# LETTER AGREEMENT
# No. R1-92-136-PGE

Pacific Gas and Electric Company
Industrial Relations Department
201 Mission Street, 1513A
San Francisco, California 94105
[415] 973-3420

International Brotherhood of
Electrical Workers, AFL-CIO
Local Union 1245, IBEW
P.O. Box 4790
Walnut Creek, California 94596
[415] 933-6060

Ronald L. Bailey, Manager or
David J. Bergman, Director and Chief Negotiator

Jack McNally, Business Manager

May 14, 1993

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

Attention: Mr. Jack McNally, Business Manager

Gentlemen:

Letter Agreement R2-92-77 established the classification of Nuclear Operator and eliminated the classifications of Auxiliary Operator and Assistant Control Operator at the Diablo Canyon Power Plant. The agreement required the completion of a sixth watch station, the Control Room Watch Station, before progression to the 54 month step. A Control Room watch station did not exist at the time of the agreement. The first employees to become eligible for progression to the 54 month step will do so on July 13, 1993.

The development of a proposal for the Control Room Watch Station qualification will require an in depth job task analysis which may take up to 6 months to satisfactorily complete. To allow employees the opportunity to begin qualifying on this watch station, the Company proposes an interim Control Room Watch Station qualification and test (copy attached).

If agreed to, an employee who begins the qualification process under the interim program will be allowed to complete the program under those requirements. This agreement will be in effect until such time as the Company completes its proposal to the Union and a new agreement is reached. A proposal should be completed in late 1993.

This has been discussed with the local Business Representative.

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

Very truly yours,

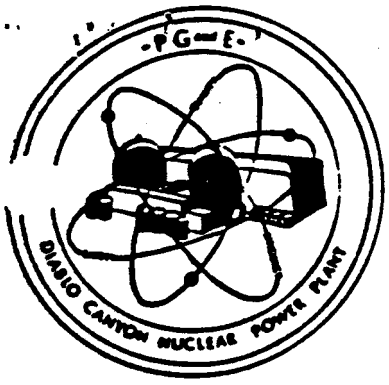
PACIFIC GAS & ELECTRIC COMPANY

By _____
Manager of Industrial Relations

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

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

May 18, 1993 By _____
Business Manager




PACIFIC GAS AND ELECTRIC COMPANY
OPERATIONS DEPARTMENT POLICY

NUMBER: A-13
REVISION: 3
DATE: 2/10/93
PAGE: 1 Of 2

DIABLO CANYON POWER PLANT Unit 1 & 2

TITLE: NON-LICENSED OPERATOR CONTROL ROOM DUTIES

APPROVED: _____
Operations Director/Operations Supervisor

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Use of a Non-Licensed Nuclear Operator (NO) in the Control Room has proven to be an effective, necessary practice which promotes training and effective use of Operations Department manpower.

This practice also adds increased responsibility to the Licensed Operators on that shift, more specifically the responsibility of monitoring and controlling the duties of the Non-Licensed operator to ensure that administrative and regulatory requirements are not violated.

To maintain confidence that we are always within the limits of our Administrative Procedures and the Federal Regulations, the job duties/assignments of the Non-Licensed operator shall be controlled using the following guidance.

xc: DBMiklush
Operations Manager
Operations Shift Supervisor
Unit 1/2 Shift Foreman/SCO
Work Planning/W. Bowles
NRC
CRAs
Training/Library



PLEASE INITIAL AND DATE

A. A Non-Licensed NO in the Control Room shall NOT be assigned tasks which involve the following:

1. Operation of Controls which directly affect reactivity, which are presently defined in DLAP OP1.DC10 as Control Rods, Reactor Make-up Control System, and Main Turbine Controls.

2. Operation of controls located on Control Consoles CC1, CC2, or CC3.

3. Manipulation of Control Board controls in response to emergencies (EPs,APs) or during major plant transients. During plant emergencies, a Non-Licensed operator's duties shall be limited to taking of logs, answering phones, and other non-critical duties as assigned by the emergency response personnel.

4. Operation of AFW controls or FW Bypass controls in Mode 1 at low power operations or in Mode 2 is considered by Senior Operations Management to have a direct affect on reactivity and SHALL NOT be allowed by Non-Licensed operators.

B. Apparatus and mechanisms other than Controls, the operation of which may affect the reactivity or power level of a reactor shall be manipulated only with the knowledge and consent of an operator or senior operator licensed pursuant to Part 55 of this chapter present at the controls. (10CFR 50.54 (j)).

Manipulation of Vertical Board controls by a Non-Licensed NO for routine daily activities shall only be done with the consent of and under the supervision of the Unit CO.

C. Prior to assigning any control room task to a Non-Licensed NO, ~~the~~ Unit CO or SCO should evaluate the task to ensure the intent of this Policy is met and the scope of the task is within the abilities of the Non-Licensed NO.

Attachment 1 to this Policy contains an Interim Nuclear Operator Level 8 Qual Card for the Control Room to be used until the Training Department develops the final Level 8 Qual Card.

# INTERIM
# NUCLEAR OPERATOR QUALIFICATION
# LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

## INSTRUCTIONS

1. Checkouts and Signatures are to be from a Licensed Operator unless otherwise noted on the signature blank.

2. The Oral Exam at the completion of each Duty Area is the responsibility of each shift's SS/SFM. The Oral Exam, at the SS/SFM option, may be delegated to a licensed operator.

3. The Standards listed in this Interim Qual Card are not meant to be all inclusive of the knowledge needed by a Non-Licensed NO to stand a watch in the Control Room. They are meant to be a guide for the Licensed Operator to use when training a candidate for a Level 8 watchstation.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

I. DUTY AREA: General Tasks and Knowledge Requirements

A. REFERENCES
1. Operations Department Policy
2. Plant Manual Volume 1 - Administrative Procedures
3. Plant Manual Volume 2 - Operating Procedures

B. KNOWLEDGE REQUIREMENTS
1. Ops Policy A-13 Non-Licensed Operator Control Room Duties
2. Ops Policy A-14 Workstation Cleanliness
3. Ops Policy B-1 Conduct of Operations
4. Ops Policy B-3 Policy on Replacing Blown Fuses
5. Ops Policy B-13 Documentation of Plant Configuration Changes
6. Ops Policy B-15 Operation of Equipment with Known Problems/Deficiencies
7. Ops Policy B-16 Operations Troubleshooting Activities
8. OP O-2 Operation of Hagan Controllers
9. OP O-3 Notification of the Chem/Rad Protection Departments

The NO will be thoroughly familiar with the contents of Policy A-13 and the duties he IS and IS NOT allowed to perform in the control room. He/she will have a good working knowledge of the contents of the other above policies and procedures.

_____ / _____
SIGNATURE DATE

C. SKILLS REQUIREMENTS

1. Chart Recorders Daily Maintenance P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: various vendor's manuals, AP C-152
- Standard: Know location of replacement chart paper and ink Pens, requirements for date/time stamping, paper change of various recorders, proper labeling of chart paper for RMS, and pen change of various recorders.

2. Computer Printer Paper Replacement P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: none
- Standard: The NO will demonstrate ability to change paper and ribbons on one or more of the control room printers.

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

3. Communication and Lamping Logs P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: none
- Standard: Identify location of and reason for keeping of logs.

4. Main Annunciator System P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: none
- Standard: The NO will demonstrate ability to perform Annunciator Test, printout an Alarm Summary, and change light bulbs in Annunciator PK windows.

5. Light Bulb Replacement P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP O-2 and AP C-60
- Standard: The NO will demonstrate ability to change light bulbs in Hagan Controllers and Postage Stamp Monitor Light Boxes.

## E. DUTY AREA COMPLETION

End of Duty Area Oral Examination _____ / _____
SS/SFM SIGNATURE DATE

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

II. DUTY AREA: Daily Data Gathering

A. REFERENCES
1. Plant Manual Volume 2 - Operating Procedures
2. Plant Manual Volume 4 - Tech Specs
3. Plant Manual Volume 6 - Surveillance Test Procedures
4. Operations Department Policy
5. PPC Reference Manuals and Help Cards

B. KNOWLEDGE REQUIREMENTS
1. Ops Policy A-4 Control of PPC Turn-on Codes
2. OP O-15 Control of Plant Process Computer Addressable Points
3. Ops Policy C-2 Policy on Performance of STPs R-2B and R-10
4. Demonstrates a basic understanding of Channel Check, Controlled Leakage, Identified Leakage, Operability, Operational Mode, Pressure Boundary Leakage, Purge, Quadrant Power Tilt Ratio, Source Check, and Unidentified Leakage

- Standard: The NO will have a good working knowledge of the above Policies, Procedures and Tech Spec Definitions.

_____ / _____
SIGNATURE DATE

C. SKILLS REQUIREMENTS

1. PPC Operation P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: PPC Reference Manual and Help Cards
- Standard: The NO will demonstrate the ability to use the PPC to gather information used in STPs, monitoring plant equipment, and gathering archived data.

2. STP I-1A Routine Shift Checks P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP I-1A
- Standard: The NO will demonstrate sufficient knowledge of systems and locations of associated instrumentation to gather data, perform quantitative assessment of channel behavior, and verification that a condition or parameter meets Tech Spec requirements.

3. STP I-1B Routine Daily Checks P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP I-1B
- Standard: (see item 2)

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

4. STP I-1C Routine Weekly Checks P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP I-1C
- Standard: (see item 2)

5. STP I-1D Routine Monthly Checks P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP I-1D
- Standard: (see item 2)

6. STP I-42 Rod Pos Dev Mon Functional P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP I-42
- Standard: The NO will demonstrate sufficient knowledge of PPC and control rod system to allow satisfactory performance of STP.

7. STP R-2B1 PPC Operator Heat Balance P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP R-2B1
- Standard: The NO will demonstrate sufficient knowledge of PPC and plant systems to successfully gather data and properly perform STP.

8. STP R-2B2 Manual Operator Heat Balance P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP R-2B2
- Standard: The NO will demonstrate sufficient knowledge of plant systems and instrumentation to allow data gathering and successful performance of STP.

9. STP R-10C RCS Water Inventory Balance P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP R-10C
- Standard: The NO will demonstrate sufficient knowledge of plant systems and their associated instrumentation, and PPC to successfully collect data and complete the STP. The Licensed operator will discuss the definitions of identified, controlled, unidentified, and pressure boundary leakage in Tech Specs.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

10. STP R-25 Calculation of QPTR P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: STP R-25
- Standard: The NO will demonstrate sufficient knowledge of PPC and NIS to allow the completion of surveillance of both computer and manual QPTR calculation.

11. Summary of Daily Operations P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: NPAP A-7 Appendix 6.1
- Standard: The NO will demonstrate sufficient knowledge of control room instrumentation to gather required information and record on data sheet.

12. Main Generator Parameter Log P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: none
- Standard: The NO will demonstrate sufficient knowledge of control room instrumentation to gather required information and record on data sheet.

13. CO's Miscellaneous Daily Data Sheet P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AP E-6S1 Operator Logs
- Standard: The NO will demonstrate sufficient knowledge of control room instrumentation to gather required information and record on data sheet.

14. Dilution Water Verification P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: CAP A-5
- Standard: The NO will demonstrate sufficient knowledge of control room indications to gather required information and record on data sheet.

15. Dented Steam Generators P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP O-4
- Standard: The NO will demonstrate sufficient knowledge of control room indications to gather required information and record on data sheet.

16. Evaluation of Pzr Safety Valve Leakage P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP O-24
- Standard: The NO will demonstrate sufficient knowledge of control room indications to gather required information, record, and calculate required information for the data sheet.

17. Tech Spec Conditional Surveillance P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AP C-6S4
- Standard: The NO will demonstrate understanding of the requirements to control and track equipment required to be operable by T.S. and the performance of a conditional surveillance when that equipment is not operable.

18. OWS Discharge Permit P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: CAP A-5
- Standard: The NO will demonstrate knowledge of the limitations of the discharge permit and the requirements for the daily data gathering.

19. S/G Blowdown Discharge Permit P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: CAP A-5
- Standard: The NO will demonstrate knowledge of the limitations of the discharge permit and the requirements for the daily data gathering.

## D. DUTY AREA COMPLETION

End of Duty Area Oral Examination _____ / _____
SS/SFM SIGNATURE DATE

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

III. DUTY AREA: Equipment Operation

A. REFERENCES
1. Operations Department Policy
2. Plant Manual Volume 2 - Operating Procedures
3. Plant Manual Volume 4 - Technical Specifications
4. Plant Manual Volume 6 - Surveillance Procedures
5. Plant Manual Volume 16 - Annunciator Response Procedures
6. Operator Information Manual

B. KNOWLEDGE REQUIREMENTS
1. Ops Policy A-6 Use of Operations Department Procedures
2. Ops Policy B-4 Limitorque Valve Control Switches
3. Ops Policy B-2 Electrical Alarm Relay Responses
4. Ops Policy B-24 Vital 4KV Switchgear Operability
5. Ops Policy B-26 Maintaining Equipment Availability during Outages
6. Ops Policy B-27 Use of CAUTION Tags
7. OP O-7 Correct Flagging of Breaker Control Switches
8. OP O-9 Manual "Seating" of Motor Operated Valves
9. STP V-3 Exercising Safety Related Valves - General Procedure
10. STP G-15B Determination of Valve Stroke Times with Equipment Timers
11. Shift and Standing Orders
12. General Operating Order - Section 12.108 Motor Starting Duties

- Standard: The NO will have a good working knowledge of the above Policies and procedures.

_____ / _____
SIGNATURE DATE

C. SKILLS REQUIREMENTS

1. CVCS System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP B-1A:V
- Standard: The NO will demonstrate knowledge of indication and control locations for CVCS components and control board mimic for CVCS System. Licensed operator will discuss how CVCS system components have an indirect effect on reactivity additions.

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

2. Excess Letdown - Place in Service P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP B-1A:IV, STP V-3K6, STP V-3S6
AR PK 04-23
- Standard: The NO will demonstrate knowledge of indication and control locations for placing Excess Letdown in service and performance of valve testing. The NO will demonstrate understanding of precautions and limitations, and cautions in the procedures.

3. Residual Heat Removal System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP B-2, STP P-3B, STP V-3M1, STP V-3M2, STP V-3M4
AR PK 02-16, AR PK 02-17
- Standard: The NO will demonstrate knowledge of indication and control locations on the VBs. The NO will demonstrate understanding of the precautions and limitations, and the cautions in the procedures. The Licensed operator will discuss the associated Tech Specs during the performance of the procedures.

4. Safety Injection System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP B-3A, STP P-1B, STP V-3L2, STP V-3L3, STP V-3L10
AR PK 02-03
- Standard: The NO will demonstrate knowledge of indication and control locations on the VBs. The NO will demonstrate understanding of the precautions and limitations, and the cautions in the procedures. The Licensed operator will discuss the associated Tech Specs during the performance of the procedures.

5. Accumulators P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP B-3B, AR PK 02-05, AR PK 02-10, AR PK 02-15
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The Licensed operator will discuss the associated Tech Spec implications whenever and alarm is present on accumulators. The NO will demonstrate knowledge of actions necessary to clear an alarm.

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

6. Moisture Separator Reheaters P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP C-5, AR PK 10-23, AR PK 10-24
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate basic knowledge of the modes of operation on the reheater controller. The NO will demonstrate knowledge of the precautions and limitations in the procedure.

7. Condenser Air Removal Systems P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP C-6, AR PK 10-11, AR PK 10-13
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations in the procedure.

8. Condensate System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP C-7, OP C-7A, OP C-7C, AR PK 10-06, AR PK 10-07
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations in the procedures.

9. No. 2 Heater Drip Pump P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP C-7B, AR PK 10-16, AR PK 10-17
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations in the procedures.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

10. Feedwater System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP C-8, AR PK 09-12, AR PK 09-13, AR PK 09-14
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of precautions and limitations and cautions in the procedures. The NO will demonstrate ability to remove/place in service MFW pump using the Lovejoy startup station to the point of handing the control of the pump over to the licensed operator. Licensed operator discuss with NO why operation of "controls" on main feedwater system is NOT allowed and the effect their operation can have on RCS temperature and reactivity.

* NOTE: Operation of the Feedwater Bypass Valves in Mode 1 at low power operations or in Mode 2 has the potential to have a direct affect on reactivity or cause a Reactor Trip. Operation of Feedwater Bypass valves SHALL NOT be allowed by non-licensed operators in Mode 1 at low power or in Mode 2.

11. Auxiliary Feedwater System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP D-1, STP P-5B, STP P-6B, STP P-6C
  STP V-3R5, STP V-3R6, STP V-3P4, STP V-3P5, STP V-3P6
  AR PK 09-16, AR PK 09-17, AR PK 09-18, AR PK 09-19
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of precautions and limitations, and cautions in the procedures. The Licensed operator will discuss with the NO the Tech Specs associated with AFW and the affects AFW can have on RCS temperature and reactivity at low power operations.

* NOTE: Operation of AFW controls in Mode 1 at low power operations or in Mode 2 has the potential to have a direct affect on reactivity or cause a Reactor Trip. The non-licensed NO shall NOT be allowed to operate AFW controls in Mode 1 at low power or in Mode 2. The NO at the CO's direction may perform routine surveillance tests on the AFW system at times other than listed above.

12. Chemical Feed & Blowdown Systems P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP D-2, AR PK 09-21, STP V-3R3, STP V-3S2
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures.

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

13. Circulating Water System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP E-4, AR PK 13-misc
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures.

14. Auxiliary Saltwater System P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP E-5, AR PK 01-01, AR PK 01-02, AR PK 01-03
STP P-7B, STP M-26, STP V-3F series
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The NO will demonstrate ability to place an ASW train in service per the procedure. Licensed operator will discuss the Tech Specs associated with ASW.

15. Component Cooling Water System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP F-2, AR PK 01-misc
STP P-8B, STP V-3H7, STP V-3H8, STP V-3H10
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The NO will demonstrate the ability to place a CCW Hx in service per the procedure. Licensed operator will discuss the Tech Specs associated with CCW.

16. Process Radiation Monitors P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP G-4, AR PK 11-misc
- Standard: The NO will demonstrate knowledge of location of the Area and Process Radiation monitors in the control room. NO will demonstrate ability to read and interpret readings on monitors. The NO will demonstrate ability to source check and place RE-18 in Level Cal for an overboard discharge. Licensed operator will discuss ECG's associated with various Rad Monitors.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

17. Auxiliary Building Ventilation System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP H-1, AR PK 15-07, AR PK 15-08, AR PK 15-16, AR PK 15-17 STP M-4
- Standard: The NO will demonstrate knowledge of ABVS flowpath, location of controls, and indications on POV 1/2. Licensed operator will discuss Tech Specs on ABVS and implications on other systems when ABVS is not operable. The NO should perform monthly surveillance on ABVS.

18. Containment Fan Coolers P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP H-2, AR PK 01-17, AR PK 01-21, STP M-51
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The NO will demonstrate ability to place a CFCU, and the Drain Collection System in service per procedure. The Licensed operator will discuss the Tech Specs associated with CFCU's and Drain Collection System.

19. Iodine Removal Units P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP H-3
- Standard: The NO will discuss purpose of Iodine Removal Units, the requirements for placing in service, and place a Unit in service.

20. Containment Ventilation System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP H-4, AR PK 15-18, AR PK 02-06, CAP A-6
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The NO will discuss or perform a containment purge and the requirements necessary to perform a purge. The Licensed operator will discuss the Tech Specs associated with Containment Ventilation system.

21. Control Room Ventilation System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP H-5, AR PK 15-06, STP M-6A
- Standard: The NO will demonstrate knowledge of CRVS flowpath, location of controls on VBs. The Licensed operator will discuss Tech Specs on CRVS. The NO should perform monthly surveillance on CRVS.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

22. Fuel Handling Building Vent System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP H-7, AR PK 15-08, AR PK 15-17, STP M-5
- Standard: The NO will demonstrate knowledge of FHBVS flowpath, location of controls, and indications on POV 1/2. The Licensed operator will discuss Tech Spec on FHBVS and implications on other systems when ABVS is inoperable. The NO should perform monthly surveillance on FHBVS.

23. Containment Spray System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP I-2, AR PK 10-18, AR PK 01-19, AR PK 01-20
  STP-4B, STP V-3I3
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The Licensed operator will discuss Tech Specs associated with CS.

24. 12KV System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP J-5, OP O-7, AR PK 19-misc
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The NO will perform on the Simulator (if possible) or discuss a bus transfer and expected indications on instrumentation.

25. 4160 Volt System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP J-6A, OP O-7, AR PK 19-misc, AR PK 20-misc
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The NO will perform on the Simulator (if possible) or discuss a bus transfer and expected indications on instrumentation. The Licensed operator will discuss Tech Specs associated with electrical systems.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

26. Diesel Generators P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP J-6B, STP M-9 and M-9I, Shift Orders dated 4-11-89
  All associated alarms windows on PK 16, PK 17, and PK 18.
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will demonstrate understanding of the precautions and limitations, and cautions in the procedures. The Licensed operator will discuss Tech Specs associated with D/G's. The NO should perform STP M-9A.

* NOTE: A Non-Licensed NO is not expected to respond to any abnormal or emergency conditions associated with the D/G or electrical buses. His/her tasks will only be associated with normal STP's or routine electrical switching or bus transfers.

27. Annunciator Response _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP J-12, AR PK 15-22, AP C-154
- Standard: The NO will discuss Annunciator Response Manual including logic diagrams, input devices, setpoints, and format for operator actions and responses. The NO will discuss how to look up window inputs in the electrical prints and determine which device is bringing in an alarm window. The Licensed operator will discuss associated operator actions for abnormal conditions and on complete loss of annunciator system. The Licensed operator will discuss associated Tech Specs and the Annunciator Defeat procedure AP C-154.

28. Compressed Air System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP K-1, AR PK 13-16, AR PK 13-17
- Standard: The NO will demonstrate knowledge of the location of indication and controls on VBs. The NO will discuss potential effects on plant equipment for low air pressure or a complete loss of instrument air.

29. Fire Protection Computer Operation and Response Procedure _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP K-2C, AR PK 10-05, AR PK 10-10, AR PK 10-15
- Standard: The NO will discuss operation of the Fire System Computer and response to alarms received. The NO will discuss how to acknowledge alarms and reset annunciator windows. The NO will identify the location of the PFAC's in the power block and the remote monitoring panels for various outbuildings. The Licensed operator will discuss the Tech Specs associated with Fire Protection Systems.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

30. Operation of DCPP Radio System P _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: OP K-9, STP I-29, GET Training
- Standard: The NO will demonstrate a basic understanding of the Control Room Radio Console and its use.

31. Reactor Vessel Level Indication System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AR PK 05-09
- Standard: The NO will demonstrate knowledge of the location of the RVLIS computer. The Licensed operator will discuss how to determine correct indication on display panel.

32. Thermocouple Temperature Monitor P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AR PK 05-07
- Standard: The NO will demonstrate knowledge of the location of Thermocouple monitor. The Licensed operator will discuss how to obtain a reading on monitor and the contents of the different pages.

33. Vibration & Loose Parts Monitor P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AR PK 11-11, Standing Orders
- Standard: The NO will demonstrate knowledge of the location of VLPM and discuss operator actions on receiving an alarm.

34. Nuclear Instrumentation System P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AR PK 03-misc, AR PK 07-misc
- Standard: The NO will demonstrate knowledge of the location of the NIS racks and the ability to obtain correct readings on the meters for data collection of the various procedures. The Licensed operator will discuss Tech Specs associated with NIS.

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

35. Earthquake Force Monitor P/S _____ / _____
SIGNATURE DATE

STDs/REFs
- Reference: AR PK 15-24
- Standard: The NO will demonstrate knowledge of the location of the monitor and the ability to obtain a reading on the meters. The Licensed operator will discuss the Tech Specs associated with the monitor.

D. DUTY AREA CONPLETION

End of Duty Area Oral Examination _____ / _____
SS/SFM SIGNATURE DATE

INTERIM
NUCLEAR OPERATOR QUALIFICATION
LEVEL 8 - CONTROL ROOM

Name _____

OPS DEPARTMENT POLICY A-13 - Attachment 1

## IV. WATCH STANDING DUTIES

NOTE: It is highly desirable that one of the following Control Room watches should be on a Saturday night shift. This will enable the candidate to stand a watch where many of the common STP's are performed.

1. First Level 8 Watch Performance _____ / _____
   SS/SFM SIGNATURE / DATE

2. Second Level 8 Watch Performance _____ / _____
   SS/SFM SIGNATURE / DATE

3. Third Level 8 Watch Performance _____ / _____
   SS/SFM SIGNATURE / DATE

## V. LEVEL 8 QUAL CARD COMPLETION

1. Qual Card Completion Authorization _____ / _____
   SS/SFM SIGNATURE / DATE

2. Final Examination _____ _____ / _____
   SCORE SR. INSTRUCTOR SIG / DATE

3. OPS Department Approval _____ / _____
   OPS DIRECTOR / SR OPS SUPERVISOR / DATE

## EXAM QUESTIONS

1. List 3 sources of 4,160 VAC to the 4 KV Vital Buses F.

   ANSWER: (Any 3 for full credit)

   Diesel Generator(s)
   Main Generator (via Aux Transformer)
   500 KV Grid (via Main and Aux Transformer)
   230 KV Grid (via 230/12kv S/U xfmr to 12kv/4kv S/U xfmr)

2. What are the two (2) conditions that will auto-start the centrifugal charging pumps?

   ANSWER: (0.5) ea.)

   1. 4KV vital bus transfer to diesel
   2. SI

3. Which of the following best describes the operation of the CCW system during full power operation?

   a. One CCW pump running, two CCW pumps in AUTO, one CCW heat exchanger in service, one heat exchanger in STANDBY, one ASW pump running
   b. Three CCW pumps running, two CCW heat exchangers in service, two ASW pumps running
   c. Two CCW pumps running, one CCW pump in AUTO, two CCW heater exchangers in service, two ASW pumps running
   d. Two CCW pumps running, one CCW pump in AUTO, one CCW heat exchanger in service, one heater exchanger in STANDBY, one ASW pump running

   ANSWER: d

4. Where does the CCW surge tank tie into the CCW system?

   a. Connected to header C return piping prior to the pump suction

   b. Connected to header A and B on the outlet of the CCW heat exchangers

   c. Connected to header A and B on the return piping prior to the pump suction

   d. Connects to the suction piping of each pump to provide adequate net positive suction head

   ANSWER: c

5. Explain the plant operational condition that would require the low RWST level trip of the RHR pumps to be cutout without an emergency condition present.

   ANSWER:

   RHR operation during refueling when the reactor cavity has been filled.

6. State which pump(s) are used to fill the Accumulators.

   ANSWER: Safety Injection pump(s)

7. Regarding the Containment Fan Cooler Units,

   a. are the primary cooling to the Control Rod Drive Mechanisms (CRDMs).

   b. are the motive force to PURGE containment via the Plant Vent.

   c. used for alternate leak detection.

   d. are powered from the Vital 4KV system.

   ANSWER: C

8. Describe the two (2) features of the Aux Bldg Ventilation system that ensure the building remains at a negative pressure

ANSWER:

1. Exhaust fan sized larger than supply fan (1.0)
2. Fan interlocks assure exhaust is running before supply can run (1.0)

9. What precaution must be taken when starting an AB or FHB Ventilation fan from RCV1 or 2 AND explain why this precaution is necessary?

ANSWER:

1. Make sure all dampers are lined up prior to starting (1.0).
2. All interlocks are overridden (1.0)

10. What ESF pumps are cooled by the FHB Ventilation system?

ANSWER: Aux Feed Pumps

11. Explain how RHR system flow and RCS cool down rate are controlled during RCS cool down.

ANSWER:

Flow is maintained constant with RHR Hx bypass valve (HCV-670). (1.0) while adjusting RHR Hx outlet valves (HVC-637/638) to adjust cool down rate (1.0)

12. Explain how RHR system flow and RCS cool down rate are controlled during RCS cool down.

ANSWER:

Flow is maintained constant. The temperature is maintained/controlled by using the heat exchanger bypass valve(s).

13. Of the following components, number them in order of highest injection to the lowest injection pressure into the RCS.

_____ Accumulators

_____ Safety Injection Pumps

_____ Centrifugal Charging Pumps

_____ Residual Heat Removal Pumps

14. List two (2) conditions/operator actions that will shift the AB Ventilation to the BLDG and SFGDS mode of operation.

ANSWER:

Manually selected at VB-4
Automatic upon start of an ESF motor SI Signal

15. In the BLDG and SFGDS mode of operation, no SI signal, for the Aux Bldg Ventilation system:

a. One supply and one exhaust fan are running with both the Bldg supply and SFGDS supply ducts open.

b. One supply and one exhaust fan are running with only the SFGDS supply ducts open.

c. Two supply and two exhaust fans are running with both the Bldg supply and SFGDS supply ducts open.

d. Two supply and two exhaust fans are running with only the SFGDS supply ducts open.

ANSWER: c

16. Explain where FHB or AB Ventilation damper failures are indicated.

ANSWER:

LEDs on POVs
Fan and Damper Failure Indication Panel (status panel) on VB-4

17. Explain why the AB and FHB ventilation fans start logic is set up to maintain the suction vanes shut until the respective fan is up to speed.

ANSWER: To prevent motor over current on start

18. If RM-12, (Containment Atmosphere Gaseous Radioactivity Monitor) is OOS, T.S. require that the Containment Cooler is Collection Monitoring System be operable. Briefly describe the operation of this system.

ANSWER:

Cooling coil condensation flow is directed to a drain pipe with an isolation valve and two level transmitters. To determine leakage rate, the isolation valve is closed, and the time between receiving the high and high-high alarm is measured.

19. Concerning Containment Spray actuation during the injection phase, select the proper answer.

a. There is one CS pump, one eductor, one spray add tank, and two spray rings for each train.

b. There is one CS pump, two eductors, one spray add tank, and two spray rings for each train.

c. There are two CS pumps, two eductors, one spray add tank, and four spray rings for the two trains.

d. There are two CS pumps, one eductor, two spray add tanks, and four spray rings for the two trains.

20. List the Auto Starts for the Condensate and Booster Pump sets.

ANSWER:

1. LTB
2. Low Level in No. 2 heater drain tank. (<16%)
3. Low Feedwater pump suction pressure. (<275#)
4. Low voltage on the 4160 v bus feeding an operating pump set.

21. What conditions will cause FCV-230 (Cond. Polisher Bypass Valve) to open?

ANSWER:

1. LTB
2. >70 # dp for > 10 sec.
3. FCV 231 not fully open
4. FCV 232 not fully open

22. List the auto starts signals for the steam driven auxiliary feedwater pump.

ANSWER:

a. AMSAC
b. low S/G level in 2/4 steam generators
c. under voltage on both 12KV busses

23. Select the answer below that best describes the ventilation for the Auxiliary Saltwater pump motors.

a. Each vault has its own supply fan which draws in outside air and maintains a positive pressure in the vault.

b. Each vault has its own exhaust fan that takes suction and discharges through a coaxial inlet and exhaust ducting.

c. Each vault has its own supply and exhaust fan that start when the Auxiliary Saltwater pump breaker is closed.

d. Each vault has its own exhaust fan and each unit has a supply fan that is shared by both vaults on the unit.

ANSWER: b.

24. List all the locations from which the ASW pumps can be controlled.

ANSWER: (1.0 pts)

1. Control room (VB-1)
2. Hot shutdown panel
3. 4 KV switch gear room breaker cubical

25. List the two (2) Auxiliary Saltwater pump standby starts that require the standby selector switch to be in the AUTO position to be functional.

ANSWER: (1.0 pts)

1. Flow discharge header pressure (<40 psig)
2. Low voltage on the opposite bus

26. Explain what operator action should be taken if an Intake Cooling Water pump trips and cannot be restarted. INCLUDE time limits AND the consequences if time limit is not met.

ANSWER:

a. Open crosstie valves to other train

b. FCV-380, 381 (1.0) within 5 minutes (1.0)

c. or the pump will trip (1.0).

27. Which of the following statements best describes the limits placed on operating the Condensate and Booster Pumps.

a. The minimum unrestricted flow for the booster pumps 7000 gpm and for the condensate pump the minimum unrestricted flow is 5500 gpm.

b. When a Condensate Booster pump is to be run below its recommended flow limit for an extended period of time pump set 1-3 should be used if possible.

c. A pump set is limited to no more than 4 starts in any 24 hr period.

d. Operation of the booster pump through only its recirculation line is limited to 1 hour in a 24 hour period.

ANSWER: d.

28. Describe the run out protection for the motor driven Auxiliary feedwater pump.

ANSWER:

a. Pump discharge pressure is used in the control scheme of the level control valve

b. if discharge pressure is too low, the LCV will decrease flow to limit run out.

29. During a LOCA with a complete loss of power which ECCS component(s) will inject borated water into the RCS?

ANSWER: Accumulator(s)

30. Which of the following are NOT a function of the steam dumps.

a. Helps Rod control system return $T_{avg}$ to programmed valve on a load rejection.

b. Returns $T_{avg}$ to no-load value on reactor trip.

c. Assists PZR code safety valve actuation on turbine trip or load rejection.

d. Provides alternate S/G overpressure protection

ANSWER: C

31. List the steam supplies available for the Gland Steam Sealing System.

ANSWER: Main Steam, Aux Steam, Unit 2 Main Steam (Crosstie)

32. What is eccentricity and what operator action(s) if an alert alarm is received (> 3 mils)?

ANSWER: Measurement of the amount of bowed rotor. DO NOT roll the turbine

33. On a unit start-up, the turbine drain valves would normally be open to drain the various lines of accumulated water.

a. At what power level will they automatically close?

b. Why is it permissible to have these valves close at power?

c. What happens to any accumulated water in the steam line for Governor valve 4 when its drain valve closes?

ANSWER:

a. >20 % (0.5)
b. There is sufficient steam flow to "flash" the water into steam and remove it from the lines (1.0)
c. The orifice block valve allows the accumulated water to drain to the cold reheat header.

34. On a unit start-up, the turbine drain valves would normally be open to drain the various lines of accumulated water. List two places that position (indicating light) can be verified.

ANSWER: VB4, under HP turbine on 104' control panel

35. When would the local 40% steam dump valve handwheel be used.

a. The handwheel is used to close a stuck open steam dump valve.

b. The handwheel would be used if no circulators are running.

c. The handwheel is used to open a steam dump valve during a loss of air, or loss of vital DC power.

d. The handwheel can only be used to open a 40% steam dump valve.

ANSWER: C

36. What mode of operation the DG will be in (ISOCHRONOUS/DROOP) for the following conditions:

Local Remote Switch in LOCAL (On Exciter Cubicle)
Mode control switch (on DG engine panel) in AUTO
DROOP switch in DROOP (on exciter panel)

ANSWER: ISOCHRONOUS

37. Which of the following is NOT an Auto start of the Diesel Generator.

a. Safety Injection

b. 4KV Start up feeder breaker open to the respective bus

c. 1st level under voltage on the respective 4 KV Vital bus

d. Loss of 230 KV switchyard

ANSWER: b

38. In regards to the Diesel Generator, what is OVERCRANK.

ANSWER: Diesel has not started (speed,JWP) in 10 seconds

39. Answer the following questions concerning the 12 Kv AUTO Transfer relay:

a. What is the purpose of the AUTO Transfer Feature Cut-out switch?

b. What does the WHITE and BLUE light associated with the AUTO Transfer reset pushbutton indicate?

ANSWER:

A. Auto transfers are defeated when switch is cut-out

B. BLUE Light - AUTO transfer occurred

WHITE Light - DC power is available for the transfer circuit.

40. Why are the 12 KV breakers operated on VB-5 required to be "FLAGGED" properly?

ANSWER: (2.0 each)

a. The O.C. alarm will not annunciate

b. The AUTO Transfer to the other source of power will NOT be prevented if the breakers are tripped on O.C. and not flagged properly(non-vital)

41. List three trips provided for the protection of the Start-Up transformer 1-1.

ANSWER: (any 3 of the 4)

a. Sudden pressure

b. Over current

c. Pilot wire diff.

d. Transformer diff.

42. Describe the procedure for performing a MANUAL bus transfer of 4Kv bus D from Start-Up to Aux. power.

ANSWER: (1.0 each)

a. Insert sync key to the switch for Aux Bkr and turn on

b. Place the bus transfer switch in the Transfer to Aux position

c. When transfer is complete, Turn sync key off

d. Flag breakers properly

43. While researching a plant transient, you need to find a value of RCS pressure from 8 hours ago. Using the PPC this data would be found on:

a. Long term archive (tape)

b. Short term archive

c. Mid term archive

d. Not retrievable

ANSWER: b

44. What indications are provided in the control room for the Vital 480 VAC system? Where are theses located (VB)?

ANSWER:

Voltage, Current (3 phases), Megawatts, megaVars, Annunciators (Ground, Room temperature, 480 V BUS ____), Breaker control switch Red/Green - open/close, Blue - Over current, and White Power Available light.
VB-4

45. If all PPC alarms are acknowledged, the alarm status indication of the PPC would be:
a. Blinking red
b. Solid red
c. Solid yellow
d. Black

ANSWER: a.

46. If the PPC is inoperable, which of the following statements best describes the effect on plant operations:

a. Increased surveillance requirements

b. Plant shutdown must commence

c. No affect on operations

d. Backup computer is placed in service

ANSWER: a.

47. The function keys that are defined on the bottom of the standard screen display of the PPC are located:

a. On the left hand side of the keyboard

b. On the top of the keyboard

c. On the right hand side of the keyboard

d. On the upper right hand corner of the keyboard

ANSWER: c.

48. Reliability Engineering has requested a value of letdown flow from 13 days ago. This data would be found on:

a. Long term archive (tape)

b. Short term archive

c. Mid term archive

d. Not retrievable

ANSWER: c.

49. Match the equipment/system listed in Column A with the correct description from Column B.

| COLUMN A | | COLUMN B |
|---|---|---|
| _____ | a. 4kV Vital buses | 1. As the supply to the 12kV and 4kV systems during outages will allow auto transfer on loss of power |
| _____ | b. Aux transformer 1-1 | 2. Steps down 25kV to 4kV for station auxiliary loads |
| _____ | c. S/U transformer 2-2 | 3. Supplies the Vital Instrument AC during Loss of All AC |
| _____ | d. Emergency D/Gs | 4. Actuation of over current, differential or sudden press. relays will generate a Unit Trip |
| _____ | e. Vital DC | 5. Following a Unit Trip and auto transfer will supply all 12 kV and 4kV buses |
| _____ | f. 12kV Startup Bus | 6. 1/3 buses are required to supply one train of ECCS |
| | | 7. Automatically supply 4kV vital buses if all offsite power is lost with the Unit shutdown |
| | | 8. Three buses designated HF, HG, and HH |
| | | 9. Steps down 12kV to 4kV to supply vital and non-vital loads during startup and shutdown |

ANSWER:

a. 8
b. 4
c. 9
d. 7
e. 3
f. 5

50. List the AREA monitors that have auto actuation. Describe what occurs (the auto actuation) when a high radiation setpoint is reached.

ANSWER:

RE-58 (Spent fuel pool radiation detector) & RE-59 (New fuel storage radiation detector).
Automatic actuation: FHBVS (Fuel Handling Building Ventilation System) shifts to the "Iodine" Removal Mode, FHB evacuation alarm sounds, and "FHB HIGH RADIATION" (PK11-10) annunciator alarms in the main control room.

51. Describe the method used at Diablo Canyon to monitor Pressurizer Safety Valve position for leakage.

ANSWER:

a. Acoustic Monitoring on discharge line

b. RTD on discharge line

52. Chemicals must be injected into the AFW system when it is placed in operation.

a. State the two chemicals which are injected AND the function of each. (2.0 pts)

b. State two methods which can be used to vary the chemical addition rate to the AFW system. (1.0 pt)

ANSWER:

a. Hydrazine - oxygen control
   Ammonia - ph control
b. Vary the pump stroke
   Vary the chemical injection tank concentration

53. List FOUR locations where the INCORE THERMOCOUPLES can be read out.

ANSWER:

a. Plant computer

b. thermocouple/core cooling monitor

c. subcooling monitor

d. SPDS

e. TDS

f. PAM-1

54. Select from below which locations are NOT monitored by the piezoelectric accelerometer sensors for excessive vibration in the Vibration & Loose Parts Monitoring System.

a. Steam Generators near the reactor coolant inlet

b. Reactor Coolant Pumps

c. Reactor Vessel near the vessel flange

d. Reactor Vessel near the incore instrument conduit

ANSWER:b.

55. Which of the following signals **DOES NOT** input into the plant Fire Detection Computer. (circle one)

a. FWST 0-2 low level

b. Cardox compressor loss of power

c. Main Warehouse smoke alarms

d. Battery room High Temp alarms

ANSWER: D

56. Which of the following equipment inputs **DIRECTLY** into the Fire Detection System main computer?

a. Data Gathering Panels and PFAC panels located throughout the plant

b. Main annunciator windows PK1005, PK1010, and PK1015

c. Various detectors located throughout the plant which monitor fire system parameters such as fire water flows, cardox pressures, and smoke detector status

d. Pyrotronic smoke detector panels

**ANSWER:** a.

57. What is the Aux Building Ventilation line-up if in SAFEGUARDS ONLY mode of operation (No SI signal)?

a. One supply and one exhaust fan are running with both the BUILDING supply and SAFEGUARDS supply ducts open.

b. One supply and one exhaust fan are running with only the SAFEGUARDS supply and exhaust ducts open

c. Two supply and two exhaust fans are running with both the BUILDING supply and SAFEGUARDS supply ducts open

d. Two supply and two exhaust fans are running with only the SAFEGUARDS supply ducts open

**ANSWER:** b.

58. Unit 2 Control Room radiation monitor RE-25 monitors the intake air to the control room. Area radiation levels at this detector have increased 23mr/hr. The setpoint for RE-25 is 2 mr/hr. Select the statement which describes the expected result from the above conditions:

a. Control Room assumes a negative pressure

b. Control Room assumes a positive pressure

c. Control Room recirculation dampers close

d. A Unit 2 control room pressurization fan starts

**ANSWER:** b.

59. How can the Control Operators determine the inputs currently in alarm for the Fire Water System Cardox systems if the Fire Detection System computer is inoperable?

a. Monitor PFAC panels 4 and 5 adjacent to the Pyrotronic smoke detector panels on the east wall of the control room

b. Monitor the Pyrotronic smoke detector panels

c. The inputs in alarm cannot be determined when the computer is out of service

d. Monitor PFAC panels 1, 2, and 3 on the west wall of the Control Room

ANSWER:d.

60. During a normal AUTO-Start of Diesel Generator 1-2, all starting air valves and turbo air assist valves open, A problem with the fuel oil system prevents the diesel from starting. Select the answer below that best describes when these valves close:

a. ALL valves will remain open until the JWPR energizes; failing this, ALL valves will close after 10 seconds due to the overcrank timer.

b. The turbo valve timer closes the turbo assist valves after three seconds; the starting air valves remain open until the overcrank timer closes them at 10 seconds

c. The turbo valve timers close the turbo assist valves and two of the air start valves at the three second point; the overcrank timer closes the remaining starting air valves at the 10 second point.

d. ALL valves remain open until the 10 second point where the shutdown relay closes them on an overcrank signal

ANSWER: c.

61. Answer the following questions concerning the **UNIT 2** 4 Kv Vital buses:

a. At 100% power, which transformer supplies power to 4 Kv bus H?

b. Which D/G supplies Unit 2 4Kv bus H?

ANSWER:

a. AUX Xfrm 2-2. (0.25)

b. D/G 2-2 (0.25)

62. Choose the correct statement in reference to the Volume Control Tank (VCT) level and pressure setpoints.

a. On a level of 89% LT-112 causes LCV-112 to trip open.

b. Auto make-up starts at 24% VCT level (decreasing).

c. During normal power operation, nitrogen is supplied automatically via a pressure regulator.

d. An Auto transfer to the RWST will occur only if both level channels (LT-112 & LT-114) are at 5%.

ANSWER: D

63. Condenser hotwell level control is 55" - 85". Select the correct input which controls level.

a. Steam generator pressure (Main Steam line pressure)

b. T avg (Auct. high)

c. Turbine impulse pressure (PT-506)

d. P-2000

ANSWER: C

64. The Unit is at 65% power. A CWP pump that was on the AUTO RECLOSE tripped. With NO OPERATOR action select the sequence of events that will occur.

a. Condenser vacuum will decrease, a runback will occur causing a LTB, and finally the Turbine will trip on lack of vacuum.

b. Condenser vacuum will decrease, SCW temperature will increase, and Turbine vibration will increase due to viscosity of the oil decreasing.

c. Turbine efficiency will decrease, due to loss of one CWP.

d. No direct affect to the unit, 65% load can be maintained with one CWP for up to 1 hour.

**ANSWER**: B

65. The Unit is at 100% power. FCV-231 & FCV-232 are OPEN and the control switch is in auto. FCV-230 is closed and in auto, Cnd Pol by-pass valve. FCV-231 is taken to the closed position. Select the correct response.

a. As FCV-231 goes closed, FCV-230 will open

b. As FCV-231 goes closed, Condensate flow to the MFW pps decrease resulting in a SG low level Rx trip.

c. As FCV-231 goes closed, FCV-232 will also close and FCV-230 will open to maintain DP below its associated setpoint.

d. Nothing will happen.

ANSWER: D

66. Rising PRT (Pressurizer Relief Tank) pressure, Temperature and level may indicate open or leaking Pressurizer safety valves, PORVs, or miscellaneous relief valves. Which of the following PRT values are out side the normal range.

a. PRT level - 85%

b. PRT temperature - 100°F

c. PRT pressure - 25 psig

d. PRT oxygen - 0.2%

ANSWER: C

67. Select the answer which best describes "VORTEXING".

a. Rapid swings of 8 to 10 amps (peak to peak) and/or increased noise level at the pump.

b. Small oscillations of 3 to 3 amps (peak to peak) with no discernable increase in noise level at the pump.

c. Small oscillations of 3 to 3 amps (peak to peak) with a large increase in noise level at the pump.

d. Slow swings of 8 to 10 amps (peak to peak) and no increased noise level at the pump.

ANSWER: B

68. The Residual Heat Removal pumps (RHR) can take a suction from (Select the best answer):

a. Loop 4 Hot Leg, RWST, Containment Recirc Sump

b. Loop 4 Cold leg, RWST, Containment Recirc Sump

c. Loop 2 Hot Leg, RWST, Containment Recirc Sump

d. Loop 2 Cold leg, RWST, Containment Recirc Sump

ANSWER: A

69. Select the correct answer in regard to Main Steam system.

a. At 100% power main steam pressure is approx. 1000 psig

b. At 100% power main steam pressure is approx. 800 psig

c. The first safety will lift at approx. 1165 psig

d. Each 10% steam dump can dump 10% rated steam flow for a total of 40%.

ANSWER: B

70. List four (4) items that will cause a Main Feedwater turbine trip by energizing the turbine trip solenoid valve.

a.

b.

c.

d.

ANSWER:

MFW pp switch VB3 to trip

Local manual trip pushbutton

S.I.

P-14

Hi feedwater discharge pressure

Lo-Lo lvl oil reservoir

Thrust brg wear

71. A Reactor trip has occurred on Unit Two. AFW is in service and supplying each of the Steam Generators with approximately 100 gpm. As part of the Control room staff, how can you determine if the AFW Chemical injection pumps are running? (select the correct answer)

a. Chemical injection pumps start automatically on the Rx trip. If they do not start a White light on monitor light box A will be on.

b. The chemical injection pumps are manually started on VB-3. Flow and amps are indicated there also.

c. Chemical injection pumps get a start signal from breaker closed on motor driven AFW pps. There is no Control room indication that the pumps are running.

d. There are RED and GREEN lights on VB-3 to indicate AFW chemical injection pump status.

ANSWER: D

72. Unit two is at 100% power, the only piece of equipment that is out of service is Waste Gas Compressor 2-1. Unit one has developed a HI-HI $O_2$ on the vent header. Unit two has been diluting, at 30 gpm, to combat a Xenon transient. LHUT 0-1 is at 75% and aligned to the Unit Two Vent Header. Which of the following would depict the outcome of this configuration over the next 12 hours.

a. No special precautions need to be taken.

b. The Unit Two Waste gas system will end up with a HI PRESSURE problem.

c. Running the Boric Acid Evaporator will take care of the pressure problem

d. Transferring the contents of LHUT 0-1 to LHUT 1-2 will take care of all Vent Header pressure problems, due to Unit Two's dilution.

ANSWER: B

73. The area K 100' HI TEMPERATURE alarm has come in on Unit One. The alarm will clear when

a. both Unit 1 and Unit 2 need to push the reset button, VB-3 to clear the alarm.

b. Unit 1 needs to push the reset button, VB-3 to clear the alarm.

c. the reset button in the Unit One Cable Spreading Room is pushed.

d. the temperature decreases below the alarm setpoint.

ANSWER: C

74. LCV-112A, CVCS Letdown Divert valve is stuck in the VCT position. Charging has been decreased from 87 gpm to 45 gpm. Select the correct response to this configuration.

a. A PZR HI PRESS RX Trip will occur.

b. VCT will fill up, increasing pressure in the VCT will change Seal Return flow and eventually will cause the relief valve to lift sending water to the LHUT.

c. The VCT will lose level, at 5% on both channels the charging pump suction will be aligned to the RWST.

d. None of the above answers will occur.

ANSWER: b

75. VCT level is at 50%. A RCS leak has occurred in containment. The 1-2 Centrifugal pump is charging at 150 gpm and maintaining PZR level on program band. With the previous information select the correct response from below.

a. In the present configuration the only result will be the Centrifugal pump (1-2) will trip on low level.

b. The blender will be able to maintain the VCT level as long as there is PWST and BAST level.

c. The charging pump suction will eventually be swapped to the RWST.

d. Centrifugal pump 1-1 will also need to be started to prevent Centrifugal 1-2 from tripping on over current.

ANSWER:C

76. Unit Two and Unit One are both running at 100% power. All the PCBs are closed. The Unit Two PCB output breaker (just one of the two) is inadvertently opened. The net result will be (select the correct answer):

a. An Annunciator alarm will be received.

b. A load rejection on Unit Two will occur.

c. Unit two will trip, due to P-9 and VARS on Unit One will increase (VARs in).

d. Nothing will happen

ANSWER: A

77. During MODE 5 and 6 operations steps are taken to prevent the Steam Generators from decreasing to ≤70 °F. The reason for the temperature limit is:

a. ensure that pressure induced stresses in the Steam Generators do not exceed the maximum allowable fracture toughness stress limit.

b. prevent a cold water, positive reactivity, restart of the Reactor.

c. temperatures of ≤70 °F cause instrument inaccuracies, which could lead to Steam Generator overfill.

d. temperatures of ≤70 °F cause Steam Generator tube denting, which would not be known until the Steam Generators are up to normal operating temperatures.

ANSWER: A

78. Select the correct answer concerning the operation of HAGAN Controller.

a. When MANUAL power is lost the lights on the controller will go out and the controller will go to the AUTO-HOLD setpoint.

b. When AUTO power is lost the lights on the controller will go out and the controller will go to the AUTO-HOLD setpoint.

c. Transferring a controller from AUTO to MANUAL and back repeatedly in a short period of time will clear the electronic signal that has built in.

d. Once power is lost to a HAGAN controller that is in MANUAL the controller will go to AUTO operation.

ANSWER: A

79. Which of the following would be a notification to the Shift Chem Tech.

a. Reactor power change of 10% in one hour.

b. 200 gallon make up to the RCS in a 24 hour period.

c. >20% change, start up or securing of Blowdown Overboard.

d. Whenever a SPEEDS truck has been called to make a pick up.

ANSWER: C

80. The most sensitive Radiation Monitor to Steam Generator tube leakage would be:

a. RE-71, 72, 73, 74

b. RE-19

c. RE-44A & B

d. RE-15 & 15R

ANSWER: D

81. As a NON-LICENSED operator in the Control room, select the correct statement as it would apply to you.

a. May operate controls located on Control Consoles CC1, CC2, or CC3 under the DIRECT observation of a LICENSED Operator.

b. Operation of controls that affect reactivity may only be operated under direct supervision of a LICENSED Operator or a plant approved STP.

c. During emergencies or during major plant transients. Duties shall be limited to taking of logs, answering phones, and other non critical duties.

d. During normal operation you may do any task that is performed in the Control room.

ANSWER: c

82. Which is a major concern for a loss of all A/C event?

a. Pressurized thermal shock, on the reactor vessel

b. A LOCA due to RCS inventory loss out the PZR PORV's

c. A reactor core re-criticality concern due to inability to borate the RCS

d. A LOCA due to RCS inventory loss past failed RCP seals

ANSWER: d

83. A reactor trip and SI occurs from 100% power, simultaneously with abnormally high radiation levels in the Auxiliary building.

Why is the RHR system of particular interest considering these conditions?

a. The RHR system has the largest fluid lines which penetrate containment

b. The RHR system is a low pressure system connected to the high pressure RCS

c. The failure of one motor operated valve in the RHR system will cause in leakage from the RCS

d. The failure of one check valve in the RHR system will cause in leakage from the RCS

ANSWER:b

84. In response to a charging and letdown flow mismatch. The following indications are noted:

- RCS letdown line pressure indicator PI-135, is exhibiting erratic readings

- CCW surge tank level is INCREASING

Where is the location of the RCS leak?

a. Seal water heat exchanger

b. Letdown heat exchanger

c. RCP thermal barrier

d. Excess letdown heat exchanger

ANSWER:b

85. While operating at 100% power the following conditions are observed for RCP 1-1:

- # 1 seal leakoff flow LOW alarm
- # 2 seal leakoff flow HIGH alarm
- RCDT level INCREASING

What event has occurred?

a. # 1 seal failure

b. # 2 seal failure

c. Low standpipe level

d. # 3 seal failure

ANSWER:b

86. While performing an STP you need to have the Aux. building watch close two valves that are in different locations.

Which communication VIOLATES Operations Department Policy regarding communication?

a. You call the Operator and have him write the information down on a formal communication sheet, and repeat it back

b. You hold a tailboard with the Operator and give him directions on a formal communications sheet

c. You call the operator and have him repeat the information back

d. You give the Operator a marked up drawing with the necessary information on it

ANSWER:c

87. A HAGAN controller has temporarily lost its manual power supply, while operating in automatic.

How will the controller respond?

a. Controller will not be affected since it is in auto

b. Controller will shift to AUTO-HOLD, then to manual when power is restored

c. Controller will control in AUTO, then shift to MANUAL when power is restored

d. Controller will shift to MANUAL

ANSWER:b

88. You have directed a new Operator to check the position of three valves in the Blender room. How should the position of a manual valve be checked?

a. To verify a valve is OPEN, he would try to open the valve further. If the valve will NOT open further it is fully open.

b. To verify a valve is fully OPEN, try to close the valve approximately 10%. If the valve moves in the closed direction, then fully open the valve.

c. To verify a valve is fully CLOSED, he would use valve stem position.

d. To verify the valve is fully CLOSED, he would try yo open the valve. If the valve moves in the open direction, then fully close the valve.

ANSWER:b

89. How would the Volume Control Tank (VCT) system respond to a failure of VCT level transmitter LT-112 in the high direction? Assume VCT level control system in automatic control and no operator actions.

a. Automatic transfer from the VCT to the RWST on LOW VCT level is still operable

b. LCV-112A would divert to the LHUT's, however automatic blender operation can makeup to the VCT

c. LCV-112A would divert to the LHUT's and an Annunciator for VCT HIGH level would alarm in the control room

d. LCV-112A would initially remain lined up to the VCT, but the alternate level transmitter LT-114 could still divert LCV-112A to the LHUT's on high level

ANSWER:c

90. How would the Volume Control Tank (VCT) level control system respond to a failure of the VCT Level Transmitter LT-112 in the low direction? Assume VCT level control system in automatic control and no operator action.

a. Automatic blender makeup would commence and the VCT level would increase until the alternate level transmitter (LT-114) sensed a high level to divert LCV-112A to the LHUT's

b. Automatic blender makeup would commence and the VCT level would reach 100%

c. VCT LO-LO LEVEL annunciator would alarm in the control room and automatic blender operation would not be affected

d. VCT LO-LO LEVEL annunciator would alarm in the control room and the vertical board indication would be lost

ANSWER:a

**NEW QUESTIONS THAT HAVE NOT BEEN APPROVED**

91. Under what circumstance would RCP number 1 Seal Bypass valve CVCS-1-8142, be opened?

a. When the RCP radial bearing outlet temperature approaches its alarm setpoint, or the number 1 seal leakoff flow rate is HIGH

b. When the RCP seal leakoff temperature approaches its alarm setpoint or the number 1 seal leakoff flow rate is HIGH

c. When the RCP radial bearing outlet temperature, or the number 1 seal leakoff temperature approaches its alarm setpoint

d. When the RCP seal injection flow is HIGH and the number 1 seal leakoff flow is LOW

ANSWER:c

92. What signals must be present for a pressurizer PORV to open, when the Low Temperature Overpressure Protection toggle switch is CUT IN?

a. Wide range hot leg pressure less than 450 PSIG and RCS hot leg temperature less than 330 degrees

b. Pressurizer pressure greater than 450 PSIG and RCS hot leg temperature less than 330 degrees

c. Wide range hot leg pressure greater than 450 PSIG and RCS hot leg temperature less than 330 degrees

d. Wide range hot leg pressure greater than 450 PSIG and RCS hot leg temperature less than 330 degrees

ANSWER:c

93. Excess letdown is placed in service. Flow is then aligned from the charging pump suction to the VCT.

What problem could be caused by returning excess letdown directly to the VCT?

a. High back pressure on the RCP number 1 seal, would reduce seal injection flow

b. Upon initiation of a Safety Injection signal, the charging pump recirculation could over pressurize the VCT

c. Enhances hydrogen of the RCS, making chemistry control more difficult

d. Degraded mixing of hydrogen

ANSWER:b

94. With the plant operating at 100% power, a pressurizer spray valve fails open. The reactor is tripped and a Safety Injection Signal is actuated on low pressurizer pressure. Prior to restarting the Unit, it is desired to cycle a Main Feedwater Bypass valve for maintenance.

What signals must be reset prior to cycle this valve?

a. Only the Safety Injection Signal must be reset

b. Safety injection signal must be reset and the reactor trip breakers must be cycled

c. Safety Injection signal and the Feedwater Isolation signal must be reset

d. Safety Injection signal and Feedwater Isolation signal must be reset, and reactor trip breakers must be cycled

ANSWER:d

95. What conditions will cause the automatic closing interlocks associated with the Residual Heat Removal system inlet isolation valves from Loop 4 hot leg RHR-8701 & 8702 to operate?

a. RHR-8701 will automatically close when RCS wide range pressure is greater than 630 PSIG and pressurizer vapor space temperature is greater than 475 degrees

b. RHR-8702 will automatically close when RCS wide range pressure is greater then 630 PSIG

c. There are NO automatic closing interlocks associated with RHR-8701 & 8702

d. RHR-8701 & 8702 will automatically close when RCS wide range pressure is greater than 450 PSIG

ANSWER:c

96. What conditions will cause the CONTAINMENT EVACUATION alarm to AUTOMATICALLY actuate?

a. High containment particulate activity

b. High containment pressure (3 PSIG)

c. High containment gaseous activity

d. High Flux at shutdown alarm on either source range nuclear instruments

ANSWER:d

97. Select the correct statement from below.

a. AMSAC will remain armed 4 minutes after either PT-505 or PT-506 senses power less than 40%

b. AMSAC is manually armed when power exceeds 40%

c. AMSAC would NOT disarm if PT-505 failed low while PT-506 still sensed full load turbine first stage pressure

d. AMSAC should NOT generally trip following a unit trip from full power

ANSWER:a

98. Select the correct statement from below.

a. If AMSAC trips, it will cause closure of the steam generator blowdown valves inside containment

b. AMSAC is expected to trip following unit trips from full power

c. If AMSAC is armed, AMSAC will trip if Steam Generators 1-1 and 1-4 decrease below 5% for at least 25 seconds

d. AMSAC sends a redundant trip signal to each reactor trip breaker shunt trip coil

ANSWER:b

99. Which of the following heat exchangers is LEAST likely to be the cause of radioactive contamination of the Component Cooling Water (CCW) system?

a. RCP thermal barrier heat exchanger

b. Excess letdown heat exchanger with excess letdown in service

c. Seal water return heat exchanger

d. Letdown non-regenerative heat exchanger

ANSWER:c

100. Assume that a MAIN STEAM LINE BREAK has occurred inside containment.

Elevated containment temperature should cause INDICATED pressurizer level to be:

a. the same as actual level

b. lower than actual level

c. either higher or lower than actual, since this instrument is not environmentally qualified

d. higher than actual level

ANSWER:d

101. After flowing past the RM-15/15R radiation monitor, where does steam jet air ejector (SJAE) exhaust discharge?

a. The SJAE condenser

b. To atmosphere outside the west side of the turbine building

c. The Main condenser

d. The plant vent

ANSWER:d

102. When re-establishing normal letdown following a letdown isolation, letdown pressure reaches 400 PSIG and is still increasing.

What immediate action must be taken?

a. Place another letdown orifice in service

b. Open the letdown heat exchanger temperature control valve farther

c. Close the letdown orifice valve

d. Bypass the demineralizers

ANSWER:c

103. While re-establishing letdown following a letdown isolation, the letdown relief valve RV-8117 lifts.

What indication of this relief valve lifting would be available in the control room?

a. Higher than normal letdown flow

b. Increased relief valve discharge temperature

c. Higher than normal temperature on the letdown heat exchanger outlet

d. Decreasing PRT pressure and level

ANSWER:b

104. When the plant is in Mode 5 in a solid reactor coolant system (RCS) condition, what controls RCS pressure?

a. Letdown pressure control valve, PCV-135

b. Charging flow control valve, FCV-128

c. Cycling the pressurizer heaters

d. Residual heat removal flow rate

ANSWER:a

105. The RHR and CCW system piping and heat exchangers are susceptible to water hammer. Which condition could lead to water hammer.

a. Formation of steam voids due insufficient CCW flow through the RHR heat exchanger when the RHR system temperature is high

b. Operating the RHR pump while taking suction from the containment sump with a level of 45%

c. Slowly increasing flow of CCW through the RHR heat exchanger when the RHR is in service

d. Operation of the RHR system in mode 6 with reactor cavity level > 108 feet

ANSWER:a

106. What must be done to reset the AMSAC TRIPPED alarm?

a. Alarm must be reset from the cable spreading room, AMSAC control console

b. Conditions for AMSAC trip must be cleared and then reset at VB-3

c. AMSAC trip will not reset until turbine power is >40%

d. Alarm will be reset when the 86G1 relay is reset

ANSWER:b

107. The 6000 gallon Ammonium Hydroxide storage tank for the Main Condensate chemical addition system was full and has just ruptured, spilling its entire contents.

What actions should be taken to prevent a loss of control in the control room?

a. Trip the reactor, trip the turbine, and secure the condensate system and condensate chemical addition system as soon as possible

b. Secure the condensate chemical addition system and ensure the turbine building exhaust fans are all running

c. Transfer control of the main control room to the hot shutdown panel and don SCBA's

d. Transfer control room ventilation to mode 3 and don SCBA's if respiratory distress is noticed

ANSWER:d

108. Upon receiving a PLANT VENT RADIATION alarm, PK11-25, you inform the CO that Waste Gas Decay Tank 1-1 has completely depressurized. The CO then directs you to initiate an SI test signal on POV1 and POV2 panels.

How does this action mitigate the effects of a Waste Gas Decay Tank rupture?

a. Realigns dampers to direct Waste Gas Decay Tank room exhaust to the Safeguards area exhaust plenum

b. Isolates the Waste Gas Decay Tank discharge valve to the plant vent stack

c. Isolates Aux Building Safeguards area dampers to the Unit vent and redirects Safeguards areas through the charcoal filter

d. Shuts down a single Aux Building supply fan and exhaust fan

ANSWER:c

109. A S/G BLOWDOWN HI RAD (PK11-17) just came into alarm. Select the valves that should reposition, due to this condition.

a. Blowdown valves outside containment, sample valves and blowdown diverted to EDR

b. Blowdown valves outside containment and sample valves

c. Blowdown valves outside & inside containment and sample valves

d. Blowdown valves inside containment and sample valves

110. Match how the loss of an INVERTER will affect the BISTABLE STATUS lights.

| | | |
|---|---|---|
| a. | IY-11 | ____ Channel I and II light off |
| b. | IY-11A | ____ Channel I bistables lights on |
| c. | IY-12 | ____ Channel II bistable lights on |
| d. | IY-13 | ____ Channel III bistable lights on |
| e. | IY-13A | ____ Channel III & IV lights off |
| f. | IY-14 | ____ Channel IV bistable lights on |

ANSWER:b,a,c,d,e,f

111. Match how the loss of an INVERTER will affect the BISTABLE STATUS lights.

| | | |
|---|---|---|
| a. | IY-21 | ____ Channel I and II light off |
| b. | IY-21A | ____ Channel I bistables lights on |
| c. | IY-22 | ____ Channel II bistable lights on |
| d. | IY-23 | ____ Channel III bistable lights on |
| e. | IY-23A | ____ Channel III & IV lights off |
| f. | IY-24 | ____ Channel IV bistable lights on |

ANSWER:b,a,c,d,e,f

112. On a complete loss of off site power and the DCPP Main Units, only part of the DCPP electrical subsystem would still have power. Circle the following plant systems that will have power.

a. Circulating Water Pumps (CWPs)

b. Safety Injection Pumps (SI)

c. Reactor Coolant Pumps (RCPs)

d. Positive Displacement Pump (PDP)

e. Reciprocating Air Compressors (JOYs)

f. Turbine Lube Oil pumping system

ANSWER:b, d, f

113. An RCP may be started _____ times within a two hour period of time. There needs to be a _____ minute wait between the starts.

a.

b.

ANSWER:three, thirty

114. List four of the five conditions that will cause an automatic closure of the letdown orifice stop valves.

a.

b.

c.

d.

ANSWER:<17% PZR lvl, No charging pp running (brkr), Hi temp lt/dn hx room, 459 & 460 not fully closed, Phase A

115. List the three modes of operation available for the Aux. Bldg. Vent System (ABVS) and specify which of the modes is NOT DIRECTLY selectable to the operator.

a.

b.

c.

i.

ANSWER:BLDG & SFGDS, BLDG only, SAFEGAURDS only-not directly selectable

116. State the conditions that will automatically start a Containment Fan Cooler Unit (CFCU), also in your answers specify the speed it will be running.

ANSWER: Xfer to SU - selected speed, xfer to DG - selected speed, SI - slow speed

117. While performing an STP on Control room ventilation, which simulates an SI signal, for Unit One the mode selector switches are both taken to the MODE 3 position. What would happen if the Unit One selector switches were then placed in the MODE 4 position.

ANSWER: The Unit One CRVS would shift to Mode 4 (instead of 3 as required) starting a second pressurization fan.

118. Concerning an overcurrent condition of an ASW pump: (Select the correct statement from below)

a. is identifiable by the flashing red light above the breaker control switch on VB1

b. is automatically reset upon start of the standby pump

c. can be bypassed at the HSD panel

d. can be reset at VB1 by taking the pump control switch to "STOP/RESET"

ANSWER:d

119. Assume that the Condenser and air removal system has just experienced a loss of circulating water flow to one half of the condenser. (Select the reason for isolating the associated air removal lines)

a. To prevent air in leakage through air removal lines

b. To prepare system for re-initiation of circulating water

c. Air removal from condenser no longer possible

d. To prevent overloading air ejector condensers

ANSWER:d

120. Select True or False for the following statements concerning alarms associated with Rod Position Indication System.

| | | | |
|---|---|---|---|
| a. | TRUE | FALSE | A Central Control card failure LED indicates that the DRPI system is indicating less than full accuracy |
| b. | TRUE | FALSE | Placing the DRPI accuracy mode switch in the A only or B only position will cause a NON-URGENT alarm signal |
| c. | TRUE | FALSE | A lit rod bottom LED without an associated GW light above the rod would be indicative of an URGENT failure for that rod |

ANSWER:False, True, False

121. What indications on the control room are available to determine if a SAFETY VALVE is open?

ANSWER:sonic detectors, individual temperature indications

122. What indications on the control room are available to determine if a PORV is open?

ANSWER:common tail pipe temperature, indicating light

123. 2-1 Diesel Generator is paralleled with Aux. power on its 4KV bus, with the control switch in MANUAL. You notice that the diesel is putting 300 Vars out and 1.7 Megawatts. You need to reduce Vars to 200 Vars out, this is accomplished by:

a. going to RAISE on the Voltage adjust switch

b. going to LOWER on the Voltage adjust switch

c. going to RAISE on the Governor Speed adjust switch

d. going to LOWER on the Governor Speed adjust switch

ANSWER:b

124. 2-1 Diesel Generator is paralleled with Aux. power on its 4KV bus. The diesel is putting out 2.1 Megawatts. You need to reduce Megawatts to 1.9, this is accomplished by:

a. going to RAISE on the Voltage adjust switch

b. going to LOWER on the Voltage adjust switch

c. going to RAISE on the Governor Speed adjust switch

d. going to LOWER on the Governor Speed adjust switch

ANSWER:d

125. Following a loss of all offsite power, diesel Generator 2-1 has started and is carrying minimal loads on its associated bus. No changes have been made to the 4KV system. The diesel control switch is still in AUTO. If you were to go to the control panel and take the governor speed control switch to RAISE, which of the following would occur?

a. Megawatts and frequency would change

b. Voltage would change

c. Only amperage would change

d. There would be no change

ANSWER:d