

- a. Notification of Unusual Event
- b. Alert
- c. Site Area Emergency
- d. General Emergency

ANSWER: 094 (1.00)

(d)

REFERENCE:

VCS, EPP-001, Attachment II, p.18

KA:194001A116 (3.1/4.4)

194001A116 ..(KA's)

(\*\*\*\*\* END OF EXAMINATION \*\*\*\*\*)