#2275

PACIFIC GAS AND ELECTRIC COMPANY

PG&E 77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

August 11, 1977

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

Superseded by LA 79-10

Attention: Mr. Dean Cofer, Business Manager

Gentlemen:

This letter cancels and supersedes all previous material submitted to you on the same subject.

Expansion of the Geysers Power Plant facilities and the increased need for closer monitoring and supervision at the facility require additions to the classifications available at the facility. Accordingly, pursuant to Section 204.4 of the Physical Agreement, Company proposes to establish the following classifications, job descriptions and rates of pay:

1725 Senior Power Plant Operator (The Geysers)

A shift employee who is a Working Foreman and who, during his shift, is in charge of the Control Center. His duties include the operation of plant equipment and switchgear which have controls in the Control Center. He operates and coordinates the activities of other operators in the operation of all equipment in the plant together with their related controls either directly or indirectly. He assists in the training of other employees in the proper performance of their duties. He shall have the personal qualifications of leadership and supervisory ability and a thorough knowledge of operating principles, equipment operating procedures, system orders, clearance procedures and necessary transactions with the System Dispatcher and the steam supplier's representatives. In conjunction with his operating duties, he directs and assists in station cleaning.

Next Lower Classification	Same or Higher Classification
1716 Power Plant Operator (The Geysers)	1725 Senior Power Plant Operator (The Geysers)

Wage Rate: $398.15

1718 Assistant Power Plant Operator (The Geysers)

A shift employee who assists the Power Plant Operator and performs operating and minor maintenance duties as required. His operating duties, under the direct supervision of the Power Plant Operator or Senior Power Plant Operator include the

operation, starting up and shutting down of main units and other plant equipment. His duties include without direct supervision necessary switching, routine trip and annunciator tests, routine chemical testing, plant housekeeping, taking readings, making log entries and operating auxiliary power plant equipment.

Beginner's Classification

Notes: 1.) A prebid within a division or an application for transfer between divisions will be considered as a bona fide bid from the Auxiliary Operator classification or a higher classification in the Line of Progression to Assistant Power Plant Operator. Under other circumstances, the Assistant Power Plant Operator classification will be considered a beginner's classification and will not be posted for bid.

2.) The various duties of the Assistant Power Plant Operator classification will normally be assigned to individual employees in order of progressive complexity; that is, the employee will be assigned more complex duties as his experience and knowledge progress. Such assignments will be made on a continuing basis only after the employee has been trained and instructed in the performance of each duty and has demonstrated his understanding of and ability to perform such duty satisfactorily.

Wage Rate:	Start	- $242.60
	End 6 mos.	- 249.55
	End 1 yr.	- 262.15
	End 18 mos.	- 274.00
	End 2 yrs.	- 285.00
	End 30 mos.	- 297.60
	End 3 yrs.	- 313.15
	End 42 mos.	- 333.05

In conjunction with the establishment of the above classifications, Company proposes, pursuant to Section 204.4 of the Physical Agreement, to revise the wage progression of the (1716) Power Plant Operator (The Geysers) classification by establishing the following wage progression for this classification:

Start	- $366.65 per week
End 6 mos.	- 375.65 per week

Company further proposes to revise Exhibit VI-B "Division Steam Generation Departments" including the letter agreement dated June 30, 1967, in the following listed manner:

1. Revise the line of progression to (1716) Power Plant Operator (The Geysers) as follows:

Next Lower Classification	Same or Higher Classifications
1718 Assistant Power Plant Operator (The Geysers)	1725 Senior Power Plant Operator (The Geysers) 1580 Senior Control Operator (Group I) 1585 Control Operator (Group I) 1586 Control Operator (Avon, Martinez and Oleum) 1715 Power Plant Operator (Kern) 1716 Power Plant Operator (The Geysers) 0513 Watch Engineer (Kern)

2. Revise the line of progressions of (1586) Control Operator (Avon, Martinez and Oleum), (1592) Assistant Control Operator (Avon, Martinez and Oleum), (1589) Assistant Control Operator (Group I), and (1565) Senior Auxiliary Operator (Potrero) to show (1725) Senior Power Plant Operator (The Geysers) and (1716) Power Plant Operator (The Geysers) as same or higher.

3. Revise the (1715) Power Plant Operator (Kern) line of progression to show the (1716) Power Plant Operator (The Geysers) as next lower and the (1725) Senior Power Plant Operator (The Geysers) as same or higher.

4. Additions - Letter of Agreement-June 30, 1967

Propose the adoption of the attached examinations for promotion to each of the following classifications or progressive wage steps:

1. Senior Power Plant Operator (The Geysers).
2. Power Plant Operator (The Geysers).
3. Assistant Power Plant Operator (The Geysers) for progression to the 30-month step.
4. Assistant Power Plant Operator (The Geysers) for progression to the 18-month step.
5. Assistant Power Plant Operator (The Geysers) for progression to the 12-month step.

Examination Procedure applicable to candidates for promotion above Auxiliary Operator - Section A of 6/30/67 letter of agreement shall apply to the classifications above Assistant Power Plant Operator (The Geysers).

Examination Procedure applicable to Auxiliary Operators and Assistant Power Plant Operators - Section B of 6/30/67 letter of agreement shall apply to the progressive wage steps of the Assistant Power Plant Operator (The Geysers).

5. The Assistant Power Plant Operator (The Geysers) shall participate in and complete the Operator Training Program as presently administered at other Power Plants.

If you are in accord with the foregoing and its attachments 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 J. W. Burbright
Manager of Industrial Relations

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

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

Sept. 27, 1977

By Dean Cofer
Business Manager

NAME _____

DATE _____

True-False
Multiple Choice
Essay

Total

EXAMINATION TO QUALIFY FOR

SENIOR POWER PLANT OPERATOR

GEYSERS POWER PLANT

QUALIFYING EXAMINATION NO. 1

1975

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

True-False
(Value 1½ points each, total 30 points)

1. Opening the D.C. power to the vacuum breakers on Units No. 5 through No. 10 will open the vacuum breakers. _____

2. It is permissible to rack a breaker tagged with "Man-on-Line Tags" into the test position, provided permission is granted by the holder of the clearance. _____

3. Increasing a Geysers unit load too rapidly could result in steam supply pressure decay requiring up to several days load curtailment while steam well pressure recovered. _____

4. When securing the domestic water supply, the fire system does not have to be considered as long as the fire pumps remain in "Auto". _____

5. The lube oil centrifuges on Units 5 through 11 should be run continually except for cleaning and maintenance work. _____

6. The speed changer (synchronizing device) on General Electric & Toshiba units repositions the rotating pilot when changing load. _____

7. If the D.C. switch is opened on the D.C. control circuit for a 480 volt contactor (ACB) both remote tripping and over-current protection will be lost. _____

8. If one of the Condensate pump motor leads goes to ground, the breaker will trip on overcurrent. _____

9. Lower than normal voltage on the auxiliary equipment bus will cause this equipment to draw higher than normal current (amps). _____

10. On electric motors of 50 h.p. or more it is OK to have 6 starts in 24 hours as long as there are no more than 3 starts in any 30 min. period. _____

11. The cooling towers on units No. 1 through No. 4 are of the induced draft cross flow type. _____

12. The water over-flow from all the cooling towers basins is injected into the ground by gravity feed. _____

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

13. The steam supplier is to be notified of all unit trips, day or night. _____

14. On automatic voltage regulation a load increase requires that the regulator "Buck" the exciter to maintain normal voltage (no change in system conditions). _____

15. The time element of an overcurrent relay for a large motor protects the load center from fault currents. _____

16. Of the various relays provided to protect the generator, the neutral overcurrent relay is the first to operate in case of a single phase to ground fault in the generator. _____

17. On units provided with a field flashing device the initial field polarity current is obtained from the generator bushing potentials. _____

18. On Units No. 1 through No. 4 it is sometimes required to throttle the inter condenser steam jet steam supply to assist control of turbine speed prior to paralleling. _____

19. The correct procedure in grounding or ungrounding transmission PCB bushing potential devices requires that the PCB disconnect switches be opened first. _____

20. The vapor extractor on the lube oil reservoir removes water vapor from the oil system. _____

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

Multiple Choice
(Value 1½ points each, total 30 points)

1. In the event of fire, you should first: _____.
   a) Start the fire pump.
   b) Trip the unit.
   c) Open a fire hose station supply valve thereby starting a fire pump.
   d) Start the emergency code and get help.

2. With No. 7 unit at full load and the cooling tower starts to ice up de-icing would be accomplished by: _____.
   a) Lowering load to a point where the ice starts melting.
   b) Use the cold weather start-up valve to by-pass the distribution section of the cooling tower.
   c) Secure the cooling tower fans one at a time.
   d) None of the above.

3. When operating on governor control a unit not connected to any other generator will: _____.
   a) Hold constant speed regardless of load changes.
   b) Vary speed with every change in load.
   c) Will not change load without operator action.
   d) Will not change speed without operator action.

4. Post-start-up planning includes an actual overspeed trip. Before running the trip test it is necessary to: _____.
   a) Run the test with the unit off the line before paralleling.
   b) Parallel and hold full load for four hours prior to the test.
   c) Parallel and hold at least 10% of load for four hours prior to the test.
   d) Test operate the trip device before running the actual overspeed trip.

5. Units No. 5 through No. 11 Emergency Seal Oil Pump, when in operation, receives oil supply from: _____.
   a) Seal Oil Vaccum Tank.
   b) Bearing oil header.
   c) Vacuum tank and float trap.
   d) Air detraining section and float trap.

6. Auxiliary Cooling Water Pumps on Units No. 5 through No. 10 will be tripped out of service by direct action of: _____.
   a) Low condenser level.
   b) High condenser level.
   c) Low condenser vacuum.
   d) Low Auxiliary Cooling Water Discharge Pressure.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

7. With Unit at rated speed, one condensate pump in service, and in cold weather startup mode of operation on Units 7, 8, 9 or 10 requirements are: _____.
   a) Cold weather startup system to be out of service prior to unit parallel.
   b) Two condensate pumps in service prior to unit parallel.
   c) Out of service condensate pump trip cut feature open prior to unit parallel.
   d) All cooling tower fans out of service prior to unit parallel.

8. Turbine Exhaust Hood Spray Pumps on Units No. 5 through No. 11 start automatically on: _____.
   a) High condensate temperature.
   b) Low condenser vacuum.
   c) High exhaust hood temperature.
   d) Low load position of turbine control valves.

9. During an off peak period, system voltage increases to the point where "bucking" voltage any further with the generator is limited. The most likely limit to be controlling will be: _____.
   a) Low generator voltage.
   b) High armature current.
   c) High end turn temperature.
   d) Generator reactive volt ampere capability.

10. The minimum excitation limit device is: _____.
   a) A limit switch on the field rheostat.
   b) A limit switch on the voltage adjuster.
   c) Set at the minimum field current for a new load.
   d) Set to prevent armature end iron heating.

11. The first line of defense against turbine overspeed is/are the: _____.
   a) Unit load controller.
   b) Emergency governor.
   c) Steam admission control valves.
   d) Emergency stop valves.

12. Excessive vibrations during a unit start up could be caused by: _____.
   a) Excess exhaust hood spray.
   b) High field current.
   c) High windage.
   d) Low bearing oil temperature.

13. It is permissable to open individual trip cut outs (T.C.O's) when: _____.
   a) Performing electrical trip tests.
   b) Changing 480 volt station service bus feeder sources.
   c) Washing station batteries.
   d) All of the above.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

14. On Units No. 5 thru No. 11 water seal is maintained between the inter condenser and main condenser by: _____.
    a) Level control valve.
    b) Loop seal in piping.
    c) Restricting orifice.
    d) A check valve.

15. If after separating a unit from the system on a scheduled shutdown, the turning gear motor will not start, the best operation would be to: _____.
    a) Break vacuum and let the unit come to rest with the auxiliary oil pump remaining in service until the turning gear can be started.
    b) Relatch turbine and maintain approximately 900 rpm until the turning gear can be started.
    c) Maintain vacuum but let the unit come to rest with the auxiliary oil pump remaining in service until the turning gear can be started.
    d) Allow the unit to come to rest and rotate 180° every ½ hour with the manual crank.

16. One phase to ground on the high side of the main transformer bank will result in: _____.
    a) Generator elevated neutral overvoltage relay operation.
    b) Generator differential relay operation.
    c) Unit overall differential relay operation.
    d) Generator elevated neutral overcurrent relay operation.

17. With unit load unchanged the power factor meter begins to advance in the lead direction it is because the system is: _____.
    a) Decreasing load.
    b) Increasing load.
    c) Increasing frequency.
    d) Decreasing voltage.

18. If injection of cooling tower overflow is lost, unit load must be reduced to approximately _____ to prevent cooling tower basin or sedementation basin spilling to the surrounding area.
    a) 5% of full load.
    b) 25% of full load.
    c) 15% of full load.
    d) 40% of full load.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

19. Normal rate of load increase on Geysers Units is: _____.
    a) 1 MW per minute until steam pressure starts to decay.
    b) As fast as pressure permits.
    c) 1 MW every 2 minutes after steam pressure starts to decay.
    d) 5 MW per minute.
    e) Both a and c are correct.

20. If main steam temperature is saturated for the pressure and: _____.
    a) If no vibration, hold present load.
    b) Notify steam supplier and hold present load.
    c) Nothing to worry about. Units are built to operate on saturated steam.
    d) Reduce load and if still saturated and shows no sign of returning to superheated condition, remove unit from service.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

Essay
(Value 4 points each, total 40 points)

1. What is the function of each of the following turbine controls?
   a) Speed governor.
   b) Load limit.
   c) Emergency Governor.
   d) Back-up overspeed.
   e) Stop valve By-pass control.
   f) High speed stop.
   g) Low speed stop.
   h) Thrust failure relay.

2. Explain in brief but full detail how to perform overspeed trip tests on the following units; assume the unit is at full load:
   a) No. 5 Unit.
   b) No. 11 Unit.
   c) No. 3 Unit.

3. Explain how you would prepare a) a hydrogen cooled generator and b) an air cooled generator for men to remove a generator end bell.

4. Explain in a step by step sequence a typical ideal turbine startup procedure at the Geysers. List basic steps briefly referring to a specific unit where needed. Steam is available to the closed main steam stop valve.

5. Explain the basic steps necessary for preparing and clearing the following equipment at the Geysers for men to work on the equipment.
   a) Main steam motor operated stop valve.
   b) Cooling tower fan motor.

6. What would the consequences be if power was lost to the steam supplier's equipment? What would you do about this?
   At: a) No. 9 and 10 Units.
   b) No. 1 & 2 Units.
   c) No. 5 & 6 Units.

7. Explain how you would change the CO_2 pilot bottles on Nos. 2 & 4 unit generator fire protection system and Units 3 & 4 lube oil reservoir fire protection systems.

8. List the steps necessary to clear electrically for men to report on:
   (See attached sheets)
   a) No. 11 Unit Generator.
   b) No. 5 Unit Generator.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

9. What is the effect on the generator of over excitation? Under excitation? These conditions can develop with no change in exciter output. Explain.

10. Describe the procedure to restore power to No. 7 and No. 8 Units following a unit lockout relay operation. (Device 386).

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPERATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-8-63

1975

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPERATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-9-62

1975

NAME _____

DATE _____

True-False
Multiple Choice
Essay

Total

EXAMINATION TO QUALIFY FOR

SENIOR POWER PLANT OPERATOR

GEYSERS POWER PLANT

QUALIFYING EXAMINATION NO. 2

1975

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

True-False
(Value 1½ points each, total 30 points)

1. Opening the D.C. power to the vacuum breakers on Units No. 5 through No. 10 will open the vacuum breakers. _____

2. 60 KV and 115 KV line switches are under the jurisdiction of the power plant and can be operated by the operator when needed. _____

3. On a hydrogen cooled generator the unit may be operated on turning gear with the seal oil system shut down as long as there is no hydrogen in the generator. _____

4. The unit 480 volt buses, at The Geysers, are protected by bus differential relays. _____

5. The generator negative sequence relay protects the generator against phase unbalance. _____

6. It is possible to exceed the generator KVA rating with half the megawatt load on the unit. _____

7. When one of four hydrogen coolers is removed from service, the generator capability is reduced by 25%. _____

8. On Units No. 5 through No. 11 a high water level in the main condenser will start the standby auxiliary cooling water pump, providing the standby pump selector is in the auto start position. _____

9. On units provided with a field flashing device the initial field polarity current is obtained from the 125 volt D.C. system. _____

10. A continuous vapor discharge from the after condenser off gas vent pipe indicates the condenser is operating near maximum peak efficiency. _____

11. Generally 480 volt motor starter or contactor control circuits are DC while 480 volt ACB's have AC control circuits. _____

12. Where provided the oil filled disconnect on the high side of unit auxiliary transformers may be used to energize or deenergize the transformer provided the low side breaker is open. _____

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

13. The maximum allowable oil temperature leaving the turbine bearings is 175°F. (3600 rpm units) _____

14. A ground on one phase lead to a cooling tower fan motor will result in "480 volt Bus Ground" annunciation and indication on ground detector lights. _____

15. With both No. 7 and No. 8 units in service and paralleled to the system only one elevated neutral ground switch will be closed. _____

16. The steam supplier is to be notified of all unit trips on an around the clock basis. _____

17. Cooling tower or sedimentation basin overflow will only be tolerated, without reducing unit load, during periods of heavy rainfall. _____

18. Excessive H_2 leakage (200 cu. ft. per day or more) requires a Unit shutdown and purge if leakage problem cannot be corrected. _____

19. A work permit is required before a cooling tower fan gear box may be inspected _____

20. A unit may be loaded as rapidly as steam is available provided the pressure does not drop below 100 psig ahead of the throttle. _____

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

Multiple Choice
(Value 1½ points each, total 30 points)

1. If the back pressure of a turbine is 1.0 inches of Hg and the barometer reads 28.98 inches of Hg the vacuum will be: _____.
   a) 29.98
   b) 27.98
   c) 29.0
   d) 28.98

2. Units No. 5 through No. 11 low condenser level: _____.
   a) Trips open condenser vacuum breakers.
   b) Trips open auxiliary cooling water pump breakers.
   c) Trips turbine lockout (device 286.)
   d) Trips condensate pumps.

3. The primary sensing device for generator differential relay protection utilizes: _____.
   a) Current transformers.
   b) Potential transformers.
   c) Both A and B.
   d) None of these.

4. If the breaker on the power source to a load center tripped and no trouble could be found, you should restore power by:_____.
   a) Reclosing the source breaker.
   b) Cut out overcurrent relays and then reenergize with source breaker.
   c) Strip the load center, reenergize bus and then close each breaker individually.
   d) Reenergize with a bus tie breaker.

5. General Electric and Toshiba turbine speed can be increased or decreased, when not paralleled to the system by:_____ with the synchronizing device (governor).
   a) Increasing the governor spring tension.
   b) Repositioning the rotating pilot valve.
   c) Repositioning the ported sleeve on the rotating pilot valve assembly.
   d) Increasing the tension in the speed changer spring.

6. If a hydrogen mixture of 4% or greater is detected on the generator bearing oil drain lines or on the exhaust from the vapor extractor: _____.
   a) The inlet valve of the vapor extractor should be open more.
   b) The seal oil supply pressure should be increased.
   c) The unit should be shut down and purged of hydrogen.
   d) Do nothing unless the condition gets worse.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

7. Air operated oil circuit breakers _____ if air pressure is too low.
   a) Cannot be closed.
   b) Cannot be opened.
   c) Cannot be opened or closed.
   d) Can be opened by relay action only.

8. The maximum exposure H_2S for 8 hour period is: _____.
   a) 5 PPM/hr.
   b) 40 PPM/hr.
   c) 20 PPM/hr.
   d) 10 PPM/hr.

9. In a two unit plant, Units No. 5 through No. 10, a ruptured instrument air line will : _____.
   a) Shut down both units on low air pressure.
   b) Trip air supply to affected unit and save the other unit.
   c) Condenser level controls would lock in operating position and save affected unit.
   d) Close air supply to shop air.

10. If cooling tower overflow injection is lost by the steam supplier: _____.
   a) Unit(s) load must be reduced to just balance cooling tower evaporation.
   b) Unit(s) must be removed from service.
   c) Cooling tower fans secured to minimize evaporation.
   d) Secure cooling tower overflow and allow basin to fill with overflow to yard drain system.

11. The contact condenser air removal system consists of: _____.
   a) Two secondary and one primary jet.
   b) Two secondary and two primary jets.
   c) One secondary and two primary jets.
   d) One large secondary, one small primary and one large primary jet.

12. The steam supplier's cooling tower overflow injection pump motors for No. 1 and No. 2 units receives power from: _____.
   a) Plant 480 volt bus.
   b) 12 KV distribution with 12 KV/480 volt stepdown transformer.
   c) No. 1 and No. 2 unit 60 kv bus with 60 kv/480 volt stepdown transformer.
   d) No. 1 Unit 11.5 kv or No. 2 Unit 13.8 kv bus with 13.8-11.5kv/480 volt stepdown transformer.

13. Units No. 5 and 6, No. 7 and 8, No. 9 and 10 have: _____.
   a) Solidly connected elevated neutral transformers for each unit.
   b) One elevated neutral transformer with solid connections for each pair of units.
   c) One elevated neutral transformer for each unit with motor operated switches to isolate the unit from its elevated neutral transformer.
   d) One elevated neutral transformer for each pair of units with motor operated switches to isolate the unit from the common elevated neutral transformer.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

14. In order to close the 13.8 kv OCB on No. 5 through No. 10 units, the following basic conditions must be set up first: _____.
    a) The 52 device must be closed first to energize the AC control circuit.
    b) The AC control circuit must be closed and air compressor operating.
    c) The DC control circuit must be closed and air pressure normal.
    d) Both the AC control and DC closing solenoid circuits must be closed.

15. Closing the 480 volt breaker (52 device) on No. 1 or 2 Unit Cooling tower supply pump motors or No. 5 through No. 10 Unit Auxiliary cooling water pump motors will: _____
    a) Start the motor.
    b) Energize the AC control circuit.
    c) Energize the AC control circuit and start the motor.
    d) Energize the DC control circuit.

16. The generator capability curve is used by the operator to determine the limit of adjustment when: _____
    a) Adjusting voltage at unity power factor.
    b) Adjusting voltage at any load.
    c) Increasing load with leading or lagging power factor.
    d) Either b or c.

17. In order to close a 480 volt contactor (42 device) on a feeder circuit the following basic conditions must be set up first: _____.
    a) The 480 volt breaker (52 device) and DC control circuit must be closed.
    b) The 480 volt breaker (52 device) and AC control circuit must be closed.
    c) The 480 volt breaker (52 device) must be closed.
    d) Turn the control switch to "Close".

18. The 480 Volt Switchgear lockout relay (86M) on units No. 3 through No. 11 is picked up by: _____
    a) Turbine lockout (286), Generator lockout (286-F) or Unit lockout (386).
    b) Turbine lockout (286) or generator lockout (286-F) if the generator breaker is closed.
    c) Turbine lockout (286) or generator lockout (286-F) if the turbine stop valves and check valves are closed.
    d) Unit lockout (386) only, by direct action.

19. On Units No. 5 through No. 11 the turbine lockout relay (device 286) is the first relay picked up for unit tripping on: _____.
    a) Generator differential or battery undervoltage.
    b) Auxiliary transformer overcurrent.
    c) Cooling tower basin high level or condensate pump pit high level.
    d) 480 volt bus overcurrent or main transformer overcurrent.

20. The hydrogen cooled generators of units No. 5 through No. 11 will be automatically purged of hydrogen when the H_2 gas control switch is in the "Auto" position and: _____.
    a) The generator OCB is open with low gas purity.
    b) The generator OCB is closed with low gas purity.
    c) Battery undervoltage or low gas purity.
    d) Low H_2 seal oil differential or low gas pressure in the generator.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

Essay
(Value 4 points each, total 40 points)

1. Explain how air leakage is prevented from entering the condenser on Units No. 5 through No. 11 in the following cases:
   a) Water from the cooling tower to the cooling tower.
   b) Condensate pump seals.
   c) Inter condenser water to the condenser.
   d) After condenser water to the condenser.
   e) Hydrogen and lube oil cooler cooling water return to the condenser.

2. In relation to power supplied to the steam supplier for each unit give the following:
   a) Source of power and voltage level.
   b) Use by steam supplier.
   c) Effect on units of power loss to the steam supplier.
   d) Method of restoring power to the steam supplier if lost.

3. How are relay operations on the transmission lines handled? Explain the procedure for reporting the relay action and steps taken to restore power.

4. List the steps to clear electrically for men to report on: (see attached sheets)
   a) No. 2 Unit Generator.
   b) No. 9 Unit Generator.
   c) No. 11 Unit Generator.

5. Explain and list the steps to bypass and clear the 21 kv line regulator.

6. How would you handle a bomb threat phone call?

7. How would you prepare No. 5 unit for service with only one condensate pump available?

8. Explain sequence of events if:
   a) An instrument air line ruptures on Units No. 5 through No. 10.
   b) If a service air line ruptures.

9. If all AC power is lost on any of the H_2 cooled units:
   a) What action must be taken?
   b) How long can H_2 be left in the generator before purging?

10. Assume Unit No. 11 is at full load and 11-3 condensate pump is to be removed from service for pump repairs: Explain procedure to remove this pump from service, clear and tag to the electrical and mechanical departments.

SHEET NO._____

SWITCHING TAG

P G AND E

SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPERATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-9-63

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

62-4116-9-63

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

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_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

62-4118-9-63

NAME _____

DATE _____

True-False
Multiple Choice
Essay

_____

Total

EXAMINATION TO QUALIFY FOR

SENIOR POWER PLANT OPERATOR

GEYSERS POWER PLANT

QUALIFYING EXAMINATION NO. 3

1975

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

True-False
(Value 1½ points each, total 30 points)

1. It is permissible to have both 480 volt station service feeder breakers closed at the same time, when transferring station service power providing the necessary T.C.O.'s are open. _____

2. Loss of instrument air will result in the H_2 and CO_2 automatic purge valves going into purge position. _____

3. Generally 480 volt motor starter or contactor control circuits are AC while 480 volt ACB's have DC control circuits. _____

4. As long as bearing oil is flowing through the turbine-generator bearings it is permissible to operate the unit on turning gear when the generator is purged of hydrogen and the seal oil supply secured. _____

5. The cooling towers on Units No. 5 through 11 are of the induced draft counter flow type. _____

6. Unit auxiliary transformers must be deenergized before opening the oil filled disconnect on the high side of the transformer. _____

7. With No. 5 unit paralleled to the system and No. 6 unit at synchronous speed with field on, and just prior to paralleling to system both unit elevated neutral ground switches will be closed. _____

8. With a generator paralleled to the system and on manual voltage control you should operate with a lagging power factor. _____

9. On units provided with a field flashing device the initial field polarity current is obtained from the 125 volt D.C. system. _____

10. On Units No. 5 through No. 10 a complete break in the instrument air supply header behind one of the turbine main control panels will cause both units to trip on "Low Control Air Header Pressure." _____

11. Air operated oil circuit breakers cannot be opened if air pressure is too low. _____

12. The speed changer (synchronizing device) on General Electric and Toshiba units repositions the ported sleeve of the rotating pilot assembly when changing load. _____

13. The time element of an overcurrent relay protects the motor from mechanical overloads. _____

14. The generator overcurrent backup relay protects the generator from line faults that are not cleared promptly or faults on the generator side of the line circuit breaker. _____

15. The steam supplier uses pumps to inject the cooling tower overflow from units No. 1 and 2 and No. 9 and 10 into reinjection wells. _____

16. Steam admission control valves provide the first line of defense against overspeed. _____

17. Maximum allowable hydrogen sulfide limits for mean to work in the area is 125 ppm for eight hours. _____

18. The field of No. 1 Unit is shorted across the field discharge resistor through contacts that close before the main field breaker contacts open. _____

19. The elevated neutral transformers on Units No. 1, 2, 3, 4 and 11 are not provided with switches to open the elevated neutral circuit. _____

20. The tail pipe on a barometric condensers must discharge below the hotwell water level or unit vacuum will be lost. _____

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

Multiple Choice
(Value 1½ points each, total 30 points)

1. Units No. 2, 3, and 4, Elliott; the speed changer will raise the unit load when parallel to the system by: _____.
   a) Repositioning the ported sleeve on the rotating pilot valve assembly.
   b) Increasing the tension in the speed changer spring.
   c) Repositioning the pilot valve assembly.
   d) Increasing the spring tension on the emergency governor.

2. If, after separating a unit from the system, the auxiliary oil pumps will not start: _____.
   a) Reset turbine and hold at approximately 900 RPM while investigating trouble.
   b) Reset turbine, return to normal speed and reparallel.
   c) Put unit on turning gear but don't break vacuum.
   d) Shut the unit down in normal manner.

3. Voltage regulators are removed from service before a generator is separated to protect the:_____.
   a) Exciter.
   b) Generator.
   c) Regulator.
   d) Transformer.

4. Generators are operated at leading power factors: _____.
   a) To produce inductive vars from voltage control.
   b) To the maximum allowable load.
   c) To correct for low system voltage.
   d) To correct for high system voltage.

5. The vacuum of a condenser is 28-inches of Hg and the barometer is 29.65 inches of Hg the back pressure is: _____.
   a) 2.5-inches of Hg.
   b) 1.65-inches of Hg.
   c) 1.85 inches of Hg.
   d) 2.05-inches of Hg.

6. If a hydrogen mixture of 4% or greater is detected on the generator bearing oil drain lines or in the exhaust from the vapor extractor: _____.
   a) The unit should be shut down and purged of hydrogen.
   b) The seal oil supply pressure should be increased.
   c) The hydrogen pressure should be reduced.
   d) The inlet valve of the vapor extractor should be open more.

7. On an ungrounded three phase 480 volt system, a ground on one phase will: _____.
   a) Cause that circuit to be tripped.
   b) Cause ground indicating light on that bus phase to burn brightly.
   c) Cause ground indicating light on that bus phase to burn dimly or go out.
   d) None of the above.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

8. If excessive use of service air is used on No. 5 through No. 11 units: _____.
   a) It could trip the Units on low air pressure.
   b) Service air supply is shut off by pressure control valve on decreasing pressure at 80 psig.
   c) The standby compressor will come in automatically on the master loader.
   d) Both "B" and "C" are correct.

9. The power supply for the steam supplier's cooling tower injection pumps and air compressor at Unit No. 11 is from: _____.
   a) 12 kv distribution with 12 kv/480 V. transformers and watthour meter on 480 volt side.
   b) 22 kv from No. 9 and 10 units with 22 kv/480 volt stepdown transformers and metered on 480 volt side.
   c) No. 11 unit 480 volt bus with watthour meter on the feeder.
   d) No. 11 unit 480 volt bus without meters.

10. No. 1, 2, 3, 4 and 11 units have: _____.
   a) Individual solidly connected elevated neutral transformers on each.
   b) Except for No. 11 unit, one solidly connected elevated neutral transformer for each pair of units.
   c) Except for No. 11 unit, one elevated neutral transformer for each pair of units with individual switches to isolate the unit from the elevated neutral transformer.
   d) Elevated neutral transformers for each unit with motor operated isolation switches in the circuit.

11. Units No. 5 through No. 11 have ampere squared hour meters and voltage squared hour meters which measure: _____.
   a) Gross station generation.
   b) Main transformer bank losses.
   c) Net station generation.
   d) Auxiliary transformer bank losses.

12. Closing the 480 volt breaker (52 device) on No. 3 unit cooling tower supply pump motor or No. 5 through 11 condensate pump motor will: _____.
   a) Start the motor.
   b) Energize the AC control circuit.
   c) Start the motor and energize the AC control circuit.
   d) Energize the DC control circuit.

13. The generator capability curve shows graphically the limits that apply when a generator is paralleled to the system, the parameters used on the curve are: _____.
   a) Volts, amps. and power factor.
   b) Megawatts, Megavars leading and for power factor.
   c) Megawatts, Megavars lagging and power factor.
   d) Megawatts, Megavars leading and lagging and power factor.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

14. No. 1 through No. 4 barometer condensers are so designed that: _____.
    a) The steam and water enter at the top with water sprays condensing the steam.
    b) The steam enters at the bottom and water at the top with steam condensing as water falls over concentric baffles.
    c) The steam enters at the top and water is sprayed from the bottom to condense the steam.
    d) The steam and water enter at the top with condensation occurring as the water falls over concentric baffles.

15. In order to close the 13.8 kv OCB on No. 5 ghrough No. 10 units, the following basic conditions must be set up first: _____.
    a) The 52 device must be closed first to energize the AC control circuit.
    b) The AC control circuit must be closed and air compressor operating.
    c) The DC control circuit must be closed and air pressure normal.
    d) Both the DC control and DC closing solenoid circuits must be closed.

16. The unit lockout relay (device 386) is the first relay picked up for unit tripping on: _____.
    a) Auxiliary transformer overcurrent or battery undervoltage.
    b) Generator neutral overvoltage or generator differential.
    c) Generator overcurrent back-up or generator loss of field.
    d) Generator negative sequence or generator overcurrent backup.

17. Low H_2 gas purity in the generator of Units No. 5 through No. 11 will result in an automatic purge if: _____.
    a) The H_2 gas control switch is in "Auto".
    b) The turbine lockout relay (device 286) has been picked up.
    c) The generator lockout relay (device 286-F) has been picked up.
    d) The H_2 gas control switch is in "Auto" and generator OCB is open.

18. On Units No. 1 and 2 and No. 5 through 11 opening the field breaker: _____.
    a) Opens two contacts separating the excitation source from the generator field.
    b) Closes a contact placing a resistor across the generator field before separating the field from its external source.
    c) Closes a contact shorting the field after separating the field from its external source.
    d) Opens the automatic voltage regulating circuit only as there is no "field breaker".

19. If a unit trip occurs and the auxiliary steam trip check valve fails to close, the operator, when arriving at the unit should: _____.
    a) Close the main steam stop valve.
    b) Close the auxiliary steam pressure control valve.
    c) Close the stop valves on the primary and secondary jets steam supply or manually trip the auxiliary steam trip check valve.
    d) Close the steam seal regulator supply stop valve.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

20. The elevated neutral ground switch on No. 5 through 10 units must be: _____.
    a) Closed just prior to paralleling the unit to the system.
    b) Opened as soon as the unit has been paralleled to the system.
    c) Opened before closing the generator field breaker.
    d) Opened just prior to paralleling the unit to the system.

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

Essay
(Value 4 points each, total 40 points)

1. Units 9 and 10 have tripped by the 386 relay device (all other units are in service). What major equipment is affected? What action should be taken until power is restored?

2. It is possible to run the blowdown pumps (Unit No. 11 H_2S abatement system) with the sand filters valved out of service? Explain.

3. What is the function of each of the following turbine controls?
   a) Speed governor.
   b) Emergency Governor.
   c) Back-up overspeed.
   d) Load controller.
   e) Stop valve by-pass control.
   f) High speed stop.
   g) Low speed stop.
   h) Thrust failure relay.

4. On Unit 5 what instruments would you check to determine the cause of high stator and cold gas temperature. What corrective action should be taken?

5. How is water level controlled in the condensers on Units 5-11 during (1) start-up? (2) normal running?

6. Unit 5 is in service and No. 1 lube oil cooler is dirty. Explain how to change over to the standby cooler.

7. List the steps to prepare for service electrically after men have reported clear: (see attached sheet)
   a) No. 3 Unit Generator.
   b) No. 9 Unit Generator.
   c) No. 11 Unit Generator.
   d) 21 kv line regulator and return to normal operation.

8. How is the barometric seal maintained on:
   a) No. 1 to 4 unit barometric condensers?
   b) No. 5 through 11 units secondary jet after condenser drain?
   c) No. 5 through 11 units primary jet after condenser drain?
   d) No. 5 through 11 units hydrogen cooler and lube oil cooler cooling water to the condenser?
   e) No. 5 through 11 units condensate from cooling tower back to cooling tower?

Senior Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

9. Give the procedure to follow in making a 480 V. bus transfer at Units 5 and 6. What equipment is affected during transfer and how is this equipment restored to normal?

10. There is a unit overall Differential relay (387) trip at Units 7 and 8. What equipment is lost and what steps must be taken to restore unit or units to normal?

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

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62-4118-9-63

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

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62-4118-9-63

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SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

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_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-8-63

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-9-63

NAME _____

DATE _____

True-False
Multiple Choice
Essay _____

Total

EXAMINATION TO QUALIFY FOR

POWER PLANT OPERATOR

GEYSERS POWER PLANT

QUALIFYING EXAMINATION NO. 1

1975

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

True-False
(Value 1½ points each, total 30 points)

1. The 21 KV line and equipment is under the jurisdiction of the Geysers Power Plant Operating Department. _____

2. The unit load controller sends signals to the governor motor to maintain a set point load. _____

3. The minimum operating voltage on the 480 volt bus is 480 volts. _____

4. Normal load increase rate on all units is 2 MW per minute. _____

5. Units No. 1 through No. 4 exhaust duct normal gage glass level is 8 inches. _____

6. Current transformers and potential transformers are both used for power factor and varmeters. _____

7. Generator automatic voltage regulation functions to vary voltage on the generator and maintain a constant power factor. _____

8. A cooling tower that has been out of service during dry weather for more than 16 hours should be wet-down for one hour. _____

9. If the D.C. switch to the turbine lockout relay (286 Device) circuit is opened, a trip will occur. _____

10. A work permit is not needed for cooling tower fan work if the off-gas is valved from the tower to atmosphere. _____

11. It is permissible to energize the 21 KV line with the voltage regulator in service and off neutral. _____

12. The synchronizing lights burn brightest when the generator is in phase with the system. _____

13. With the governor set at low speed stop, unit speed will be at 3,420 rpm if the unit is not paralleled with the system. _____

14. On Units No. 1 through No. 4 the cooling tower supply pump has a higher GPM rating than the condenser supply pump. _____

15. An "RTD" is used in generator operation to measure hydrogen gas pressure. _____

16. If an operator is standing by a cleared piece of equipment, it is not necessary to hang Man-on-Line tags for a maintenance clearance. _____

17. The main transformers on Units No. 3 and No. 4 are cooled by radiator fins, forced air cooling fans and forced oil circulation. _____

18. The cooling towers for Units No. 5 through No. 11 are induced draft double cross flow towers. _____

19. The steam supplier is to be notified of all unit trips, day or night. _____

20. Except for protective hard hat and glasses, it is not necessary to wear other protective clothing for transmission line switching. _____

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

Multiple Choice
(Value $1\frac{1}{2}$ points each, total 30 points)

1. Current transformers are part or all of the supply for which of the following instruments and relays?

a) ammeters _____
b) voltmeters _____
c) varmeters _____
d) wattmeters _____
e) frequency meters _____
f) power-factor meters _____
g) synchroscope _____
h) indicating lamps _____
i) watthour meters _____
j) overcurrent relays _____
k) differential relays _____
l) ground indication _____
m) undervoltage relays _____
n) sudden pressure relays _____
o) battery ammeters _____
p) amps squared H meters _____
q) generator backup overcurrent relay _____
r) generator negative sequence relay _____

2. Before closing an open trip cutout switch on any unit, the important voltage test is: _____.
   a) no voltage between cutout switch blade and ground
   b) no voltage between cutout switch blade and switch clip
   c) no voltage between cutout switch clip and ground
   d) approximately 60 volts between cutout switch clip and ground

3. When No. 11 Unit is shut down and main steam stop closed, fire pump protection is provided by: _____.
   a) the motor-driven fire pump only
   b) the motor-driven fire pump and the condensate pumps
   c) the motor-driven fire pump and the steam turbine-driven fire pump
   d) the steam turbine-driven fire pump only

4. The minimum operating voltage on the 480 V bus is: _____.
   a) 480 V
   b) 430 V
   c) 440 V
   d) 450 V

5. When the field breaker on a generator is racked out for generator clearance: _____.
   a) the field is grounded by breaker cubicle contacts
   b) a current is supplied to the field by cubicle contacts for heating purposes
   c) the field is completely open from external connections
   d) the field is shorted through a resistor on most units

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

6. Oil trip device on Toshiba and General Electric units will not trip the unit at speeds below: _____.
   a) 3,950 rpm
   b) 3,600 rpm
   c) 3,800 rpm
   d) 3,350 rpm

7. It is permissible for an electrician to perform tests on 6-1 cooling tower fan A.C.B. that required opening and closing the A.C.B. in the test position if: _____.
   a) all those reported on are reported off and his Caution Tag is placed on the switch
   b) he reports on with M.O.L. tags
   c) everyone is reported off
   d) grounds are used

8. The maximum H_2S exposure is: _____ for an 8-hour period.
   a) 15 ppm/hr
   b) 10 ppm/hr
   c) 20 ppm/hr
   d) 5 ppm/hr

9. High generator fan differential pressure is an indication of: _____.
   a) high H_2 casing pressure
   b) low H_2 purity
   c) high H_2 purity
   d) H_2 cooler leak

10. The closing force utilized for turbine control valves is: _____.
   a) hydraulic oil
   b) compression spring
   c) rack and pinion
   d) rotating cam

11. At unity power factor the generator KVA is: _____ the generator KW.
   a) less than
   b) more than
   c) there is no relationship
   d) equivalent to

12. CO_2 discharge for fire protection on No. 2 and No. 4 Unit air-cooled generators is initiated by: _____.
   a) high temperature of air
   b) smoke detectors
   c) generator differential relay action
   d) none of these

13. A unit D.C. emergency lube oil pump can be cleared and repaired if: _____.
    a) unit is in service
    b) repairs can be completed the same day
    c) unit is out of service
    d) auxiliary oil pump is available

14. The elevated neutral ground switch on No. 5 through 10 must be: _____.
    a) closed just prior to paralleling the unit to the system
    b) not be closed if the other unit is in operation and its elevated neutral ground switch is closed
    c) opened as soon as the unit is paralleled to the system
    d) closed before closing the generator field breaker

15. To bypass the 21 KV line regulator: _____.
    a) disconnect power to regulator and close the bypass switches
    b) return regulator to neutral, cut out power to regulator and open disconnects to regulator, thereby closing the bypass disconnect switches
    c) open regulator disconnect switches and close bypass switches
    d) close bypass switches, open regulator switches and take power off regulator

16. Air-operated oil circuit breakers: _____.
    a) are opened and closed by air pressure
    b) are opened only by air pressure
    c) are closed only by air pressure
    d) are opened and closed by air pressure with spring assist

17. Normal oil level in the seal oil vacuum tank is maintained by: _____.
    a) main seal oil pump recirculation relief valve
    b) seal oil vacuum tank float trap
    c) generator seal oil return float trap
    d) generator H_2 casing pressure

18. On overcurrent trip actions of 50 HP and larger motors: _____.
    a) no re-start attempts are permitted unless major plant equipment is immediately endangered
    b) one re-start attempt is permitted
    c) two re-start attempts are permitted providing 15 minutes are allowed between each start
    d) three re-start attempts are permitted providing motor runs 10 minutes between each start

19. No. 1 Unit bearing oil outlet temperature limit is: _____.
    a) 170°F
    b) 150°F
    c) 165°F
    d) 125°F

20. On Units No. 5 through No. 10 water seal is maintained between the inter-condenser and main condenser by: _____.
    a) level control valve
    b) loop seal in piping
    c) restricting office
    d) water level in main condenser

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

Essay
(Value 4 points each, total 40 points)

1. What is the purpose and where are the follcwing tags used? Discuss each.
   a) Man-on-Line Tag.
   b) Caution Tag.
   c) Construction Red Tag.
   d) Union Oil Orange Tag.
   e) Form 23 Tag.
   f) Information Tag.

2. What is the function of the following?
   a) Turbine trip throttle valve (emergency stop valve).
   b) Turbine trip check valve.
   c) Auxiliary steam check valve.
   d) Control valves.

3. Explain in detail what you would do if No. 5 Unit cooling tower was on fire. Assume the unit is out for trip tests.

4. Fill out the Man-on-Line tags as indicated. (See attached sheets.)
   a) No. 9-1 Cooling Tower Fan (Breaker 52-8) is cleared for men to report on. Make out typical tags to report the Shift Foreman and the Maintenance Foreman on.
   b) Fill out tags when they report off 6 hours later.
   c) Where will tags be hung?

5. Give the basic steps for preparing and clearing the following equipment at the Geysers for men to work on the equipment:
   a) Main steam motor-operated stop valve.
   b) Cooling tower fan gear box.

6. Write a typical Switching Tag to clear electrically for men to report on. (See attached sheets.)
   a) No. 1 Unit generator.
   b) No. 11 Unit generator.

7. What are the power sources to the steam supplier's equipment?
   What steam supplier's equipment is supplied?
   What will be the consequences and what would you do if the power is lost to the steam supplier?

   At the following units:
   a) 1 and 2 Units.
   b) 7 and 8 Units.
   c) 11 Unit.

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

8. Explain how you would change the CO_2 pilot bottles on:
   a) No. 2 and 4 Unit generator fire protection; and
   b) No. 3 and 4 Units lube oil reservoir fire protection systems.

9. Give the details for paralleling No. 5 Unit generator to the system, starting with applying the field.

10. Give the details on how to change from automatic voltage control to manual voltage control on:
   a) No. 4 Unit.
   b) No. 5 through 8 Units.
   c) No. 9 through 11 Units.

PGT 62-1225

MAN ON LINE

LOCATION _____

LINE or APPARATUS _____

CLEARANCE ISSUED TO _____ AT _____

BY _____ TIME _____ DATE _____

LINE REPORTED CLEAR BY _____ AT _____

TO _____ TIME _____ DATE _____

THIS TAG MUST NOT BE REMOVED OR THIS SWITCH OR VALVE MUST NOT BE OPERATED WITHOUT APPROVAL

OF _____

(OVER)

PGT 62-1225

MAN ON LINE

LOCATION _____

LINE or APPARATUS _____

CLEARANCE ISSUED TO _____ AT _____

BY _____ TIME _____ DATE _____

LINE REPORTED CLEAR BY _____ AT _____

TO _____ TIME _____ DATE _____

THIS TAG MUST NOT BE REMOVED OR THIS SWITCH OR VALVE MUST NOT BE OPERATED WITHOUT APPROVAL

OF _____

(OVER)

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE _____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

82-4116-9-63

1975

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 1

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-9-63

1975

NAME _____

DATE _____

True-False
Multiple Choice
Essay _____

Total

EXAMINATION TO QUALIFY FOR

POWER PLANT OPERATOR

GEYSERS POWER PLANT

QUALIFYING EXAMINATION NO. 2

1975

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

True-False
(Value 1½ points each, total 30 points)

1. Before bypassing the 21 KV line voltage regulator, the regulator is to be in the neutral position and turned off. _____

2. The differential relay on a generator will operate to clear a phase-to-phase fault within the zone of protection. _____

3. During a startup the stationary parts of a turbine expand more rapidly than the moving parts. _____

4. A "hard hat" and glasses are the protective gear required for switching on the transmission lines. _____

5. If the temperature of the steam entering the turbine is at saturation temperature for the pressure, it could be either dry steam or 100% water. _____

6. Trip cutout features may be opened by the Operator under special conditions. _____

7. Normal load increase rate on Units No. 5 through No. 11 is 1 MW per minute. _____

8. The oil trip on General Electric and Toshiba turbines will not trip the unit at speeds below 3,000 rpm. _____

9. The sudden pressure relay on the main transformer is designed for alarm action only. _____

10. Normal gage glass level for No. 4 Unit exhaust duct is about 3 inches. _____

11. A ground on the D.C. excitation system could indicate a ground on the generator field. _____

12. Current transformers ratio current for use in watt-meters, power-factor meters and varmeters. _____

13. The condenser supply pump on Units No. 1 through No. 4 has a higher GPM capacity than the cooling tower supply pump. _____

14. If the Operator is doing his own switching, it is not necessary to fill out or use a Switching Tag. _____

1975

15. An "RTD" is used to measure hydrogen cold and hot gas temperatures. _____

16. A ground on one phase of a 480 volt feeder will not cause overcurrent operation of the feeder breaker. _____

17. Undervoltage (110 volts) on the 125 volt D.C. bus of Units No. 5 through No. 10 will trip the turbine lockout relay (Device 286). _____

18. A work permit is required before any maintenance may be started on a cooling tower. _____

19. When automatic purging of a hydrogen-cooled generator is initiated, the hydrogen is vented from the generator casing at the bottom with CO_2 introduced through spray heads at the top. _____

20. The generator 13.8 KV and main transformer bank metering potential fused disconnects should be closed quickly because of large current flow through this circuit. _____

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

Multiple Choice
(Value 1½ points each, total 30 points)

1. Potential transformers are part or all of the supply for which of the following instruments and relays?

a) ammeters _____
b) voltmeters _____
c) varmeters _____
d) wattmeters _____
e) frequency meters _____
f) power-factor meters _____
g) synchroscope _____
h) indicating lights _____
i) watthour meters _____
j) overcurrent relays _____
k) differential relays _____
l) ground indication _____
m) undervoltage relays _____
n) sudden pressure relays _____
o) battery voltmeters _____
p) volts squared H meters _____
q) generator backup overcurrent relays _____

2. When a generator becomes separated from system parallel operation while on load controller and supplies an isolated system load of its own the: _____.
   a) load controller will not change unit load for frequency control
   b) load controller will respond to maintain normal frequency
   c) load controller will trip and allow the governor to control frequency
   d) load limit device will automatically go into action and maintain frequency

3. High level in the seal oil vacuum tank will: _____.
   a) shut down seal oil vacuum pump
   b) close solenoid valve between seal oil vacuum pump and seal oil vacuum tank
   c) start emergency seal oil pump and shut down main seal oil pump
   d) both a and b

4. High condenser level in the main condenser will: _____.
   a) open condensate pump recirculation valve
   b) start standby auxiliary cooling water pump
   c) trip condenser vacuum breakers open
   d) trip condensate pumps by action of turbine lockout relay (286 Device)

5. The electro dryer normal temperature during heating cycle is: _____.
   a) 450°F
   b) 200°F
   c) 510°F
   d) 300°F

6. To prevent starting cooling tower fans Units No. 1 through No. 4 rotating backwards: _____.
   a) start fans before pulling vacuum
   b) start fans before paralleling the turbine-generator
   c) shut off water to the cooling tower fans cell and check fan stopped before starting the fan in that cell
   d) start fans before starting cooling tower supply pump
   e) either c or d method can be used

7. Toshiba turbine thrust bearing wear detectors operate by primary sensing element use of: _____.
   a) electrical pickup device
   b) oil pressure across a gap
   c) mechanical probe

8. If a turbine-generator trips on unit overall differential: _____.
   a) open trip cutout on unit overall differential and return unit to service
   b) have electrical department test all equipment involved in relay scheme
   c) visually check equipment and return unit to service
   d) leave decision up to Dispatcher

9. The steam supplier must be notified on: _____.
   a) all unit trip-outs during night only
   b) all unit trip-outs day or night
   c) injection well line breaks
   d) sedimentation basin overflows
   e) b, c and d are all correct

10. The D.C. emergency lube oil pump can be cleared for repairs: _____.
   a) while unit is running if repairs can be made in 30 minutes or less
   b) while unit is running if either the auxiliary oil pump or turning gear oil pump available
   c) only if unit is shut down
   d) while running if an Operator is standing by

11. If a cooling tower begins to ice up, the Operator in order to prevent damage should: _____.
   a) reduce load immediately
   b) notify the System Dispatcher and then reduce load
   c) remove unit from service
   d) cut out cooling tower fans one at a time until tower is de-iced

12. An H_2 cooler leak in Units No. 5 through No. 11 will result in: _____.
   a) liquid detector high level
   b) increased H_2 consumption
   c) low H_2 purity
   d) generator field ground alarm

Power Plant Operator
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13. No. 1 Unit load is normally controlled by a pressure regulator which gets its control pressure from: _____.
    a) main steam pressure
    b) hydraulic oil pressure
    c) first-stage pressure
    d) turbine exhaust pressure

14. Unit No. 5 is rolling on steam at 900 rpm and speed cannot be increased. The probable cause is: _____.
    a) the governor is at its minimum stop
    b) the load limit is not open far enough
    c) hydraulic oil pressure is low
    d) the full arc admission motor is burned out

15. To control speed on No. 1 Unit for paralleling it may be necessary to increase condenser back pressure. This is generally done by: _____.
    a) closing steam supply to turbine shaft steam seals
    b) closing or throttling steam to after-condenser jet
    c) closing or throttling steam supply to inter-condenser jet
    d) closing or throttling water to inter-condenser jet

16. When bringing a turbine up through a critical speed range, proper procedure calls for: _____.
    a) increasing the rate of acceleration through the critical speed range
    b) decreasing the rate of acceleration
    c) hold speed steady until vibration decreases
    d) maintaining a slow steady increase in speed

17. The collector rings on a generator: _____.
    a) remove the 3-phase A.C. power to the transformer
    b) counteract the centrifugal force on the rotor
    c) connect the D.C. excitation to the field windings
    d) provide surface for stator temperature measurement

18. Voltage regulators are taken off automatic before a generator is separated to protect the: _____.
    a) exciter
    b) generator
    c) regulator
    d) transformer

19. On an operating unit, No. 5 through No. 11, low generator H_2 pressure will: _____.
    a) trip the turbine lockout relay (286 Device) only
    b) trip the turbine lockout relay (286 Device) and purge the generator
    c) trip the turbine lockout relay (286 Device) and purge the generator if the auto purge scheme is in auto
    d) sound an alarm only

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20. On an ungrounded three-phase 480 volt system, a ground on one phase will: _____.
    a) cause that circuit to be tripped
    b) cause ground indicating light on that bus phase to burn brightly
    c) cause ground indicating light on that bus phase to burn dimly or go out
    d) cause the unit lockout relay (Device 386) to trip the unit

Power Plant Operator
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Essay
(Value 4 points each, total 40 points)

1. What is the purpose and where are the following tags used? Discuss each.
   a) Man-on-Line Tag.
   b) Caution Tag.
   c) Construction Red Tag.
   d) Union Oil Orange Tag.
   e) Form 23 Tag.
   f) Information Tag.

2. Assume No. 8 Unit is shut down for overhaul and its cooling tower basin is drained for cleaning. What important items will require consideration?

3. Fill out the Man-on-Line tags as indicated. (See attached sheet.)
   a) No. 7 Unit is cleared for men to report on. Make out typical tags to report the Shift Foreman and Maintenance Foreman on.
   b) Fill out tags for reporting off 48 hours later.
   c) Where will tags be hung?

4. Write a typical Switching Tag to prepare for service electrically after men have reported clear: (See attached sheets.)
   a) No. 6 Unit generator.
   b) No. 11 Unit generator.

5. What is the function of the following?
   a) Speed governor.
   b) Emergency governor.
   c) Turbine trip throttle valve (emergency stop valve).
   d) Turbine trip check valve.
   e) Auxiliary steam check valve.
   f) Turbine trip throttle valve bypass control.

6. Give the procedure for:
   a) Transferring from start-up transformer to auxiliary transformers on No. 11 Unit.
   b) Transferring from auxiliary transformers to start-up transformer on No. 11 Unit.

7. Give the basic steps for preparing and clearing the following equipment at the Geysers for men to work on the equipment:
   a) Main steam motor-operated stop valve.
   b) Cooling tower fan blade.

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8. What are the power sources to the steam supplier's equipment? What equipment is supplied? What will be the consequences and what would you do if power was lost to the steam supplier at the following units?
   a) 1 and 2 Units.
   b) 5 and 6 Units.
   c) 9 and 10 Units.
   d) 11 Unit.

9. Give the details for changing from manual to automatic voltage regulation on:
   a) No. 3 Unit.
   b) No. 7 Unit.
   c) No. 10 Unit.

10. What precautions should be taken before changing over power source to the 480 volt station service bus on Units No. 5 through 10?

Power Plant Operator
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PGT 62-1225

MAN ON LINE

LOCATION_____

LINE or APPARATUS_____

CLEARANCE ISSUED TO_____ AT_____

BY_____ TIME_____ DATE_____

LINE REPORTED CLEAR BY_____ AT_____

TO_____ TIME_____ DATE_____

THIS TAG MUST NOT BE REMOVED OR THIS SWITCH OR VALVE MUST NOT BE OPERATED WITHOUT APPROVAL

OF_____

(OVER)

PGT 62-1225

MAN ON LINE

LOCATION_____

LINE or APPARATUS_____

CLEARANCE ISSUED TO_____ AT_____

BY_____ TIME_____ DATE_____

LINE REPORTED CLEAR BY_____ AT_____

TO_____ TIME_____ DATE_____

THIS TAG MUST NOT BE REMOVED OR THIS SWITCH OR VALVE MUST NOT BE OPERATED WITHOUT APPROVAL

OF_____

(OVER)

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

SHEET NO._____

SWITCHING TAG

P G AND E

SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

62-4118-9-63

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Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 2

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4118-8-63

1975

NAME _____

DATE _____

True-False
Multiple Choice
Essay _____

Total

EXAMINATION TO QUALIFY FOR

POWER PLANT OPERATOR

GEYSERS POWER PLANT

QUALIFYING EXAMINATION NO. 3

1975

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

True-False
(Value 1½ points each, total 30 points)

1. Brush sparking could be an indication of hydrogen leakage at the collector rings. _____

2. Induction motors result in lagging power factor on the generator supplying this load. _____

3. If a unit is purged of hydrogen and placed on turning gear, the seal supply may not be shut down. _____

4. Switching Tags must be made out even though the Operator is doing his own switching. _____

5. During overspeed trip testing on a 3,600 rpm unit, the maximum allowable speed for the test is 4,000 rpm. _____

6. If H_2 purge is on automatic and valving at the H_2 manifold set up for automatic purge, a loss of station A.C. power will purge the generator. _____

7. A ground on one phase of a 480 volt in-service feeder will result in overcurrent trip of the feeder breaker. _____

8. Battery undervoltage (118 volts) on Units No. 3, 5, 7, 9 and 11 will result in time delay tripping of the unit lockout relay (Device 386). _____

9. Inverse time overcurrent elements protect the 480 volt motors from mechanical overloads.

10. Potential transformers ratio current for use in watt-meters, power-factor meters and varmeters. _____

11. The vapor extractor on the lube oil reservoir provides a slight negative pressure on the turbine and generator bearing returns. _____

12. The automatic voltage regulator on a generator functions to maintain constant VAR and power-factor loading by varying generator voltage. _____

13. On Units No. 1 through No. 4 the condenser supply pump has a greater pumping capacity than the cooling tower supply pump. _____

Power Plant Operator
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14. The steam supplier receives a relatively stable power supply for injection well pumps and air control system compressors from the 12 KV distribution system. _____

15. Switching Tags are a requirement for all 480 volt switching operations even though the Operator does his own switching. _____

16. A work permit is required by maintenance personnel before any work may be started on the power building roof. _____

17. The generator backup overcurrent relay protects the generator from phase-to-phase and phase-to-ground internal faults if other relays fail to clear the trouble. _____

18. When on automatic, the H_2 seal oil vacuum pump of Units 5 through 11 will be tripped if the vacuum tank oil level goes high. _____

19. When the building sump pumps on Units No. 5 through No. 11 are both available and on automatic, the pumps will be alternately started to hold the building sump level. _____

20. As long as the steam is at saturation temperature for the pressure, the chance of water in the steam is nonexistent. _____

Power Plant Operator
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Multiple Choice
(Value $1\frac{1}{2}$ points each, total 30 points)

1. Current transformers and potential transformers are both needed and used to supply which of the following instruments and relays?

a) ammeters _____
b) voltmeters _____
c) varmeters _____
d) wattmeters _____
e) power-factor meters _____
f) synchroscope _____
g) indicating lights _____
h) watthour meters _____
i) amps squared H meters _____
j) overcurrent relays _____
k) generator loss of field relay _____
l) generator backup overcurrent relay _____
m) differential relays _____
n) sudden pressure relays _____
o) generator negative sequence relay _____
p) generator field ground relay _____

2. Low vacuum in the seal oil vacuum tank will: _____.
a) shut down main seal oil pump and start emergency seal oil pump
b) close solenoid valve between seal oil vacuum pump and seal oil vacuum tank
c) initiate generator H_2 casing purge
d) bring in "Low Vacuum-Vacuum Tank" annunciation

3. An air cooler leak in Units No. 2 through No. 4 will cause: _____.
a) low purity readings
b) high stator temperature
c) water in liquid detector
d) water in bearing oil

4. With No. 7 Unit at full load and the cooling tower starts to ice up, de-icing would be accomplished by: _____.
a) lowering load to a point where the ice starts melting
b) use the cold weather start-up valve to bypass the distribution section of the cooling tower
c) secure the cooling tower fans one at a time
d) notify the System Dispatcher and remove the unit from service, then restart on the cold weather start-up system

5. Air-operated oil circuit breakers: _____ if air pressure is too low.
a) cannot be closed
b) cannot be opened
c) cannot be opened or closed
d) can be opened by relay action only

6. On Units No. 5 through No. 10 water seal is maintained between the inter-condenser and main condenser by: _____.
   a) level control valve
   b) loop seal in piping
   c) restricting orofice
   d) a seal is not necessary, both at the same pressure

7. It is permissible to open specific trip cutouts (T.C.O's) when: _____.
   a) performing electrical trip tests
   b) changing 480 volt station service bus feeder sources
   c) washing station batteries
   d) all of the above

8. The maximum H_2S exposure for an 8-hour period is: _____.
   a) 5 ppm/hr
   b) 10 ppm/hr
   c) 15 ppm/hr
   d) 20 ppm/hr

9. In the process of paralleling No. 5 through No. 10 Units to the system the generator O.C.B. does not close, the probable cause is: _____.
   a) the turbine lockout relay (286 Device) is not reset
   b) both unit ground transfer (elevated neutral) switches are closed
   c) the unit lockout relay (386 Device) is not reset
   d) D.C. voltage is too low to energize O.C.B. closing solenoid

10. Generator voltage regulators should be removed from service before separating units to: _____.
   a) insure regulator is cut out before decreasing shaft speed to prevent overexcitation of transformers
   b) insure regulator is cut out before decreasing shaft speed to prevent overexcitation of generator
   c) prevent damage to regulator as speed decreases
   d) allow a more constant excitation value for slowing down the turbine generator shaft

11. If a cooling tower fan motor or condensate pump motor trip on overcurrent: _____.
   a) one restart attempt is permitted
   b) two restart attempts are permitted provided 15 minutes elapse between each start
   c) no restart attempts are permitted unless major plant equipment is immediately endangered
   d) three restart attempts are permitted provided motor runs 10 minutes between each start

12. If the Dispatcher requested a voltage boost from a generator, the power-factor meter would: _____.
    a) move in lag direction
    b) move in lead direction
    c) show no change
    d) increase in its present direction away from unity

13. A hydrogen cooler leak on Units No. 5 through 11 will be indicated by: _____.
    a) low H_2 purity
    b) liquid detector high level
    c) increased H_2 consumption
    d) generator field ground alarm

14. On Toshiba units the approximate setting of the governor low speed stop is: _____.
    a) 3,050 rpm
    b) 2,750 rpm
    c) 3,450 rpm
    d) 3,650 rpm

15. The elevated neutral transformer on a generator: _____.
    a) supplies power for emergency lighting
    b) supplies potential for indicating lights on the synchronizing panel
    c) affords methods of detecting ground faults on main transformer high side
    d) affords a method of detecting generator stator winding and lead grounds

16. If, after separating a unit from the system, the auxiliary oil pump will not start: _____.
    a) reset turbine and hold at approximately 1/2 speed while investigating trouble
    b) reset turbine, return to normal speed and reparallel
    c) put unit on turning gear but do not break vacuum
    d) shut down the unit in normal manner

17. On a General Electric or Toshiba unit with a rotating pilot governor, the load is manually changed when using governor control by: _____.
    a) moving the pilot valve bushing
    b) moving the pilot valve
    c) increasing the flyweight spring tension
    d) decreasing the flyweight spring tension

18. When bringing a turbine up through a critical speed range, proper procedure calls for: _____.
    a) increasing the rate of acceleration through the critical speed range
    b) decreasing the rate of acceleration
    c) hold speed steady until vibration decreases
    d) maintaining a slow steady increase in speed

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19. The voltage regulator set point adjustment controls: _____.
    a) megawatts
    b) reactive power flow
    c) rheostat position
    d) generator voltage

20. Turbine-generator bearing oil return sight flow connections receive: _____.
    a) a portion of the bearing oil return flow
    b) a mixture of bearing oil and seal oil return
    c) all of bearing oil return flow
    d) a mixture of hydraulic and bearing oil return

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

Essay
(Value 4 points each, total 40 points)

1. What is the purpose and where are the following tags used? Discuss each.
   a) Man-on-Line Tag.
   b) Caution Tag.
   c) Construction Red Tag.
   d) Union Oil Orange Tag.
   e) Form 23 Tag.
   f) Information Tag.

2. Expand and define the following:
   a) MW
   b) KV
   c) KVA
   d) PF
   e) VARS

   What is meant by the term "elevated neutral?"

3. In respect to turbine governors explain the term speed droop. What is the reason for high and low speed stops on the governor speed changer?

4. What is the purpose of a field discharge resistor? Explain when and how it is used.

5. Fill out the Man-on-Line tags as indicated. (See attached sheet.)
   a) No. 1 Unit is cleared for men to report on. Make out typical tags to report the Shift Foreman and Maintenance Foreman on.
   b) Fill out tags for reporting off 24 hours later.
   c) Where will tags be hung?

6. Fill out tags for the following: (See attached sheet.)
   a) Caution Tag; to Shift Foreman, No. 7 Unit H_2 Gas Manual-Auto control switch, CO_2 regulator leaks through and is cut out.
   b) Information Tag; No. 3 Unit, overvoltage relay cutout switch is not wired up.

7. Give the details for paralleling No. 9 Unit generator with the system, starting with rolling the unit on steam.

8. Write a typical Switching Tag to return to service electrically after men have reported clear: (see attached sheets)
   a) No. 2 Unit generator.
   b) No. 7 Unit generator.
   c) No. 11 Unit condensate pump.

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9. Give the basic steps for preparing and clearing the following equipment at the Geysers for men to work on the equipment.
   a) No. 11 Unit stop valve to turbine-driven fire pump.
   b) No. 11 Unit cooling tower fan gear box.

10. What are the power sources to the steam supplier's equipment? What equipment is supplied? What will be the consequences and what would you do if power was lost at the following units?
   a) No. 1 and 2 Units.
   b) No. 3 and 4 Units.
   c) No. 9 and 10 Units.
   d) No. 11 Unit.

PGT 62-1225

MAN ON LINE

LOCATION_____

LINE or APPARATUS_____

CLEARANCE ISSUED TO_____ AT_____

BY_____ TIME_____ DATE_____

LINE REPORTED CLEAR BY_____ AT_____

TO_____ TIME_____ DATE_____

THIS TAG MUST NOT BE REMOVED OR THIS SWITCH OR VALVE MUST NOT BE OPERATED WITHOUT APPROVAL

OF_____

(OVER)

PGT 62-1225

MAN ON LINE

LOCATION_____

LINE or APPARATUS_____

CLEARANCE ISSUED TO_____ AT_____

BY_____ TIME_____ DATE_____

LINE REPORTED CLEAR BY_____ AT_____

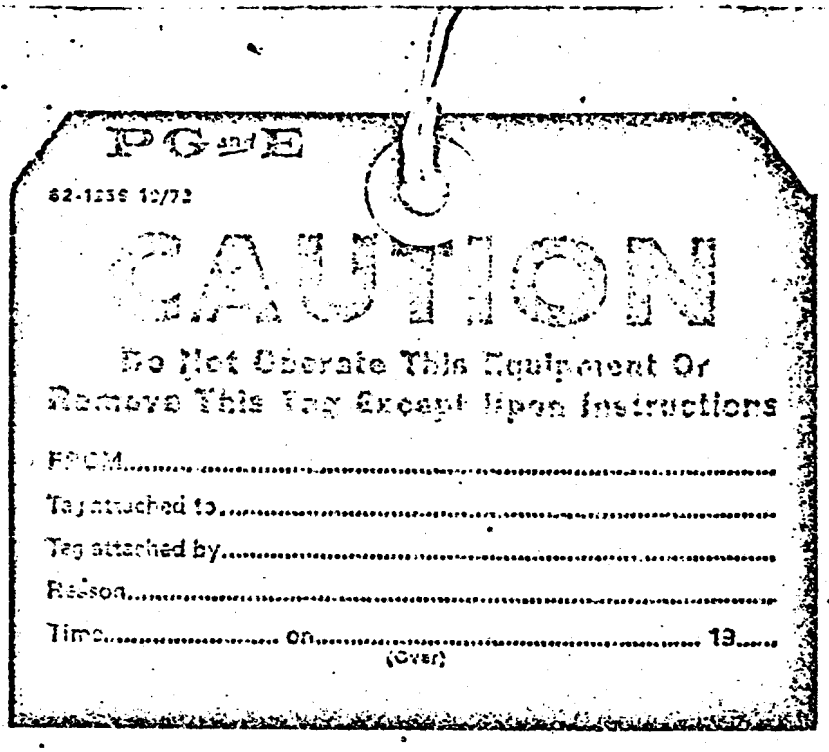
TO_____ TIME_____ DATE_____

THIS TAG MUST NOT BE REMOVED OR THIS SWITCH OR VALVE MUST NOT BE OPERATED WITHOUT APPROVAL

OF_____

(OVER)

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3


PG and E

62-1255 10/72

CAUTION

Do Not Operate This Equipment Or
Remove This Tag Except Upon Instructions

FROM.....

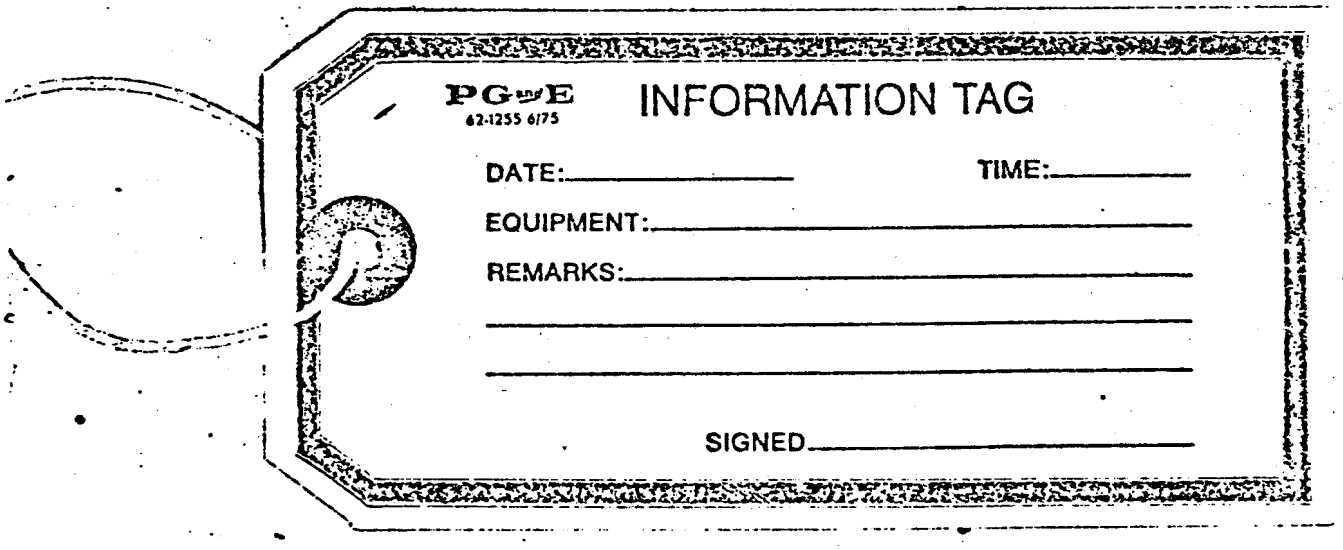
Tag attached to.....

Tag attached by.....

Reason.....

Time..... on..... 19.....

(Over)


PG and E
62-1255 6/75

INFORMATION TAG

DATE:_____ TIME:_____

EQUIPMENT:_____

REMARKS:_____

_____

_____

SIGNED_____

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:
_____ DATE_____

SWITCHING CHECKED BY:
_____ DATE_____

SWITCHING EXECUTED BY:
_____ DATE_____

62—118-9-63

1975

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

62-4116-9-83

1975

Power Plant Operator
Geysers Power Plant
Qualifying Examination No. 3

SWITCHING TAG

P G AND E

SHEET NO._____ SWITCHING LOG NO._____

SWITCHING CENTER_____ DATE_____

PURPOSE_____

OPER'N No.	STATION OR LOCATION	OPER-ATION	SWITCH No.	INSTRUCTIONS	TIME EXECUTED

SWITCHING PREPARED BY:

_____ DATE_____

SWITCHING EXECUTED BY:

_____ DATE_____

SWITCHING CHECKED BY:

_____ DATE_____

63-4116-5-63

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