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

Applicant Information

Name:	Region: II
Date: December 6, 2000	Facility/Unit: Turkey Point/3&4
License Level: RO	Reactor Type: W
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

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

_____
Applicant's Signature

Results

Examination Value	100	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

WRITTEN EXAMINATION GUIDELINES

1. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

2. To pass the examination, you must achieve a grade of 80.00 percent or greater; grades will not be rounded up to achieve a passing score. Every question is worth one point.

3. For an initial examination, the nominal time limit for completing the examination is five hours; extensions will be granted if anyone needs more time to complete the exam.

4. You may bring pens, pencils, and calculators into the examination room. Use black ink to ensure legible copies; dark pencil should be used only if necessary to facilitate machine grading.

5. Print your name in the blank provided on the examination cover sheet and the answer sheet. You may be asked to provide the examiner with some form of positive identification.

6. Mark your answers on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you are using ink and decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

7. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate asking them before answering the question. Ask questions of the NRC examiner or the designated facility instructor *only*. When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or references, you should answer the question based on the actual plant.

8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

9. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.

10. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.

11. Do you have any questions?

Name: _____

1.

Unit 3 was operating at 100% when a single control rod in control bank D drops into the core. The SRO directs that the dropped rod be recovered.

Which one of the following prevents the remaining rods in the control rod bank from being withdrawn while the dropped rod is being recovered?

A. The rod stop bypass is used to block control rod bank D outward movement.

B. The "lift coil disconnect" disconnect switches are opened on control bank D rods that did not drop.

C. The rod drop bistable actuated when the rod dropped and will prevent outward rod motion by control bank D.

D. The "lift coil disconnect" disconnect switch is opened on the dropped rod to electrically isolate it from control bank D.

2.
Which one of the following reactivity values is correct if Keff is equal to 0.95?

A. +2.053

B. -2.053

C. +0.053

D. -0.053

3.

Following an alarm on R-3-19, S/G blowdown liquid activity with the reactor at normal operating temperatures and pressures at power, which one of the following should an operator expect?

A. DAM-1 S/G steamline monitor to decrease over time.

B. DAM-1 S/G steamline monitor to increase over time.

C. R-3-15, Air ejector radiation monitor to decrease over time.

D. R-3-15, Air ejector and DAM-1 S/G steam line radiation monitor indications remain constant over time.

4.

Unit 3 experienced a station blackout and operators have implemented 3-EOP-ECA-0.0, Loss of All AC Power. The 3A1 and 3A2 Battery chargers are inoperable.

Step 1 of Attachment 3, 125V DC Bus Shedding, must be performed within _____

to ensure the 3A vital battery will supply vital loads for a minimum of _____ .

Which one of the following combinations accurately completes the above statement?

A. 30 minutes, 2 hours

B. 30 minutes, 4 hours

C. 60 minutes, 2 hours

D. 60 minutes, 4 hours

5.

Unit 3 has just been tripped from 100% power due to a stuck open pressurizer safety valve. The crew has just tripped the reactor coolant pumps due to loss of subcooling. Pressurizer level is 70%. How would RVLMS respond when saturation conditions are reached in the RCS?

A. Decrease, then increase.

B. Decrease rapidly.

C. Increase, then decrease.

D. Increase rapidly.

6.
Unit 3 is operating at 100% power when the controlling S/G pressure transmitter fails low on the 3A S/G.

Which one of the following describes the effect this will have on the indicated steam flow of the controlling channel and the initial 3A FW Control Valve, FCV-478, response?

A. Indicated steam flow will decrease. The FCV will open.

B. Indicated steam flow will decrease. The FCV will close.

C. Indicated steam flow will increase. The FCV will open.

D. Indicated steam flow will increase. The FCV will close.

7.

Per 3-ONOP-041.1, "Reactor Coolant Pump Off-Normal," which one of the following requires stopping an RCP ?

A. RCP horizontal motor vibrations equal 10 MILS

B. RCP vertical shaft vibrations equal 10 MILS

C. RCP stator winding temperature equals 225 degrees

D. RCP pump bearing temperature equals 200 degrees

8.

Following an uncontrolled increase in the source range count rate while subcritical. Operators enter 3-ONOP-046.1, "Emergency Boration" and establish the following conditions:

- FI-3-110, Emergency Borate Flow, indicates 64 GPM.
- FI-3-122, Charging Line Flow, indicates 40 GPM.

Which one of the following describes the appropriate procedural actions to be taken per 3-ONOP-046.1?

A. Start an additional Boric Acid Pump and align valves as necessary to establish emergency boration flow.

B. Open CV-3-310B, Loop C Charging Isolation Valve, to increase emergency boration flow.

C. Start an additional Charging Pump and align valves as necessary to establish emergency boration flow.

D. Align Charging Pump Suction to the RWST.

9.

While in EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation" operators have successfully restored recirculation capability. What is the proper action at this point?

A. Continue with this procedure until the procedure transitions out to another procedure.

B. Suspend performance of EOP-ECA-1.1 and return to the procedure and step in effect.

C. Go to EOP-E-1, "Loss of Reactor or Secondary Coolant," Step 1.

D. Go to EOP-ES-1.3, "Transfer to Cold Leg Recirculation."

10.

Which one of the following statements describes the application of NOTES and/or CAUTIONS found within the body of an ONOP (for example, prior to step 4 of a 20 step ONOP)?

A. CAUTIONS apply to the step which they precede and for the remainder of the procedure, unless otherwise stated.

B. CAUTIONS only apply to the step which they precede, unless otherwise stated.

C. NOTES apply to the step which they precede and for the remainder of the procedure, unless otherwise stated.

D. NOTES continue to apply after transitioning to another procedure, unless otherwise stated.

11.

Unit 3 has experienced a simultaneous LOOP/LOCA.

Which one of the following describes the response of the Emergency Containment Cooler (ECC) Fan motors?

A. Two ECCs start immediately upon receipt of the SI signal.

B. Two ECCs start when sequenced on by the sequencers.

C. If the 3B EDG fails to start, ECCs 3A and 3B will be powered from the 3A EDG.

D. If the 3A EDG fails to start, ECCs 3B and 3C will be powered from the 3B EDG.

12.

"A" AFW pump is out of service. Operators have realigned the "C" AFW pump to train 1. Following a reactor trip and initiation of safety injection due to an unisolable fault on S/G B, conditions associated with AFW are:

- AFW pump C steam supply MOV failed to open
- AFW pump B discharge pressure = 10 psig
- AFW pump B RPM = 5900 RPM
- AFW flow to S/G A, B, & C = 0 gpm

Which one of the following is indicated?

A. Steam binding of B AFW pump due to backleakage of steam through the discharge check valves.

B. Air binding of B AFW pump due to inleakage of air through the mechanical seals.

C. Inadequate NPSH for B AFW pump due to the suction valve failing shut on loss of air.

D. Runout conditions on B AFW pump due to low pressure in B S/G.

13.

When transferring water from the SFP to the RWST, what is the flow limitation and what is the basis for this flow limitation?

A. Flow is limited to 100 GPM because of the slow response of the RWST overflow instrumentation.

B. Flow is limited to 100 GPM because it must pass through the demineralizer in the SFP purification loop.

C. Flow must be greater than 200 GPM because of the Minimum Developed Head.

D. Flow must be greater than 200 GPM because it must pass through the demineralizer in the SFP purification loop.

14.
Which one of the following describes why the discharge of the HHSI pumps is realigned 12 hours after a large break LOCA?

A. This is done to prevent the possibility of boron precipitation due to the concentrating effects experienced during a cold leg break. The HHSI pumps are then run for hot leg recirculation.

B. This is done to prevent the possibility of boron precipitation due to the concentrating effects experienced during a hot leg break. The HHSI pumps are then run for cold leg recirculation.

C. This is done to prevent the loss of HHSI pump NPSH. The HHSI pumps then take suction from the containment sump and are run for hot leg recirculation.

D. This is done to prevent the loss of HHSI pump NPSH. The HHSI pumps then take suction from the containment sump and are run for cold leg recirculation.

15.

Which one of the following defines the personnel who, under 0-ADM-200, "Conduct of Operations," have the authority to remove personnel from the control room?

Only the NPS and:

A. ANPS

B. ANPS, RCO

C. ANPS, RCO, NWE

D. ANPS, RCO, NWE, Shift Technical Advisor

16.
In accordance with 3-ONOP-030, "Component Cooling Water Malfunction," which one of the following IMMEDIATE ACTIONS must be performed if CCW surge tank level is decreasing and the CCW Surge Tank Makeup Valve, MOV-3-832, is fully open?

A. Trip Reactor and stop all RCPs.

B. Dispatch an operator to tie together the CCW headers.

C. Operate the running charging pump at minimum speed.

D. Dispatch an operator to split the CCW header.

17.

With reactor power at 50% and the pressurizer level control transfer switch in Position III (LT 461/460), a failure causes the following plant events to occur in the given sequence (assume no operator actions are taken):

1. Charging flow reduced to minimum.
2. Pressurizer level decreases.
3. Letdown secured and Pressurizer heaters off.
4. Pressurizer level increases until high level trip.

Which one of the following failures occurred?

A. Level transmitter 460 failed low.

B. Level transmitter 460 failed high.

C. Level transmitter 461 failed low.

D. Level transmitter 461 failed high.

18.
Which one of the following is indicative of an impending loss of natural circulation flow?

A. RCS delta T at 57 degrees F and increasing

B. RCS subcooling at 42 degrees F and increasing

C. Source range detector counts decreasing

D. RCS cold leg temperature slowly decreasing

19.

A reactor startup is in progress with Source Range counts indicating 3.7 E+4 cps on N-31 and N-32. Intermediate Range Instrument N-35 indicates 3 E-11 and N-36 indicates 1 E-11. What actions should be performed and why?

A. Enter the ONOP for Intermediate Range Instrument malfunction, maintain power < P-6, N-35 is undercompensated.

B. Enter the ONOP for Intermediate Range Instrument malfunction, maintain power < P-6, N-36 is failed low.

C. Continue the startup, power is too low to determine if any Intermediate Range detector has failed.

D. Enter the ONOP for Intermediate Range Instrument malfunction, continue the startup, adequate protection and monitoring is available with one Intermediate Range detector.

20.

The following conditions exist on Unit 3:

- Reactor trip and SI have automatically actuated.
- Operators are preparing to transition from EOP-E-1 "Loss of Reactor or Secondary Coolant."
- RCS pressure is stable at 700 psig.
- All S/G pressures are stable at 900 psig.
- RWST level is 310,000 gallons and decreasing slowly.
- Containment pressure peaked at 10 psig and is decreasing.

Which one of the following identifies the correct procedure to which operators will transition to?

A. ES-1.1 "SI Termination"

B. ES-1.2 "Post LOCA Cooldown and Depressurization"

C. ES-1.3 "Cold Leg Recirculation"

D. ES-1.4 "Hot Leg Recirculation"

21.

Given the following plant conditions:

- The reactor tripped 45 seconds ago.
- Turbine stop valves are closed.
- Megawatt meter at zero output.
- Mid and East GCBs are closed.

Which one of the following states the condition of the generator and the correct operator response?

A. Generator is acting as a load on the grid, depressurize steam lines and MSRs.

B. Generator is motoring, depressurize steam lines and MSRs.

C. Generator is motoring, actuate the Emergency Gen Bkr Trip Switch.

D. Generator exciter has failed, locally open 3A & 3B MG set supply breakers.

22.

Which ONE of the following Hi radiation alarms will initiate a Containment Purge System isolation?

A. ARMS R2 (Containment Area)

B. SPING4 (Special Particulate and Iodine Noble Gas)

C. PRMS R12 (Containment Air Radioactivity)

D. PRMS R14 (Plant Vent Gas)

23.

Which one of the following situations would require prior review by the ALARA review board as detailed in 0-ADM-600, "Health Physics Manual?"

A. 1 person replacing a valve gasket that involves an exposure of 2.5 rem total.

B. 2 persons removing a piping spool that involves an exposure of 4.5 rem total.

C. 3 persons performing a surveillance test on an HVAC filter unit involving an exposure of 2.0 rem for each person.

D. 5 people performing preventive maintenance on a pump which involves an exposure of .75 rem for each person.

24.

Which one of the following is the reason why AFW flow rate is procedurally restricted to less than 100 gpm when recovering a steam generator level if the level has fallen below 8% wide range indication?

A. Ensure SG pressure transient condition does not occur which could result in an uncontrolled release through a safety valve.

B. Ensure pressurizer level transient does not result in pressure transient that would actuate SI.

C. Minimize thermal stress conditions on steam generator components.

D. Minimize RCS cooldown rate which could result in an unacceptable positive reactivity addition.

25.

Given the following:

- Reactor startup in progress with the reactor critical.
- Intermediate Range Channels N35 and N36 power indicate 3E-11 and 5E-11 amps respectively.

Which one of the following describes the actions required if BOTH Source Range (SR) Instruments fail LOW in this situation?

A. Manually insert all control and shutdown rods, then open the reactor trip breakers.

B. Maintain current power level until at least one SR instrument is returned to service.

C. Manually trip the reactor.

D. Enter a 6 hour LCO then continue the startup.

26.

While operating in Mode 1, Annunciator H1/6 ,PRMS CHANNEL FAILURE alarms. On inspection, the fail light is found to be illuminated on PRMS channel 18, Waste Disposal System Liquid Effluent Monitor.

Which one of the following describes the correct operator response?

A. Bypass the channel and direct chemistry to take periodic samples.

B. Direct the SNPO to shut RCV-014 (gaseous release isolation valve).

C. Stop liquid release if in progress.

D. Refer to 0-OP-061.11, WDS Controlled Liquid Release to Circulating Water.

27.

During the performance of 3-EOP-ES-0.2, "Natural Circulation Cooldown," while cooling down the RCS at a rate of 25 degrees F/hour, water inventory in the Condensate Storage Tanks is lost.

Which one of the following describes the appropriate procedural actions?

A. Remain in ES-0.2, "Natural Circulation Cooldown," and maintain the same cooldown rate.

B. Remain in ES-0.2, "Natural Circulation Cooldown," and stop the cooldown.

C. Transition to ES-0.3, "Natural Circulation Cooldown With Steam Void in Vessel (With RVLMS,)" and increase the cooldown rate.

D. Remain in ES-0.2, "Natural Circulation Cooldown," and increase the cooldown rate.

28.

The Instrument Air System controls and indications located at the Alternate Shutdown Panel (ASP) consist of air pressure indication and the _____.

Which one of the components below completes the above statement?

A. Unit 3 & 4 air header cross connect isolation valve control switch.

B. Containment Air Header Isolation Valve Normal/Isolate switch.

C. Diesel air compressor start pushbutton.

D. Electric air compressor start pushbutton.

29.

Operators are responding to a main steam line break inside containment and are attempting to secure the Containment Spray pumps (CSPs).

Which one of the following identifies the EOP-E-1 procedural criteria that must be satisfied to allow stopping the CSPs?

A. Containment pressure <14 psig OR Containment temperature <122°F

B. Containment pressure <14 psig AND Containment temperature <122°F

C. Containment pressure <20 psig OR Containment temperature <180°F

D. Containment pressure <20 psig AND Containment temperature <180°F

30.

Given the following:

- The unit is in Mode 6 with the core loading in progress.
- Power Range channel N42 is out of service for annual maintenance.
- The power supply for Power Range channel N41 power range channel fails.

Which one of the following describes the required action in this situation?

A. No actions are required.

B. Stop all fuel movement.

C. Evacuate containment.

D. Verify refueling cavity level is above 56'10".

31.

Which one of the following valves will remain open following a Phase A containment isolation actuation?

A. MOV-381 RCP seal water return

B. CV-855 Accumulator N2 supply

C. MOV-730 RCP bearing water return

D. CV-519A Primary water to containment isolation

32.

Refueling operations are in progress on Unit 3. An irradiated fuel assembly is in the transfer cart in containment when the following symptoms occur:

- Annunciator I 4/6, CNTMT SUMP HIGH LEVEL in alarm
- Annunciator G 9/5, CNTMT SUMP HIGH LEVEL in alarm
- Annunciator H 1/1, SPENT FUEL PIT LOW LEVEL in alarm
- Containment Radiation Monitor R-3-12 increasing

Which one of the following is a required IMMEDIATE ACTION based on the above symptoms?

A. Direct the refueling operator to close SFP Transfer Tube Gate Valve.

B. Lay irradiated fuel assembly down but do not transfer to the spent fuel pool.

C. Sound the containment Evacuation alarm.

D. Lay irradiated fuel assembly down and transfer to the spent fuel pool.

33.

Which one of the following represents a means of inadvertent criticality prevention, as described in 0-ADM-035, "Limitations and Precautions for Handling Fuel Assemblies?"

A. The minimum boron concentration while fuel is stored in the spent fuel pool is 1925 ppm.

B. Burnup limits are placed on fuel located in Region I of the spent fuel pool.

C. Enrichment limits are placed on the fuel located in Region I of the spent fuel pool.

D. Fuel assembly enrichment shall not exceed 3.5 weight per cent of U-235 in the spent fuel pool storage racks.

34.

Unit 3 was at 100% steady state power when the following events occurred:

- Unit 3 suffered a small break LOCA and tripped from 100% power.
- Offsite power was lost coincident with the reactor trip but has NOT been restored.
- The operators are now at step 3 of 3-EOP-ES-1.2, "Post-LOCA Cooldown and Depressurization."
- Pressurizer level is now 25%.

Which one of the following describes the local actions required to enable the RCO to energize pressurizer backup group heaters?

A. To restore A and B group heaters, reset their respective lockout relays.

B. To restore A and B group heaters, take their respective keylock switches to emergency.

C. To restore the A group heaters take the respective keylock switch to emergency. To restore the B group heaters, reset the lockout relay.

D. To restore the A group heaters, reset the lockout relay. To restore the B group heaters take the respective keylock switch to emergency.

35.

3-EOP-ECA 1.2, "LOCA Outside Containment" step 3, states:

"Check If Break Is Isolated."

What indications do you use to accomplish this and based on these indications, where do you transition?

A. If RCS temperature is increasing then go to 3-EOP-E-1, "Loss of Reactor or Secondary Coolant." If RCS temperature is decreasing then go to 3-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation."

B. If RCS temperature is increasing then go to 3-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation." If RCS temperature is decreasing then go to 3-EOP-E-1, "Loss of Reactor or Secondary Coolant."

C. If RCS pressure is increasing then go to 3-EOP-E-1, "Loss of Reactor or Secondary Coolant." If RCS pressure is decreasing then go to 3-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation."

D. If RCS pressure is increasing then go to 3-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation." If RCS pressure is decreasing then go to 3-EOP-E-1, "Loss of Reactor or Secondary Coolant."

36.

Given the following:

- The Unit is critical.
- Three reactor coolant loops are in operation.

Which one of the following sets of conditions represents a violation of a technical specification safety limit?

A. Power = 50%, Pressure = 1975 psig, Tavg = 605°F

B. Power = 80%, Pressure = 2250 psig, Tavg = 640°F

C. Power = 10%, Pressure = 2400 psig, Tavg = 655°F

D. Power = 90%, Pressure = 2000 psig, Tavg = 595°F

37.

Following a loss of offsite power, Tc is within 35 deg. F of Tsat for S/G pressure. This is a positive indication of which one of the following?

A. single phase flow in the RCS loops

B. two phase flow in the RCS loops

C. safety Injection has occurred

D. safety Injection has not occurred

38.

Which one of the following will result if a Charging Pump is operated at maximum speed without component cooling water?

A. temperature of the coupling oil will exceed limits.

B. temperature of the thrust bearing will exceed limits.

C. charging pump will cavitate within 1 minute.

D. temperature limits are expected to remain within specification limits indefinitely.

39.

The plant is stable at 90 % power. Which one of the following is most likely to cause an entry into EOP-E-0 ?

A. Loss of 3P06.

B. Loss of 3P07.

C. Loss of 3P08.

D. Loss of 3P09.

40.

The operating charging pump fails resulting in a loss of normal charging while operating at 100% power.

Which one of the following is the required action after unsuccessful attempts to start a charging pump?

A. Fully open CV-3-310B, alternate charging valve.

B. Close CV-3-204, letdown isolation valve.

C. Close CV-3-200 A/B/C, letdown orifice isolation valve(s).

D. Fully open HCV-3-121, charging flow to Regenerative heat exchanger.

41.

A fire hydrant on the main fire header is opened, resulting in decreasing fire main pressure.

As pressure continues to drop, which one of the following identifies the correct automatic starting order of fire system pumps?

The first fire pump to autostart would be the:

A. Diesel Fire pump followed by the Electric Fire pump.

B. Diesel Fire pump followed by the Jockey Fire pump.

C. Electric Fire pump followed by the Diesel Fire pump.

D. Electric Fire pump followed by the Jockey Fire pump.

42.

In Step 3 of 3-EOP-E-3, "Steam Generator Tube Rupture," operators are directed to Check ruptured S/G steam dump to atmosphere – CLOSED.

Which one of the following describes how the RCO can verify the Steam Dump to Atmosphere (SDTA) valve is closed?

A. The SDTA controller demand position needle is at 0%.
The ERDADS mimic displays a filled in valve.

B. The SDTA controller demand position needle is at 0%.
The ERDADS mimic displays an unfilled valve.

C. The SDTA controller demand position needle is at 100%.
The ERDADS mimic displays a filled in valve.

D. The SDTA controller demand position needle is at 100%.
The ERDADS mimic displays an unfilled valve.

43.

The following conditions exist:

- A Gas Decay Tank release is in progress.
- PRMS R-15, Condenser Air Ejector monitor, has alarmed.
- PRMS R-14, Plant Vent monitor, has alarmed.

Which one of the following describes a correct operator response?

A. Enter ONOP-041.3, "Excessive RCS Leakage."

B. Enter ONOP-071.1, "Secondary Chemistry Deviation from Limits."

C. Verify automatic isolation of the Gas Decay Tank release has occurred.

D. Verify automatic isolation of steam generator blowdown has occurred.

44.

Which one of the following identifies the AFW steam supply valve(s) that may be deenergized in the event of a loss of vital DC power?

A. MOV-1403, 3A Stm. Supply to Aux. Feedwater Pumps
MOV-1404, 3B Stm. Supply to Aux. Feedwater Pumps

B. MOV-1403, 3A Stm. Supply to Aux. Feedwater Pumps
MOV-1405, 3C Stm. Supply to Aux. Feedwater Pumps

C. MOV-1404, 3B Stm. Supply to Aux. Feedwater Pumps
MOV-1405, 3C Stm. Supply to Aux. Feedwater Pumps

D. MOV-1403, 3A Stm. Supply to Aux. Feedwater Pumps
MOV-1404, 3B Stm. Supply to Aux. Feedwater Pumps
MOV-1405, 3C Stm. Supply to Aux. Feedwater Pumps

45.
The DAM1 steam line radiation monitor has alarmed. Which one of the following describes how DAM1 can be used to determine which S/G is the source of the radiation?

A. Sample line isolation valves must be operated locally.
DAM1 readings can be monitored locally and on ERDADS.

B. Sample line isolation valves must be operated locally.
DAM1 readings can be monitored locally and in the Primary Sample Room.

C. Sample line isolation valves may be operated from the Control Room.
DAM1 readings can be monitored locally and on ERDADS.

D. Sample line isolation valves may be operated from the Control Room.
DAM1 readings can be monitored locally and in the Primary Sample Room.

46.

A control rod has dropped while at 100% power.

Which one of the following describes the control rod's status and the basis for this determination?

The dropped control rod is:

A. inoperable. To limit the effects of rod misalignment on accident analysis.

B. inoperable. To ensure minimum shutdown margin is maintained.

C. operable. Accident analysis is not affected by rod misalignment.

D. operable. Shutdown margin requirements are not affected by rod misalignment.

47.

Unit 4 is in Mode 1 when CV-4-3700, Main Steam Supply valve to SJAE, fails closed.

Which one of the following combinations of megawatt load and condenser vacuum will require the operators to manually trip the reactor and turbine?

A. 300 MWe, 23"Hg

B. 600 MWe, 23"Hg

C. 300 MWe, 25"Hg

D. 600 MWe, 25"Hg

48.

With Pressurizer pressure initially at 2235 psig, a PORV opened and remained open.

Which one of the following identifies the expected PORV tailpipe temperature as seen on TI-3-463 (VPA) when PRT pressure equals 50 psig?

A. 212° F

B. 281° F

C. 298° F

D. 315° F

49.

In the event of a fire, which one of the following completes the below requirement regarding the Fire Brigade Program per 0-ADM-016.2, "Fire Brigade Program" ?

IF a qualified fire brigade operator is available, THEN a Fire Brigade member shall turn over his fire brigade duties to the qualified fire brigade operator prior to:

A. going to the switchyard.

B. going to the Nuclear Admin Building.

C. entering the switchgear room.

D. using a self contained breathing apparatus.

50.

The detector for Component Cooling Water Monitor, channel R-17A has failed high and is now alarming. Which one of the following are the consequences of this failure?

A. RCV-3-609, CCW Head Tank Vent Valve, closes.

B. There is a local alarm only, and there are no automatic actions associated with this channel alarm.

C. The MOV for sample from R-17A in the Primary Sample Room closes, and the MOVs downstream of R-17B must be used to throttle and balance flow to obtain a sample to confirm the detector failure.

D. RCV-3-014 cannot be opened until the alarm has been reset and RCV-3-014 hand loader setting has been decreased to zero.

51.

Which one of the following is correct concerning excore nuclear instrumentation? The excore detectors are encased in:

A. lead which slows down the leaking fast neutrons and brings them into thermal equilibrium with the target boron.

B. polyethylene which slows down the leaking fast neutrons which causes them to have a higher potential energy than the target helium.

C. polyethylene which slows down the leaking fast neutrons and brings them into thermal equilibrium with the target boron.

D. lead which slows down the leaking fast neutrons and brings them into thermal equilibrium with the target helium.

52.

A large break LOCA has occurred on Unit 4.

The containment sump is full.

SI has been reset.

Which one of the following describes the effect on the containment sump pumps and the containment sump pump discharge valves when Phase A containment isolation is reset?

A. The sump pumps will start and the discharge valves will open.

B. The sump pumps will start and the discharge valves will remain closed.

C. The sump pumps will remain off and the discharge valves will open.

D. The sump pumps will remain off and the discharge valves will remain closed.

53.

The design basis of the spent fuel storage racks is to maintain Keff _____ provided the pool is _____

A. Keff < 1.0 , flooded with 1950 PPM borated water.

B. Keff < 1.0 , flooded with unborated water.

C. Keff < 0.95, flooded with 1950 PPM borated water.

D. Keff < 0.95, flooded with unborated water.

54.

Operators are performing 3-EOP-ES-1.1, "SI Termination." The following conditions exist:

- Containment radiation levels are 1.5E3 R/hr.
- Containment temperature is 160°F.
- Pressurizer level is 33%.

Operators are unable to open CV-3-204, Letdown from Regen Heat Exchanger Isolation.

Which one of the following describes the correct operator response?

A. Manually open the bypass around CV-3-204 and use one pressurizer PORV for subsequent RCS depressurization.

B. Manually open the bypass around CV-3-204 and restore normal letdown flow when adverse containment conditions no longer exist.

C. Establish excess letdown and continue attempts to establish normal letdown.

D. Establish excess letdown and use auxiliary spray (CV-3-311) for subsequent RCS depressurization.

55.

Unit 3 is at 90% power with all rods fully withdrawn when the unit RCO receives the following annunciators:

- B 7/1 NIS/RPI ROD DROP/ROD STOP
- B 6/4 POWER RANGE CHANNEL DEVIATION
- B 9/3 SHUTDOWN ROD OFF TOP/DEVIATION
- B 2/2 POWER RANGE UPPER DET/AUTO DEFEAT
- B 2/3 POWER RANGE LOWER DET/AUTO DEFEAT

The RCO observes the RPI indicators and rod bottom lights and determines two rods in the same rod bank group have fully inserted.

Which one of the following describes the appropriate course of action to be taken ?

A. Check QPTR to be less than OR equal to 2%.

B. Trip the Reactor and enter 3-EOP-E-0, "Reactor Trip or Safety Injection."

C. Increase reactor power to maintain Tave within 3 degrees of Tref.

D. Increase turbine load to maintain Tave within 3 degrees of Tref.

56.

Which one of the following describes the effect of decreasing VCT pressure from 30 psig to 10 psig during RCS heatup in Mode 3?

A. Charging Pumps will cavitate.

B. RCP #2 seal flow decreases.

C. Letdown flow increases.

D. High RCP standpipe level alarm actuates.

57.

Which one of the following identifies the minimum number of Circulating Water Pumps that must be in operation to satisfy the interlock that allows a radioactive liquid release?

A. 0

B. 1

C. 2

D. 3

58.

Plant conditions:

- A reactor trip with a loss of all AC power occurred 2 hours ago.
- Core exit thermocouples read approximately 650 degrees F and increasing.
- Steam generator pressure is stable at 815 psig.
- Steam generator steam flow is undetectable.

Which ONE of the following describes plant conditions?

A. Loss of natural circulation flow has occurred.

B. Natural circulation flow is increasing.

C. The reactor core has uncovered and core damage is imminent.

D. Reactor Coolant System subcooling margin is increasing.

59.

Unit 3 operators have entered FR-H.1 "Response to Loss of Secondary Heat Sink".

The following conditions exist:

- No Main Feedwater Pumps are available.
- No Auxiliary Feedwater Pumps are available.
- The RCP's are off.
- Annunciator E-2/6 HI-HI SG LVL TURBINE TRIP/FEEDWATER ISOLATION is in alarm.
- The operators are preparing to re-establish feedwater using the Standby Steam Generator Feedwater Pump.

Which one of the following identifies the minimum signals that must be reset to satisfy the interlocks to re-establish feed flow to the Steam Generators?

A. Reset SI

B. Reset Phase A

C. Reset Feedwater Isolation

D. Reset Feedwater Isolation and SI

60.

Unit 4 experienced a Design Basis LOCA. The 4B sequencer failed to operate.

Which one of the following describes the required operator response to verify Containment Spray operation?

A. Manually start the 4B CSP. Manually open MOV-4-880B.

B. Manually start the 4B CSP. Check MOV-4-880B automatically opened.

C. Check autostart of the 4B CSP. Manually open MOV-4-880B.

D. Check autostart of the 4B CSP. Check MOV-4-880B automatically opened.

61.

Which one of the following rod control interlocks (rod stops) and their coincidences is correct?

	Rod Stops	Coincidence
A.	Power range High Flux OPDT Setpoint matches Actual DT Coincidence	2/4 2/3
B.	Power range High Flux OPDT Setpoint matches Actual DT Coincidence	1/4 2/3
C.	Power range High Flux OPDT Setpoint matches Actual DT Coincidence	2/4 1/2
D.	Power range High Flux OPDT Setpoint matches Actual DT Coincidence	1/4 1/2

62.

Operators are performing a reactor startup on Unit 3. The ECC predicts criticality at D-100.

Which one of the following identifies the rod height closest to the point at which operators will announce entry into Mode 2?

A. C-93

B. C-110

C. D-83

D. D-100

63.

The power supplied to AMSAC from both Vital Buses 3P06 and 3P07 has been lost. What effect will this have on AMSAC and its components?

A. AMSAC will not actuate, and will not be capable of actuation, however, the RPS will perform its safety functions without interference from AMSAC.

B. AMSAC will not actuate initially, however, it will automatically switch to an alternate power supply and will be fully functional.

C. AMSAC will actuate, and the RPS will perform its safety functions without interference from AMSAC.

D. AMSAC will not actuate and will not be capable of actuation, and the loss of the AMSAC will disarm any loss of Channel III and /or IV First Stage Turbine Pressure Signal (after 360 seconds).

64.

While in Mode 4 Unit 3 experienced a LOCA.

- Operators are performing 3-ONOP-041.7, "Shutdown LOCA [Mode 3 (Less than 1000 psig) or Mode 4]."
- One HHSI pump has been started.
- CET temperatures are stable and RCS Hot Leg temperatures are decreasing slightly.
- RVLMS Plenum indication is 0%.

Which one of the following identifies the required operator response and the reason for that response?

A. Immediately start all HHSI pumps to fill the upper head.

B. Immediately start all HHSI pumps to restore core cooling.

C. Start additional HHSI pump(s) one at a time, as necessary to fill the upper head.

D. Start additional HHSI pump(s) one at a time, as necessary to restore core cooling.

65.

Containment Air Particulate Monitor Channel (R-11) is reading erratically. The instrument technicians report that the lead for the power supply has come loose. As he reconnects the lead, the instrument momentarily goes off scale high and upon reconnecting the lead, the instrument returns to its normal value. What are the consequences of the instrument technicians actions?

A. The containment purge supply and exhaust fans trip. The containment purge supply and exhaust isolation valves close. The control room ventilation is in recirculation mode.

B. The containment purge supply and exhaust fans remain running. The containment purge supply and exhaust isolation valves close. The control room ventilation is in recirculation mode.

C. The containment purge supply and exhaust fans trip. The containment purge supply and exhaust isolation valves remain open. The control room ventilation remains in normal alignment.

D. The containment purge supply and exhaust fans remain running. The containment purge supply and exhaust isolation valves close. The control room ventilation remains in normal alignment.

66. Which one of the following identifies when AFW System Tech. Specs. are applicable and when operability is demonstrated?

	Applicability	Demonstrate Operability
A.	Modes 1 & 2	Prior to entering Mode 1
B.	Modes 1 & 2	Prior to entering Mode 2
C.	Modes 1, 2 & 3	Prior to entering Mode 1
D.	Modes 1, 2 & 3	Prior to entering Mode 3

67.

With both units initially at 100% power and normal system alignments, the switchyard deenergizes resulting in a Loss of Offsite Power to both units.

- Both Unit 3 EDGs locked out and cannot be restarted.
- Both Unit 4 EDGs automatically started and reenergized their respective 4kV buses.
- The ANPS directs the BOP to restore power to the 3A 4KV bus first.

Which one of the following identifies the source of power that operators will align to the 3A 4KV bus?

A. 4A EDG via the 3D and 4D 4kV Buses.

B. 4B EDG via the 3D and 4D 4kV Buses.

C. 3C 4kV Bus.

D. Unit 4 Startup Transformer.

68.

Operators are performing 3-OP-041.3, Section 7.2, "Reducing PRT Liquid Temperature." Annunciator A 7/1, PRT HI/LO LEVEL HI PRESS/TEMP, alarms.

The RCO observes the following PRT parameter values:

PRT Temperature: 105° F

PRT Level: 69 %

PRT Pressure: 12 psig

Which ONE of the following identifies correct operator response?

A. Continue with Section 7.2, "Reducing PRT Liquid Temperature."

B. Raise PRT level by performing Section 5.1, "Establishing Normal Conditions."

C. Lower PRT level by performing Section 7.1, "Draining the PRT."

D. Lower PRT pressure by performing Section 7.3, "Purging/Reducing PRT Pressure."

69.

Operators have successfully completed Immediate Actions in response to an uncontrolled rod withdrawal with reactor power initially at 85%.

The following stable conditions now exist:

Reactor Power:	87%
Tavg:	574°F
Tref:	570°F (same as pre-event value)
RCS boron Concentration:	270 ppm (same as pre-event value)

Which one of the following is correct regarding the effect of this event on the Moderator Temperature Coefficient (MTC) and the potential effect on subsequent operations?

A. MTC has become more negative. A subsequent cooldown would add positive reactivity.

B. MTC has become more negative. A subsequent cooldown would add negative reactivity.

C. MTC has become less negative. A subsequent cooldown would add positive reactivity.

D. MTC has become less negative. A subsequent cooldown would add negative reactivity.

70.

Operators have performed 3-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation" and are now responding to high containment pressure using 3-EOP-FRZ.1, "Response to High Containment Pressure." Both procedures have criteria for using containment spray. Which one of the following states which procedure has precedence and its basis?

The operation of the containment spray pumps indicated in procedure....

A. 3-EOP-ECA-1.1 takes precedence over the guidance of 3-EOP-FR-Z.1 because it conserves RWST water, if possible, by stopping containment spray pumps.

B. 3-EOP-ECA-1.1 takes precedence over the guidance of 3-EOP-FR-Z.1 because it ensures the maximum available heat removal system operability in order to reduce containment pressure.

C. 3-EOP-FR-Z.1 takes precedence over the guidance of 3-EOP-ECA-1.1 because it conserves RWST water, if possible, by stopping containment spray pumps.

D. 3-EOP-FR-Z.1 takes precedence over the guidance of 3-EOP-ECA-1.1 because it ensures the maximum available heat removal system operability in order to reduce containment pressure.

71.

Operators have entered 3-EOP-E-0 due to a Steam Line break. Step 13 of 3-EOP-E-0 states:

"Check if Main Steam lines should be isolated."

Which one of the following conditions would require closing the MSIVs in this situation?

A. High steam flow and high Tavg

B. Low steam flow and low Tavg

C. Low Tavg and Hi Hi containment pressure

D. Low Tavg and Low S/G pressure

72.

Operators are responding to a loss of offsite power and are preparing to perform a natural circulation cool down.

The following conditions exist:

- The main steam isolation valves are open.
- Tavg is 540 degrees F.
- Condenser vacuum is 19" Hg.
- The Steam Dump Mode selector switch is in MANUAL.
- The Steam Dump to Condenser control switch was placed in BYPASS when Tavg dropped below 543 degrees F.

The operator places the SDTC Hagan controller in MANUAL and raises controller output to 50%.

Which one of the following identifies howmany SDTC valves will open?

A. 0

B. 1

C. 2

D. 4

73. B wcm 12-06-06

Unit 4 is operating at 100% power with two ICW pumps running. One pump trips and flow through the remaining ICW Pump is 20,500 GPM. An attempt to adequately reduce ICW total flow by throttling the TPCW Hx Outlet ICW isolation valve and the CCW Hx Outlet Spool piece valve was unsuccessful.

Which one of the following describes your required actions?

A. Reduce unit load using 3-GOP-103 to limit heat input into the TPCW system AND throttle ICW flow to the TPCW system heat exchangers using 3-50-401 until TPCW heat exchanger outlet temperature is less than 105 degrees and the total ICW flow is less than 19000 GPM.

B. Reduce unit load using 3-GOP-103 to limit heat input into the TPCW until the TPCW heat exchanger outlet temperature is below 105 degrees. DO NOT throttle ICW flow to the TPCW system heat exchangers using 3-50-401 until the total ICW flow is less than 19000 GPM.

C. Reduce unit load using 3-GOP-103 to limit heat input into the TPCW system AND adjust ICW flow to the TPCW system heat exchangers using 3-50-401 until the TPCW heat exchanger outlet temperature is below 120 degrees.

D. Adjust ICW flow to the TPCW system heat exchangers using 3-50-401 until the TPCW heat exchanger outlet temperature is below 120 degrees, DO NOT reduce unit load.

74.
The RCO desires to enter a procedure at step 10. Which one of the following conditions would prevent this?

A. The existing plant conditions are different from those required by the procedure to perform the entry step.

B. All steps prior to the entry point are marked "N/A."

C. The NPS or cognizant Department Supervisor has approved and documented the entry point including the reason for the special entry point.

D. The entry point and reason for the entry point is documented in the remarks section of the procedure.

75.
Select the EOP(s) that can be entered directly:

A. E-0 only

B. E-0 and FR-S.1

C. E-0 and ECA-0.0

D. E-0, ECA-0.0 and FR-S.1

76.

Manual calibration of the NIS is being performed in accordance with 3-OSP-059.5, "Power Range Nuclear Instrumentation Shift Checks and Daily Calibration." Feedwater average temperature is incorrectly calculated to a value 30 degrees less than actual. For these conditions which ONE of the following is correct?

Calculated reactor thermal power will be:

A. LOWER than actual power AND a gain adjustment of the NIS channels using the calculated value would be CONSERVATIVE (indicated power closer to the setpoints).

B. LOWER than actual power AND a gain adjustment of the NIS channels using the calculated value would be NON CONSERVATIVE (indicated power farther from the setpoints).

C. HIGHER than actual power AND a gain adjustment of the NIS channels using the calculated value would be CONSERVATIVE (indicated power closer to the setpoints).

D. HIGHER than actual power AND a gain adjustment of the NIS channels using the calculated value would be NON CONSERVATIVE (indicated power farther from the setpoints).

77.

During refueling, the Unit 3 instrument air system is being supplied by an electric driven air compressor. Which one of the following conditions will cause the compressor to shut down and be locked out from restarting?

A. High LP (first stage) air outlet temperature

B. low HP (second stage) air inlet temperature

C. High oil pressure

D. high air outlet flow

78.
According to 0-ADM-600, "Health Physics Manual," which one of the following radiation exposures is an NRC exposure limit?

A. 2.5 rem/yr TEDE to the whole body.

B. 7.5 rem/yr to the lens of the eye.

C. 18.75 rem/yr shallow dose equivalent to the hands and forearms.

D. 50 rem/yr shallow dose equivalent to the skin of the whole body.

79.

Removal of iodine from containment due to a large break LOCA is essentially complete two hours after actuation of the emergency containment filtering system (ECF).

Which one of the following describes why filter fan operation is necessary for up to 72 hours?

A. Remove heat from containment.

B. Remove radioactive particulate from containment.

C. Remove iodine decay heat from ECF charcoal beds.

D. Remove iodine decay products from containment atmosphere.

80.

Operators have completed EOP-ES-1.3, "Transfer to Cold Leg Recirculation."

CET temperatures are stable.

The following events occur:

- The switchyard deenergizes resulting in a LOOP.
- All plant systems respond as designed.

Assuming no operator action, which one of the following describes the effect on CET temperatures and the reason for that effect?

CET temperatures will:

A. decrease. Additional SI flow to the RCS will be established.

B. remain the same. SI flow to the RCS will remain unchanged.

C. increase. SI flow to the RCS has been terminated.

D. increase and then stabilize. SI flow to the RCS was momentarily interrupted.

81.

Unit 3 has had an inadvertent Phase A Containment Isolation Actuation. Which one of the flow paths describes the effect on RCP seal leakoff flow? Assume no operator actions. Leakoff flow is:

A. diverted to the suction of the charging pumps.

B. isolated.

C. diverted to the PRT.

D. diverted to the VCT.

82.

Gas Decay Tank "A" is in service when the relief valve on that tank lifts and fails to reseat.

Which one of the following is correct?

A. The release will be automatically isolated by RCV-014 when R-14, Plant Vent Monitor, alarms.

B. R-14, Plant Vent Monitor, will alarm and trip both Auxiliary Building exhaust fans, terminating the release.

C. The release will not be automatically isolated, but monitored by R-14, Plant Vent Monitor.

D. The release will be automatically isolated by the Unit 3 SFP Vent SPING4 Monitor.

83.

Unit 3 has experienced a steam generator tube rupture. Operators have entered 3-EOP-E-3, Steam Generator Tube Rupture. Which one of the following is the correct order to perform the recovery actions?

A. Isolate the ruptured steam generator, reduce primary system temperature, then reduce primary system pressure.

B. Isolate the ruptured steam generator, reduce primary system pressure, then reduce primary system temperature.

C. Reduce primary system temperature, reduce primary system pressure, then isolate the ruptured steam generator.

D. Reduce primary system pressure, reduce primary system temperature, then isolate the ruptured steam generator.

84.

Following a mechanical overspeed trip of an AFW pump, which one of the following describes the effect on the pump if the governor manual speed control knob is not rotated to the minimum position?

If the governor manual speed control knob is not adjusted, the AFW pump:

A. mechanical overspeed trip mechanism will not reset.

B. may overspeed and trip again on subsequent restart.

C. may overspeed and not trip on subsequent restart.

D. will not attain rated speed on subsequent restart.

85.

You are at the Alternate Shutdown Isolation Switch (XS-3DG) mounted on the side of Panel 3C12B1 located on the south wall of the 3B EDG room. You find the switch is in the NORMAL position. In this position the Alternate Shutdown Isolation Switch:

A. will align EDG 3B indications on the Alternate Shutdown Panel.

B. will not remove Control Room EDG Lockout reset pushbutton from circuit.

C. will remove normal lockout circuit fuses and insert backup lockout circuit fuses.

D. will alarm annunciator window F 2/3 REMOTE-LOCAL CONTROL IN LOCAL in the control room.

86.

Which one of the following includes acceptance criteria for the ECCS following a postulated Loss-of-Coolant Accident, as required by 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear reactors?"

The calculated maximum fuel element cladding temperature shall not exceed:

A. 2200°F and calculated total cladding oxidation at any point shall not exceed 17%.

B. 2200°F and calculated total cladding oxidation at any point shall not exceed 1% of the maximum possible.

C. 2500°F and calculated total cladding oxidation at any point shall not exceed 17%.

D. 2500°F and calculated total cladding oxidation at any point shall not exceed 1% of the maximum possible.

87.

Plant conditions:

- The reactor is critical at 1.0 E-8 amps at the end of core life.
- ONE S/G atmospheric steam dump fails open.

Assume: no operator action
no rod motion
no reactor trip

Which one of the following describes Tave and reactor power five minutes into this transient?

A. Tavg will be greater than initial Tavg, reactor power will be above the point of adding heat.

B. Tavg will be greater than initial Tavg, reactor power will be at the point of adding heat.

C. Tavg will be less than initial Tavg, reactor power will be at the point of adding heat.

D. Tavg will be less than initial Tavg, reactor power will be above the point of adding heat.

88.

While performing 4-EOP-ES-1.3, "Transfer to Cold Leg Recirculation," and after placing the control switches to the CLOSE position for the RHR suction from the RWST valves, MOV-4-862A and MOV-4-862B, the ANPS reads the following CAUTION:

"DO NOT CONTINUE until RHR pump suction is isolated from the RWST"

Which one of the following describes the consequences of continuing in ES-1.3 before the MOV-862 A&B valves are fully closed?

A. If the containment pressure is greater than the RWST pressure, contaminated sump water will flow from the containment to the RWST.

B. If an RHR pump is restarted before the MOV-862 A&B valves are fully closed, the RHR pump will not have adequate NPSH.

C. If high head SI pumps are running, they will short circuit flow back to the RWST, robbing the reactor of cooling flow.

D. The RHR pumps are interlocked with MOV-862 A&B such that the RHR pumps cannot be started until the MOV's are completely closed.

89.

During the recirculation phase of ECCS operation following a Large Break LOCA on Unit 3, adequate RHR flow can not be verified. Which one of the following actions should be taken?

One HHSI pump is used with suction taken from the:

A. suction of the RHR pump. The RHR pump will take suction from the normal loop C hot leg suction.

B. discharge of the RHR pump. The RHR pump will take suction from the normal loop C hot leg suction.

C. suction of the RHR pump. The RHR pump will take its suction from the containment recirculation sumps.

D. discharge of the RHR pump. The RHR pump will take its suction from the containment recirculation sumps.

90.

Operators are monitoring grid instability and are in the process of placing a CVCS mixed bed demineralizer with new resin into service when the RO notes the following primary system parameters:

- Reactor power is 101.2% and increasing.
- Tavg is 577 degrees F and increasing.
- Gross megawatts have increased by 2 MWe without operator action.
- Rod control is in manual.

Which ONE of the following describes the most probable cause of these plant conditions?

A. CV-3-2011, Low Pressure Heater Bypass valve has inadvertently opened.

B. The demineralizer was not sufficiently rinsed in prior to placing it in service.

C. Only Cation resin was placed in the demineralizer.

D. Only Anion resin was placed in the demineralizer.

91.

The West operating buses in the switchyard are connected through the West operating bus tie breaker. A fault occurred on one of the west buses. What will the automatic protection scheme do?

The protection scheme will open and lockout all the breakers connected to:

A. the failed west bus only, but will not open the tie breaker.

B. both west buses, but will not open the tie breaker.

C. the failed west bus only, and open the tie breaker.

D. both west buses, and open the tie breaker.

92.

During start-up of a main feedpump, the main feedpump ...

A. must have its discharge valve throttled to 14 turns open.

B. is allowed two successive starts from rated temperature.

C. should be allowed to coast to rest between starts.

D. should be left running for 1/2 hour after two successive starts prior to a third start.

93.
Which one of the following will directly cause a Containment Ventilation Isolation?

A. Automatic Phase A Containment Isolation Signal

B. Automatic Phase B Containment Isolation Signal

C. Safety Injection Signal

D. Containment High Range Radiation Monitor (CHRRMS) alarm

94.

Which one of the following describes the expected plant response to an overcurrent trip of a running condensate pump at 100% power with the 3C condensate pump out of service?

A. The associated steam generator feed pump will trip and initiate a turbine runback.

B. The standby steam generator feed pump will automatically start upon trip of the running condensate pump.

C. CV-3-2011, LP Heaters Bypass, will automatically open and will maintain adequate suction pressure to run both steam generator feed pumps.

D. Heater drain pump discharge valves will automatically open and will maintain adequate suction pressure to run both steam generator feed pumps.

95.

Following an area radiation monitor alarm in the Unit 3 spent fuel pit, which one of the following is a required IMMEDIATE action per 0-ONOP-066, "High Area Radiation Monitoring System Alarm"?

A. Evaluate process monitors and other ARMs for the affected area.

B. Notify the SNPO to check local indications.

C. Identify alarming ARMS channel(s) by pressing the ACK pushbutton on ARMS control panel R-30.

D. Notify Health Physics to survey the area to determine the source of the radiation.

96.

The following conditions exist:

- Unit 3 is at 100% power.
- 3A EDG surveillance is in progress and 3A EDG is fully loaded.
- The system load dispatcher has notified the site that off-site power is unstable due to severe storms in the area but that the front should move through in 30 minutes.
- Electrical maintenance has requested that Operations start the 3A and stop the 3B condensate pumps to support motor filter change out.

Which one of the following describes a correct operator action in this situation?

A. Authorize swapping condensate pumps to support Electrical maintenance.

B. Defer swapping condensate pumps until 3A EDG surveillance is complete.

C. Stop the EDG surveillance test because the EDG will be overloaded if a SI Signal occurs while it is tied to the bus.

D. Defer swapping condensate pumps until System reports that the severe storms are no longer threatening offsite power.

97.

A logic error has sent a simultaneous zero current order to both stationary and movable gripper coils. If this is not detected and corrective action completed before bridge thyristors cut the current to zero, what will occur?

A. There will be excess ripple in the coil voltage.

B. A dropped rod will occur.

C. The power cabinet will be overloaded.

D. The lift coil will be energized preventing motion.

98.

Following a SGTR, the ANPS transitioned to 3-EOP-ECA-3.3, "SGTR Without Pressurizer Pressure Control." SI was terminated in 3-EOP-FR-P.1, "Response to Imminent Pressurizer Thermal Shock Condition." Step 1 of 3-EOP-ECA-3.3 states:

"Check HighHead SI Pumps Any Running."

You are then directed to bypass the steps that establish Normal and Auxiliary spray. Which one of the following is the purpose for bypassing these steps?

A. Immediate need for RCS pressure control no longer exists.

B. RCS pressure is being controlled by both normal and auxiliary spray that was established in 3-EOP-FR-P.1.

C. RCS pressure is being controlled only by auxiliary spray that was established in 3-EOP-FR-P.1.

D. Only normal spray was established in 3-EOP-FR-P.1.

99.

Operators are performing 3-EOP-FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition." You cannot verify steam supply is aligned to both trains of AFW pumps from the intact S/Gs. Which one of the following describes the procedurally required actions for this condition?

A. Dispatch operator to close AFW pump steam supply MOV breaker on faulted S/G.

B. Dispatch operator to open pump steam supply MOV on faulted S/G.

C. Isolate steam flow to AFW pumps while repositioning AFW steam supply cross-connect valves to provide steam ~~to~~ from intact S/Gs. WCM 12-06-00

D. Maintain steam flow to AFW pumps while repositioning AFW steam supply cross-connect valves to provide steam ~~to~~ from intact S/Gs. WCM 12-06-00

100.

Unit 3 experienced a LOCA resulting in SI actuation. Reactor trip breakers failed to open and all attempts to open the reactor trip breakers have been unsuccessful.

All S/G levels are below the narrow range.

While in FR-S.1, "Response to Nuclear Power Generation/ATWS," operators reset SI.

Which one of the following describes the effect on the feedwater flow control valves when SI is reset and the correct operator response?

The feedwater flow control valves will:

A. reopen. Place the feedwater flow controllers in Manual and close the valves.

B. reopen. Allow the feedwater flow control valves to remain open to restore S/G level.

C. remain closed. Place the feedwater flow controllers in Manual and open the valves to restore S/G level.

D. remain closed. Allow the feedwater flow control valves to remain closed.

RCO XIX
NRC Written Examination

RO & SRO
December 6, 2000

References

I. Technical Specifications Figure 2.1-1, Reactor Core Safety Limit – Three Loops in Operation

II. Plant Curve Book Section 2, Figure 5 (Unit 3 Cycle 18 - 10,000 MWD/MTU)

III. Steam Tables "Properties of Saturated and Superheated Steam"

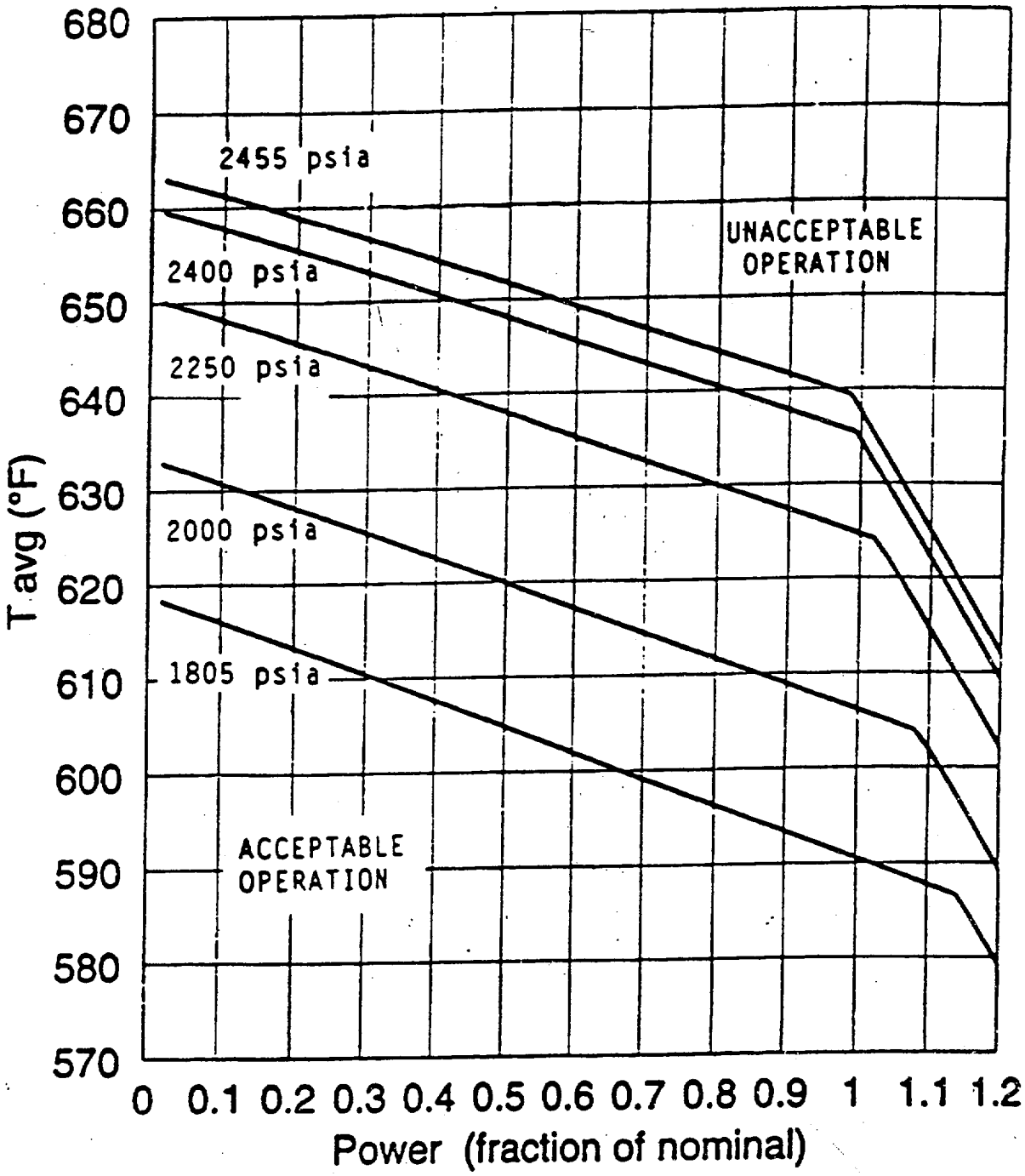

Figure 2.1-1 Reactor Core Safety Limit - Three Loops in Operation

UNIT 3 CYCLE 18 - 10,000 MWD/MTU

INTEGRAL ROD WORTH vs STEPS WITHDRAWN
C and D IN OVERLAP HZP - No Xe HFP - Eq Xe

BANKS		ROD WORTH (pcm)	
D	C	HZP	HFP
0	0	2047	2221
0	2	2047	2220
0	6	2047	2218
0	8	2047	2214
0	10	2046	2209
0	12	2045	2205
0	14	2043	2200
0	16	2043	2194
0	18	2042	2187
0	20	2042	2176
0	22	2042	2164
0	24	2038	2153
0	26	2034	2142
0	28	2033	2125
0	30	2031	2108
0	32	2028	2094
0	34	2025	2080
0	36	2019	2061
0	38	2013	2041
0	40	2006	2025
0	42	1998	2008
0	44	1988	1990
0	46	1978	1972
0	48	1964	1953
0	50	1950	1933
0	52	1936	1920
0	54	1921	1907
0	56	1899	1886
0	58	1876	1864
0	60	1857	1848
0	62	1838	1831
0	64	1816	1814
0	66	1793	1796
0	68	1775	1780
0	70	1756	1764
0	72	1737	1749
0	74	1717	1734
0	76	1699	1715
0	78	1680	1695
0	80	1663	1682
0	82	1645	1668
0	84	1627	1651
0	86	1608	1634
0	88	1593	1620
0	90	1578	1605
0	92	1563	1590
0	94	1548	1575
0	96	1534	1561
0	98	1520	1547
0	100	1507	1534
0	102	1494	1521
0	104	1480	1505
0	106	1466	1488
0	108	1455	1475
0	110	1443	1462
0	112	1431	1447
0	114	1418	1432
0	116	1407	1419
0	118	1395	1405
0	120	1384	1393

BANKS		ROD WORTH (pcm)	
D	C	HZP	HFP
0	122	1372	1381
0	124	1361	1367
0	126	1349	1352
0	128	1339	1340
2	130	1328	1328
4	132	1316	1312
6	134	1304	1295
8	136	1291	1280
10	138	1277	1265
12	140	1264	1248
14	142	1250	1231
16	144	1234	1212
18	146	1218	1193
20	148	1203	1174
22	150	1188	1155
24	152	1170	1134
26	154	1152	1112
28	156	1133	1089
30	158	1114	1066
32	160	1097	1047
34	162	1080	1027
36	164	1059	1005
38	166	1038	982
40	168	1021	961
42	170	1004	940
44	172	985	919
46	174	965	897
48	176	947	876
50	178	929	855
52	180	910	836
54	182	890	816
56	184	872	794
58	186	853	771
60	188	835	753
62	190	817	735
64	192	797	715
66	194	777	694
68	196	759	676
70	198	741	657
72	200	721	639
74	202	701	620
76	204	684	603
78	206	667	585
80	208	651	570
82	210	635	555
84	212	621	541
86	214	607	526
88	216	596	513
90	218	585	500
92	220	577	493
94	222	568	485
96	224	562	475
98	226	555	464
100	228	551	460
102	230	546	455
104	230	539	447
106	230	532	438
108	230	527	432
110	230	522	425
112	230	516	418

BANKS		ROD WORTH (pcm)	
D	C	HZP	HFP
114	230	509	411
116	230	504	404
118	230	498	397
120	230	491	390
122	230	484	383
124	230	477	373
126	230	469	363
128	230	463	359
130	230	456	355
132	230	448	347
134	230	439	338
136	230	432	330
138	230	424	322
140	230	416	316
142	230	408	309
144	230	400	301
146	230	391	292
148	230	384	286
150	230	376	279
152	230	366	269
154	230	356	258
156	230	347	252
158	230	338	246
160	230	326	237
162	230	314	228
164	230	304	220
166	230	294	212
168	230	284	204
170	230	273	196
172	230	263	187
174	230	252	177
176	230	240	169
178	230	228	160
180	230	215	151
182	230	201	141
184	230	189	133
186	230	177	124
188	230	165	115
190	230	152	106
192	230	140	98
194	230	128	89
196	230	117	83
198	230	106	76
200	230	92	66
202	230	78	55
204	230	67	48
206	230	55	40
208	230	44	32
210	230	33	24
212	230	26	19
214	230	18	14
216	230	13	10
218	230	7	6
220	230	5	5
222	230	3	3
224	230	2	2
226	230	1	1
228	230	1	1
230	230	0	0

Test Name: TP_RO.TST
Test Date: Friday, December 01, 2000

	Question ID		Type	Pts	Answer(s) 0
1: 51	015K5.14	001	MC-SR	1	C
1: 52	068A3.02	001	MC-SR	1	D
1: 53	033K4.05	001	MC-SR	1	B
1: 54	W/E02EG2.4.12	001	MC-SR	1	C
1: 55	001G2.1.2	001	MC-SR	1	A
1: 56	003A1.10	001	MC-SR	1	B
1: 57	075K1.02	001	MC-SR	1	B
1: 58	017A1.01	001	MC-SR	1	A
1: 59	W/E05EK2.1	001	MC-SR	1	C
1: 60	026A2.03	001	MC-SR	1	B
1: 61	014K4.05	001	MC-SR	1	B
1: 62	G2.1.22	001	MC-SR	1	A
1: 63	012K2.01	001	MC-SR	1	A
1: 64	011EA1.17	001	MC-SR	1	C
1: 65	073A2.02	001	MC-SR	1	A
1: 66	G2.2.23	001	MC-SR	1	C
1: 67	055EA2.01	001	MC-SR	1	B
1: 68	007A2.02	001	MC-SR	1	D
1: 69	001AK1.17	001	MC-SR	1	A
1: 70	069EK3.01	001	MC-SR	1	A
1: 71	040EG2.4.6	001	MC-SR	1	C
1: 72	051AA1.04	001	MC-SR	1	A
1: 73	062AA2.04	001	MC-SR	1	A
1: 74	G2.4.5	001	MC-SR	1	A
1: 75	G2.4.6	001	MC-SR	1	C
1: 76	015K6.02	001	MC-SR	1	C
1: 77	079G2.2.27	001	MC-SR	1	A
1: 78	G2.3.4	001	MC-SR	1	D
1: 79	027K5.01	001	MC-SR	1	C
1: 80	013K3.01	001	MC-SR	1	C
1: 81	003A3.01	001	MC-SR	1	C
1: 82	071K4.05	001	MC-SR	1	C
1: 83	035A4.06	001	MC-SR	1	A
1: 84	061K4.07	001	MC-SR	1	B
1: 85	064G2.1.23	001	MC-SR	1	B
1: 86	G2.1.27	001	MC-SR	1	A
1: 87	041A4.05	001	MC-SR	1	D
1: 88	G2.4.20	001	MC-SR	1	A
1: 89	006K4.14	001	MC-SR	1	D
1: 90	004G2.4.21	001	MC-SR	1	B
1: 91	062K3.01	001	MC-SR	1	C
1: 92	056K1.03	001	MC-SR	1	C
1: 93	029A3.01	001	MC-SR	1	C
1: 94	056A2.04	001	MC-SR	1	A
1: 95	072A4.01	001	MC-SR	1	D
1: 96	G2.1.32	001	MC-SR	1	B
1: 97	001A2.16	001	MC-SR	1	B
1: 98	027AK3.03	001	MC-SR	1	A
1: 99	W/E08EK2.1	001	MC-SR	1	D
1: 100	059A4.11	001	MC-SR	1	A

Test Name: TP_RO.TST
Test Date: Friday, December 01, 2000

		Question ID		Type	Pts	Answer(s) 0
1:	1	005AK3.05	001	MC-SR	1	B
1:	2	029EK1.02	001	MC-SR	1	D
1:	3	037AA2.3	001	MC-SR	1	B
1:	4	055EK3.02	001	MC-SR	1	C
1:	5	074EK1.05	001	MC-SR	1	B
1:	6	059K1.04	001	MC-SR	1	B
1:	7	015/017AK2.10	001	MC-SR	1	A
1:	8	024AK2.03	001	MC-SR	1	C
1:	9	W/E11EA2.2	001	MC-SR	1	B
1:	10	G2.4.8	001	MC-SR	1	A
1:	11	022K2.01	001	MC-SR	1	B
1:	12	061K6.01	001	MC-SR	1	A
1:	13	002A4.06	001	MC-SR	1	B
1:	14	005K5.09	001	MC-SR	1	A
1:	15	G2.1.9	001	MC-SR	1	C
1:	16	008A2.02	001	MC-SR	1	A
1:	17	011A4.01	001	MC-SR	1	D
1:	18	035K3.01	001	MC-SR	1	A
1:	19	033AK3.01	001	MC-SR	1	B
1:	20	W/E03EA2.1	001	MC-SR	1	B
1:	21	007AK2.03	001	MC-SR	1	C
1:	22	W/E13G2.3.9	001	MC-SR	1	C
1:	23	G2.3.2	001	MC-SR	1	C
1:	24	054AK1.02	001	MC-SR	1	C
1:	25	032AG2.2.23	001	MC-SR	1	A
1:	26	068K6.10	001	MC-SR	1	C
1:	27	W/E09EA1.3	001	MC-SR	1	C
1:	28	078K3.01	001	MC-SR	1	B
1:	29	103A1.01	001	MC-SR	1	B
1:	30	034G2.4.48	001	MC-SR	1	B
1:	31	013K2.01	001	MC-SR	1	C
1:	32	036AK2.02	001	MC-SR	1	C
1:	33	G2.2.28	001	MC-SR	1	C
1:	34	009EG2.1.30	001	MC-SR	1	D
1:	35	W/E04EA2.1	001	MC-SR	1	C
1:	36	G2.2.22	001	MC-SR	1	B
1:	37	056AG2.4.21	001	MC-SR	1	A
1:	38	026EA2.04	001	MC-SR	1	D
1:	39	057EK3.01	001	MC-SR	1	D
1:	40	022AA1.01	001	MC-SR	1	C
1:	41	086A3.01	001	MC-SR	1	C
1:	42	038EA1.27	001	MC-SR	1	A
1:	43	071G2.4.46	001	MC-SR	1	C
1:	44	063K3.02	001	MC-SR	1	B
1:	45	039A1.09	001	MC-SR	1	A
1:	46	003AK3.08	001	MC-SR	1	A
1:	47	055K3.01	001	MC-SR	1	A
1:	48	010K5.01	001	MC-SR	1	C
1:	49	067EK1.02	001	MC-SR	1	A
1:	50	072A2.02	001	MC-SR	1	A