PACIFIC GAS AND ELECTRIC COMPANY

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April 19, 1984

Local Union No. 1245
International Brotherhood of
Electrical Workers, AFL-CIO
P. O. Box 4790
Walnut Creek, California 94596

Attention: Mr. Jack McNally, Business Manager

Gentlemen:

Company proposes adoption of the attached three versions of the revised Assistant Control Operator Qualifying Examination at Diablo Canyon Power Plant.

The examinations have been reviewed by Mr. Dave Reese of your staff and his committee consisting of Messrs. Chester Bartlett and Dick Williams, and it is our understanding that they have given their approval to implement the examinations.

These examinations have also been a subject of the ongoing negotiations at Diablo Canyon and we have been assured that the examinations are acceptable as written.

If you are in accord with the foregoing and agree thereto, please so indicate in the space provided below and return one executed copy of this letter to Company.

Yours very truly,

PACIFIC GAS AND ELECTRIC COMPANY

By _____
Manager of Industrial Relations

The Union is in accord with the foregoing and it agrees thereto as of the date hereof.

LOCAL UNION NO. 1245, INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, AFL-CIO

May 17, 1984

By _____
Business Manager

NAME_____

DATE_____

ESSAY -

TRUE-FALSE -

MULT CHOICE -

_____

GRADE

_____
PASS/FAIL

DCPP

ASSISTANT CONTROL OPERATOR

QUALIFYING EXAMINATION

EXAM 1

GRADED BY_____DATE_____

REVIEWED BY_____DATE_____

REVIEWED WITH_____DATE_____

ESSAY QUESTIONS (4 points each)

1. Describe how you can change the following on the diesel generator (assume manual operation and paralleled through the vital bus to the system):

   a. Load (MW)

   b. Reactive power (VARS)

   c. Engine temperature

2. What are your actions if you are inside containment and an evacuation alarm occurs?

3. State the normal, full power, flowpath from Diablo Creek to the Primary Water Storage Tank, (a sketch may be helpful).

4. List the automatic start signals on the motor and turbine driven Aux. Feed Pumps.

5. List all the Lube Oil Pumps taking suction on the main lube oil reservoir include when each is used and the approximate discharge pressure of each.

6. Describe the process for identifying a suspected defective fuel assembly during a refueling outage.

7. Describe the "Hot Startup" mode of operation of the Moisture Separator Reheaters, including when its use is permissible.

8. Describe how pressure in the Liquid Holdup Tanks (LHUT's) is controlled. Include any pressure setpoints and any vacuum and/or over pressure protection afforded.

9. List all the reactor trips associated with the Nuclear Instrumentation, include their setpoints.

10. Basically explain how the Digital Rod Position Indication System (DRPI) monitors actual Rod Position.

TRUE-FALSE Questions (1.5 points each)

1. During the "Fire" Mode of Control Room Ventilation (Mode 2), 100% of the air in the control room is recirculated. _____

2. The Reciprocating Charging Pump starts on a Safety Injection Signal. _____

3. The Condensate Full-Flow Demineralizers are in the condensate flowpath between the Condensate Booster Pumps and the #6 Heater Drain Cooler. _____

4. The volume control tank (VCT) automatic makeup occurs between 14% and 24% level. _____

5. High Turbidity in the Clarifier outlet is probably due to the bed level being too high. _____

6. If the reactor will not manually trip when needed, de-energize load centers 12 I and J. _____

7. Normal charging is to RCS loop 4, while alternate charging is to RCS loop 3. _____

8. Turbine eccentricity of more than 3 mils, during turbine operations, will trip the main turbine. _____

9. The Clean and Dirty L.O. storage tanks room is protected from fire by Cardox Flooding. _____

10. Flow is initiated, in a deluge protected area, by pressurizing the diaphram of the deluge control valve via a thermal link or manual actuation. _____

11. The "Slack Cable" light on the Fuel Handling Manipulator Crane must be energized before the "Gripper" will operate. _____

12. The Fuel Transfer Lifting frame changes speed approx. one foot from the ends of travel in both the down and up directions. _____

13. Condenser hotwell level is maintained low during high power operations and high during low power operations. _____

14. Manual handwheel operation of the generator motor operated disconnects in the closed direction bypasses all interlocks. Therefore, extra care must be used when opening. _____

15. When loading fuel, criticality is predicted by performing an Inverse Count Rate Ratio (ICRR) plot. _____

16. The make-up water demineralizer filters should be backwashed once per week. _____

17. The vital Instrument AC Panels' power supply is a "Make before Break" shift from normal to back-up power. _____

18. The maximum temperature difference between the Pressurizer and the Reactor Coolant system is for minimum subcooling considerations. _____

19. DELTA P across the feedwater control valve is 152 psid, from 20-100% power. _____

20. Upon reaching 15% of full load steam flow, the operating Main Feed pump should be placed in "Auto" control. _____

MULTIPLE CHOICE (1.5 points each)

1. If heat tracing is lost, 12% boric acid will begin to crystalize (precipitate) at approximately _____.

   a. 50°F
   b. 75°F
   c. 110°F
   d. 135°F

2. Steam generator level is programmed _____ for a load of 20-100%.

   a. 20-100%
   b. 33-100%
   c. 33-44%
   d. Constant 44%

3. Of the following, _____ is not an action of the automatic "Phase B" signal.

   a. CCW supply to RCP's close
   b. Main Steam Isolation Valves close
   c. Spray Additive Tank outlet valves open
   d. Instrument Air Isolation

4. Feedpump speed control program utilizes _____ as a reference.

   a. Total steam flow
   b. Average steam flow
   c. First stage pressure
   d. Auctioneered Tavg

5. With the 1-3 diesel running on unit 1 for on M-9A test, an actual safety injection occurred on unit 2. The diesels' response is _____.

   a. The unit 1 feeder would trip and allow transfer to unit 2
   b. The unit 2 feeder would shut, and then trip open the unit 1 feeder
   c. That a transfer to unit 2 would be blocked, because of the unit 1 feeder being shut
   d. The diesel and unit 1 feeder would trip, followed by a diesel restart and closure of unit 2 breaker

6. Administrative control for discharging a Gas Decay Tank, via the ventilation stack, lies with the _____.

   a. SFM and Shift Technical Advisor
   b. SFM and Plant Manager
   c. SFM, Radiological Engineer, and Plant Manager
   d. SFM and Radiological Engineer

7. The backup heaters are turned on with a 5% insurge of the pressurizer level to _____.

   a. Minimize volume loss during a resultant outsurge
   b. Minimize pressure loss during a resultant outsurge
   c. Prevent a hard bubble (non-condensable gasses)
   d. Ensure spray valve actuation

8. A load rejection of 10% in less than 140 seconds is called a _____ signal.

   a. C-7a
   b. C-7b
   c. C-8
   d. C-9

9. The Reactor Coolant Pump oil lift pump must run at pressure for at least _____, prior to starting the Reactor Coolant Pump.

   a. 30 seconds
   b. 1 minute
   c. 2 minutes
   d. 5 minutes

10. The spent fuel tool is designed so that it is impossible to move a fuel assembly any nearer than _____ feet below the normal water level of the spent fuel pool.

    a. 10
    b. 15
    c. 20
    d. 25

11 Letdown from the RCS at pressures less than 400 psig, _____.

a. is via the normal letdown flowpath, but requires PCV-135 to be wide open.
b. is accomplished solely by the excess letdown system.
c. is primarily provided by the RHR System via HCV-133.
d. is not required (minimum letdown pressure is 600 psig).

12. During a plant cooldown, the RHR system is placed in service when Tavg has been reduced to less than _____ and pressure is approximately _____.

a. 350°F, 500 psig
b. 350°F, 400 psig
c. 475°F, 400 psig
d. 475°F, 500 psig

13. Following a spurious turbine trip, selecting the MSR vent header control switch to the "Startup" position _____.

a. Shortens the time required for a turbine restart
b. Lengthens the time required for a turbine restart
c. Has no affect on turbine restart
d. Forces "hot start-up" mode on the MSRs

14. The main turbine turning gear should be left in operation at least _____ following a turbine shutdown.

a. 1 hour
b. 10 hours
c. 24 hours
d. 48 hours

15. While heating up the steam generators, under normal conditions, _____.

a. The main steam isolation valves should be open, and the bypasses shut
b. The main steam isolation and bypass valves should be open
c. The main steam isolation and bypass valves should be closed
d. The main steam isolation valves should be shut, and the bypasses open

16. The containment fan coolers are run in _____ speed during the "Normal Mode" and in _____ speed during the "Accident Mode".

a. Low, low
b. High, high
c. Low, high
d. High, low

17. The protection interlock, _____, causes a turbine and feedpump trip as well as a feedwater isolation at 67% steam generator level.

a. P-11
b. P-12
c. P-13
d. P-14

18. Besides their normal supply containment spray rings may also be supplied by the _____.

a. Charging system
b. Residual heat removal system
c. Auxiliary feedwater system
d. Safety injection system

19. Steam generator programmed level utilizes as a reference level _____

a. PT 505
b. PT 506
c. PT 505 or PT 506 (selectable)
d. PT 505 or PT 506 (auctioneered)

20. A containment ventilation isolation (CVI) occurs on all of the following except _____.

a. Any safety injection
b. Automatic Phase A signal
c. Manual Phase B signal
d. Plant Vent High Radiation

NAME _____

DATE _____

ESSAY -

TRUE-FALSE -

MULT CHOICE -

_____
PASS/FAIL

DCPP

ASSISTANT CONTROL OPERATOR

EXAM 2

GRADED BY _____ DATE _____

REVIEWED BY _____ DATE _____

REVIEWED WITH _____ DATE _____

ESSAY QUESTIONS (4 points each)

1. Describe the operation of the Reactor Coolant Pump Seals, including approx. seal flow rates and flow paths.

2. List what causes an isolation of the feedwater system from the S/G, including setpoints, results, and the reason for having a feedwater isolation.

3. Describe the interlocks associated with the movement of the Manipulator Crane Bridge and Trolley.

4. Explain the main feed pump speed control, including the reason for having speed control.

5. a. Draw a one line diagram of the RCS letdown system, from the RCS to the VCT. Include all major components and remotely operated valves.

   b. List any controlling signals or interlocks associated with all automatic valves.

6. List all Reactor Trips and Safety Injection Signals originating from the secondary plant (steam side), include setpoints.

7. Basically describe the three phases (modes of operation) of the Emergency Core Cooling Systems, following a major loss of Coolant Accident. Include when each is used.

8. Describe the diesel generator "Automatic" and "Manual" modes of operation.

9. Describe the functions of, and when the following turbine supervisory equipment is used.

   a. Casing expansion
   b. Differential expansion
   c. Eccentricity
   d. Vibration
   e. Rotor position

10. Explain how pressurizer level is controlled. Include in your discussion inputs, setpoints, and a discussion on the reason for maintaining pressurizer level as we do.

TRUE-FALSE (1.5 points each)

1. High pH on the clarifier effluent is probably due to insufficient lime injection. _____

2. During accident conditions, the containment fan coolers shift to slow speed. _____

3. The "SAFEGUARDS ONLY" mode of Auxiliary Building Ventilation occurs only on an SI signal. _____

4. The Reactor Cavity Sump is considered part of the "Open Drain System" and is pumped to the Floor Drain Receivers in the Aux. Building. _____

5. The Null Meter on the Manipulator Crane will automatically stop hoist operation when the alarm is sounded. _____

6. The unit cannot be run at full load if the #2 heater drip pump is shutdown. _____

7. All condenser steam dump valves will close, and be blocked closed,when a P-12 signal is received. _____

8. The "RCCA Inspection Stand" is located next to the "Cask Decontamination Area" to allow removal of Tramp Uranium (if necessary). _____

9. Automatic actions that occur from containment Hi-Hi pressure or manual Phase B initiation are NOT the same. _____

10. Following a vital bus transfer to startup power, all previously running CCW pumps will trip off and automatically restart (after a time delay). _____

11. The 4 kv bus is provided with a "Fast Auto Transfer" and a "Slow Auto Transfer" to startup power, contingent upon busses being in synchronism. _____

12. Flow is initiated, in deluge protected areas, by a thermal link bleeding pressure from the deluge control valve diaphragm. _____

13. The Main Turbine turning gear should be in operation at least 24 hours prior to rolling the turbine with steam. _____

14. The first available backup for the Air Side Seal Oil (ASSO) system is the main LO system. _____

15. It is not possible to remove a single MSR from service during power operation, due to the unequal thrust that would occur on the associated L.P. Turbine. _____

16. Make up water passes through the dual media and anthricite filters in series, prior to the make up demineralizers. _____

17. The Fuel Handling Building Ventilation will shift to the Iodine Removal mode on a high radiation signal from the fuel handling building radiation monitors (RM-5 or RM-9). _____

18. During normal power operation, the Bearing oil pump, the Emergency Oil Pump, the H.P. seal oil backup pump and the Bearing Lift pump will all be shutdown. _____

19. The Boron Injection Tank (BIT) supplies the required net positive suction head to the ECCS pumps on a Safety Injection. _____

20. The Waste Concentrates Condensate Tank may provide motive water for spent resin transfer. _____

MULTIPLE CHOICE (1.5 points each)

1. Upon receipt of a containment phase B isolation signal, _____.

   a. The CCW supply and return valves from the RCP's close
   b. Isolation of the primary water lines occurs
   c. Letdown isolation occurs
   d. Isolation of all N_2 lines occurs

2. With the 1-3 diesel running on Unit 1 for a M-9A test, an actual safety injection occurred on Unit 2. The diesels' response is _____.

   a. The Unit 1 feeder would trip and allow transfer to Unit 2
   b. The Unit 2 feeder would shut, and then trip open the Unit 1 feeder
   c. That a transfer to Unit 2 would be blocked, because of the Unit 1 feeder being shut
   d. The diesel and Unit 1 feeder would trip, followed by a diesel restart and closure of Unit 2 breaker

3. The maximum number of starts on a Reactor Coolant Pump within a two hour period is limited to _____.

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

4. Letdown from the RCS at pressures less than 400 psig _____.

   a. is accomplished via the normal letdown flowpath but requires PCV-135 to be wide open.
   b. is accomplished solely by the Excess Letdown System
   c. is not required (minimum letdown pressure 600 psig)
   d. is primarily provided by the RHR system via HCV-133

5. The pressurizer low level alarm activates at _____.

   a. -5% level difference from reference
   b. -15% level difference from reference
   c. 10% level
   d. 5% level

6. In the "Normal" mode of control room ventilation (Mode 1) there is approximately _____.

   a. 80% recirculation and 20% makeup
   b. 20% recirculation and 80% makeup
   c. 100% recirculation
   d. 100% makeup

7. During the Long Term Cooling Phase (Post Accident), the ASW line up consists of _____.

   a. Both ASW trains running independantly
   b. Both ASW trains running crosstied
   c. Both ASW pumps running through only one heat exchanger
   d. Both ASW trains running crosstied with the crosstie to the other unit (FCV 6.01) open

8 The control interlock _____, blocks automatic rod withdrawal below 15% Turbine Power.

   a. C-3
   b. C-4
   c. C-5
   d. C-6

9. On an auto start of a Waste Gas Compressor, the _____.

   a. moisture separator vent valve opens
   b. gas decay tank fill valve opens
   c. recirc valve opens to maintain 1.5 psig suction pressure
   d. suction regulator opens to reduce suction pressure to .5 psig

10. During normal operation, the turbine driven Auxiliary Feedpump steam supply valves positions are _____.

    (FCV-37: isolation from steam lead 1-2,FCV-38 isolation from steam lead 1-3, FCV-95: turbine steam inlet valve)

    a. FCV-37 and 38 closed, FCV-95 open
    b. FCV-37 and 38 open, FCV-95 closed
    c. FCV-37 or 38 open, FCV-95 closed
    d. FCV-37, 38 and 95 closed

11. When operating the Manipulator crane, the Dillon Load Cell should indicate approx. _____ lbs., while supporting the gripper tube, fuel assembly and rod control cluster assembly.

    a. 1000
    b. 1300
    c. 2400
    d. 3200

12. Opening the startup vents on the moisture separator reheater (MSR), via the switch on VB-3, immediately following a reactor trip _____.

    a. Is according to procedure and allows a smoother startup
    b. Is recommended, but not required
    c. Is not advised, but has no adverse consequences on restart
    d. Requires a longer shutdown, by requiring that a "Cold Start" be performed

13. During a plant cooldown, the RHR system is placed in service when Tavg has been reduced to less than _____ and pressure is approximately _____.

    a. 350°F, 500 psig
    b. 350°F, 400 psig
    c. 475°F, 400 psig
    d. 475°F, 500 psig

14. The automatic action designed to protect against a main steam line break upstream of the main steam isolation valves is the _____.

    a. Steam line high Delta P Safety Injection
    b. High steam flow coincident with low-low Tavg or low steam line pressure Safety Injection
    c. Steam generator high level reactor trip
    d. Pressurizer high level reactor trip

15. Of the following pumps, _____ will not auto start on receipt of a safety injection signal.

    a. Centrifugal charging pumps
    b. Reciprocating charging pump
    c. RHR pumps
    d. SI pumps

16. The manipulator crane hoist movement is _____.

    a. at a single preset speed (2 fpm)
    b. at a variable speed (0-20 fpm)
    c. either by variable or by single preset speed
    d. at one of two preset speeds (2 and 10 fpm)

17. The turbine driven aux. feed pump automatically starts on a _____.

    a. 4 kv bus transfer to diesel
    b. undervoltage on both 12 kv busses
    c. trip of both main feed pumps
    d. Safety Injection

18 Of the following, _____ is not a reactor trip.

a. pressurizer low pressure
b. pressurizer high pressure
c. pressurizer low level
d. pressurizer high level

19. Following a reactor trip signal, if the reactor will not trip automatically or manually, de-energize load centers _____ to allow the rods to drop.

a. 13I and J
b. 13D and E
c. 12D and E
d. 12I and J

20. The RHR motor operated supply valves (9003 A or B) to the containment spray header won't open until _____.

a. the RHR pump suction from containment sump valves open
b. the Containment Spray pump discharge motor operated valve (9001 A or B) shut for that header
c. the Containment Spray pump is de-energized for that header
d. the RWST Lo-Lo level alarm occurs

NAME _____

DATE _____

ESSAY -

TRUE-FALSE -

MULT CHOICE -

GRADE _____
PASS/FAIL

DCPP

ASSISTANT CONTROL OPERATOR

QUALIFYING EXAMINATION

EXAM 3

GRADED BY _____ DATE _____

REVIEWED BY _____ DATE _____

REVIEWED WITH _____ DATE _____

ESSAY QUESTIONS (4 points each)

1. List the equipment powered by the 4KV vital busses. Indicate which loads, re-start on a transfer to the diesel with no SI signal present.

2. List the functions of the CCW pump recirc. valves and the CFCU temperature control valves' bypass valves (maxi-flow).

3. Explain how to move a fuel element from a core periphery position to a core center position (assume on RCCA needs to be installed), include how alignment of the equipment is accomplished.

4. List ten automatic functions associated with pressurizer pressure, which occur between 1500 and 2500 psig.

5. Describe the design features that protect the Safety Injection pumps from both high flow and low flow conditions.

6. Describe the operation of the Steam Generator Water Level Control system (SGWLC), including the inputs (a sketch is permissible).

7. List the systems which will inject water into the RCS during a major Loss of Coolant Accident. Include approx. pressures at which injection occurs.

8. Discuss the Load Transient Bypass (LTB) feature at DCPP. Include in your discussion the basis for the LTB, and auto actions that occur.

9. a. What is the function of the feedpump discharge check valve?

   b. Why is there a separate check valve in the feedline to the S/G?

10. Describe the operation of the Reactor Coolant Pump seals, including approx. seal flow rates and flow paths.

TRUE-FALSE (1.5 points each)

1. The normal heating steam supply to the seawater evaporator is auxiliary steam. _____

2. A de-energized circulating water pump would be damaged if backflow were allowed to run the pump in the reverse direction. _____

3. CCW header "C" isolation valve (FCV-355) shuts on a phase A isolation. _____

4. When the turbine driven Aux. Feedwater Pump is manually started, the Steam Generator blowdown isolation valves (O.C.) will close. _____

5. LCV 112A (VCT Divert Valve) normally starts to divert letdown from the VCT to the LHUT at 87% in the VCT. _____

6. Containment Integrity, in respect to the fuel transfer tube, may be established by a water seal one foot above the transfer tube. _____

7. During Accident Conditions, the Containment Fan Coolers shift to fast speed. _____

8. The Reciprocating Charging Pump starts on a Safety Injection Signal. _____

9. The Reactor Cavity Sump is considered part of the "Open Drain System" and is pumped to the Floor Drain Receivers in the Aux. Building. _____

10. The operator is never allowed to move the Fuel Manipulator bridge or Trolley without the Gripper tube fully up. _____

11. During Normal full power operation, FCV-95 (steam supply to the AFW pump) is the only valve preventing AFW flow into the Steam Generators. _____

12. Any turbine trip above 5% power will result in a reactor trip. _____

13. The "New Fuel" elevator has a mechanical interlock to prevent use with a spent fuel element. _____

14. The seawater evaporator has scale cracked by lowering the pH to 5-6. _____

15. The Main Turbine turning gear should be in operation at least 1 hour before turbine startup and at least 24 hours after shutdown. _____

16. The main feed pump recirculation control valve opens on decreased flow to any steam generator. _____

17. The Waste Concentrates Condensate Tank may provide motive water for Spent Resin Transfer. _____

18. As power is increased, the steam supply to the main feed pumps will shift from main steam to hot reheat steam. _____

19. During the "Fire" mode of control Room Ventilation (Mode 2), 100% of the air in the control room is recirculated. _____

20. Low level in the #2 heater drain tank automatically starts the standby condensate/condensate booster pump set. _____

MULTIPLE CHOICE (1.5 points each)

1. A Containment Ventilation Isolation (CVI) occurs on all of the following except _____.

   a. Any Safety Injection
   b. Automatic Phase A signal
   c. Manual Phase B signal
   d. Plant Vent High Radiation

2. Taking the "MSR Vent Header Control Switch" to the "Startup" position immediately following a Reactor Trip, _____.

   a. is according to procedure and allows a smoother startup.
   b. is recommended but not required.
   c. is not advised, but has no adverse consequences on a restart.
   d. reqires a longer shutdown, by requiring that a "Cold Startup" be performed.

3. Upon receipt of a Containment Phase B isolation signal _____.

   a. letdown isolation occurs.
   b. isolation of all N_2 lines occur.
   c. isolation of primary water lines occur
   d. isolation of the CCW to the RCP's occur.

4. The automatic action designed to protect against a Main Steam Line break, upstream of the Main Steam Isolation valves, is the _____.

   a. Steam Generator High level reactor trip.
   b. Steam Line high Delta P Safety Injection.
   c. Containment high pressure Safety Injection.
   d. High Steam flow coincident with low-low TAVG or Low Steam Line pressure Safety Injection.

5. Following a reactor trip signal, if the reactor will not trip automatically or manually, de-energize load centers _____ to allow the rods to drop.

   a. 12 I and J
   b. 12 D and E
   c. 13 I and J
   d. 13 D and E

6. The Reactor Coolant Pump oil lift pump must be run at pressure for at least _____ prior to starting the Reactor Coolant pump.

a. 30 seconds
b 1 minute
c. 2 minutes
d. 5 minutes

7. The "Low Power Permissive" (P-7) interlock unblocks various PZR, RCP and Turbine reactor trips at _____.

a. 10% Reactor Power
b. 10% Turbine Power
c. 10% Reactor Power or 10% Turbine Power
d. 10% Reactor Power and 10% Turbine Power

8. During the Long Term Cooling Phase (Post Accident), the ASW line up consists of _____.

a. both ASW trains running independantly
b. both ASW trains running crosstied
c. both ASW pumps running through only one heat exchanger.
d. both ASW trains running crosstied with the crosstie to the other unit (FCV (FCV 601) open.

9. Under steady state operation, charging flow rate should be _____.

a. equal to letdown flowrate.
b. 12 GPM greater than letdown flowrate.
c. 32 GPM greater than letdown flowrate.
d. 20 GPM greater than letdown flowrate.

10. Excess letdown flowrate is designed to provide _____ at 2235 psig, as indicated by the _____.

a. 32 GPM, flow meter on VB2
b. 20 GPM, flow meter on VB3
c. 20 GPM, pressure and temperature meters on VB2
d. 32 GPM, VCT level meter

11. The pressurizer spray valve bypass line is designed to _____.

a. Keep a uniform pressurizer boron concentration
b. Keep a uniform pressurizer to RCS temperature
c. Cool the spray line
d. Help maintain the pressurizer at the same boron concentration as the RCS

12. When operating the Manipulator crane, the Dillon Load Cell should indicate approx. _____lbs. while supporting the Gripper tube, fuel assembly and Rod Control Cluster Assembly.

a. 1000
b. 1300
c. 2400
d. 3200

13. The fan line up for the "Iodine Removal" mode of fuel Handling Building Ventilation is _____.

a. both supply fans (S-1 and S-2) and one HEPA exhaust fan (E-5 or E-6) running.
b. both supply fans (S-1 and S-2) and both HEPA exhaust fans (E-5 and E-6) running.
c. either supply fan (S-1 or S-2) and either HEPA exhaust fan (E-5 or E-6) running.
d. both supply fans (S-1 and S-2) and all exhaust fans (E-4, E-5 and E-6) running.

14. On an Autostart of a Waste Gas Compressor, the _____.

a. moisture separator vent valve opens
b. Gas Decay Tank fill valve opens
c. Recirc. Valve opens to maintain 1.5 psig suction pressure
d. suction regulator opens to reduce suction pressure to .5 psig.

15. The Main Turbine Zero Speed Indicator can be supplied by _____.

a. The main L.O. pump (attached)
b. The HP seal oil backup pump
c. The bearing lift pump
d. All of the above

16. The feed pump speed control system maintains _____ across the feedwater control valve, from zero to full load.

a. 100-200 psid
b. 50-152 psid
c. 50-200 psid
d. 100-152 psid

17. The pressurizer back-up heaters are turned on with a 5% insurge of the pressurizer level to _____.

a. minimize volume loss during a resultant outsurge.
b. minimize pressure loss during a resultant outsurge.
c. prevent a hard bubble (non-condensable gasses).
d. ensure spray valve actuation.

18. To unblock the 35% and 10% steam dump valve, a C-7B signal is generated by _____.

a. a reactor trip signal
b. a 10% load rejection in 30 seconds
c. a 10% load rejection in 140 seconds
d. a 50% load rejection in 140 seconds

19. Of the following, _____ is NOT a reactor trip signal.

a. Pressurizer low pressure
b. Pressurizer high pressure
c. Pressurizer low level
d. Pressurizer high level

20. While heating up the steam generator, under normal conditions, _____.

a. the main steam isolation valves should be open, and the bypasses shut
b. the main steam isolation and bypass valves should be open
c. the main steam isolation and bypass valves should be closed
d. the main steam isolation valves should be shut, and the bypasses open