# Form G5-1

PG&E LOG _____
WO/GM _____
D&C _____

**PACIFIC GAS AND ELECTRIC COMPANY**
**GENERATION PRE-PARALLEL INSPECTION**

Name of Project: _____
Location: _____

~~Transmission Line No.~~ _____ Distance Circuit No. _____

1. Maintenance Data:

   Generation Customer's Maintenance Chief _____
   Telephone Number _____
   Generation Customer's Regular Maintenance Interval _____
   Electrical Contractor _____

2. Test Reports Attached: Yes _____ No _____

   If not, who has the reports: _____

3. Generation Facility Manual Disconnect Device for PG&E Line Clearances:

   Manufacturer _____
   Model Number _____
   PG&E Device Number _____

4. Designated PG&E Electric Control Center _____

5. PG&E Inspector _____
   NAME PHONE NO.

   Date Inspection Performed: _____
   Date Facility Placed on 30 Day Test Released: _____

Distribution:

PG&E Designated Electric Control Center (1)
Division Project Coordinator (1)
Marketing Services (1)
Power Contracts (1)
GM&C Area Engineering (1)
System Dispatch (1)

# Form G5-1

(Continued)

PG&E LOG _____
WO/GM _____
D&C _____

**PACIFIC GAS AND ELECTRIC COMPANY**
**GENERATION PRE-PARALLEL INSPECTION**

1a. Generator Nameplate: _____ kW _____ Volts _____ Pf _____ 1ϕ _____ 3ϕ

b. Generator Type:
_____ Synchronous
_____ Induction
_____ DC w/ Inverter

Synchronizing:
_____ Auto
_____ Manual w/ Relay

Connection:
_____ WYE-Ground
_____ WYE-Ungrounded
_____ Delta

Manufacturer _____ Serial No. _____

c. Generator Prime Mover:

Wind _____ Water _____ Steam _____ Solar _____ Fuel Cell _____

Other, specify _____

d. Generator Breaker or Contactor:

Manufacturer _____ Serial No. _____

_____ Thermal/Magnetic Overcurrent
_____ Undervoltage Release (optional under 40kW)
_____ DC Shunt Trip (required over 40kW) w/battery _____ Capacitor Trip _____
_____ Control Voltage (Not acceptable for use)

2. Dedicated Transformer: Yes _____ 3ϕ _____ 1ϕ _____ 3-1ϕ _____
No _____ Bank of 3-1ϕ _____

Customer owned _____ PG&E owned _____
Bank Rating: _____ KVA Transformer % _____ MVA Base

Transformer Connection: Primary _____ volts
Secondary _____ volts

Protected by: Fuse Size _____ Amps _____ Other _____

3. Ground Protection Required: Yes _____ No _____

If Yes, type of ground detection (check type):
_____ Ground Bank with overcurrent relay.
_____ Broken Delta Ground Bank with low pick up overvoltage relay.
_____ Ground Overcurrent relay in neutral or dedicated transformer.
_____ Low voltage pick up overvoltage relay in elevated neutral of dedicated transformer.
_____ Other _____

# Form G5-1

(Continued)

**GENERATION PRE-PARALLEL INSPECTION**

**PROTECTIVE DEVICES:**

| RELAY | Standard Device Number | Required Yes/No | Mfr and Model | Settings | Specific Breaker Tripped | Date of Function Test | PG&E Inspector Initials |
|---|---|---|---|---|---|---|---|
| ~~Zone 1 Distance~~ | ~~21Z1~~ | | | | | | |
| ~~Zone 2 Distance~~ | ~~21Z2~~ | | | | | | |
| Directional Phase O.C. | 67 | | | | | | |
| Directional Ground O.C. | 67N | | | | | | |
| Non-directional O.C. | 50/51 | | | | | | |
| Ground or Neutral O.C. | 50/51N | | | | | | |
| Overvoltage Ground | 59N | | | | | | |
| Overcurrent with voltage restraint | 51V | | | | | | |
| Underfrequency | 81U | | | | | | |
| Overfrequency | 81O | | | | | | |
| Synchronizing | 25 | | | | | | |
| Auto Synchronizing | 15/25 | | | | | | |
| Undervoltage | 27 | | | | | | |
| Overvoltage | 59 | | | | | | |
| Transfer Trip From: | | | | | | | |
| Transfer Trip From: | | | | | | | |
| Reclose Block at: | | | | | | | |
| Reclose Block at: | | | | | | | |

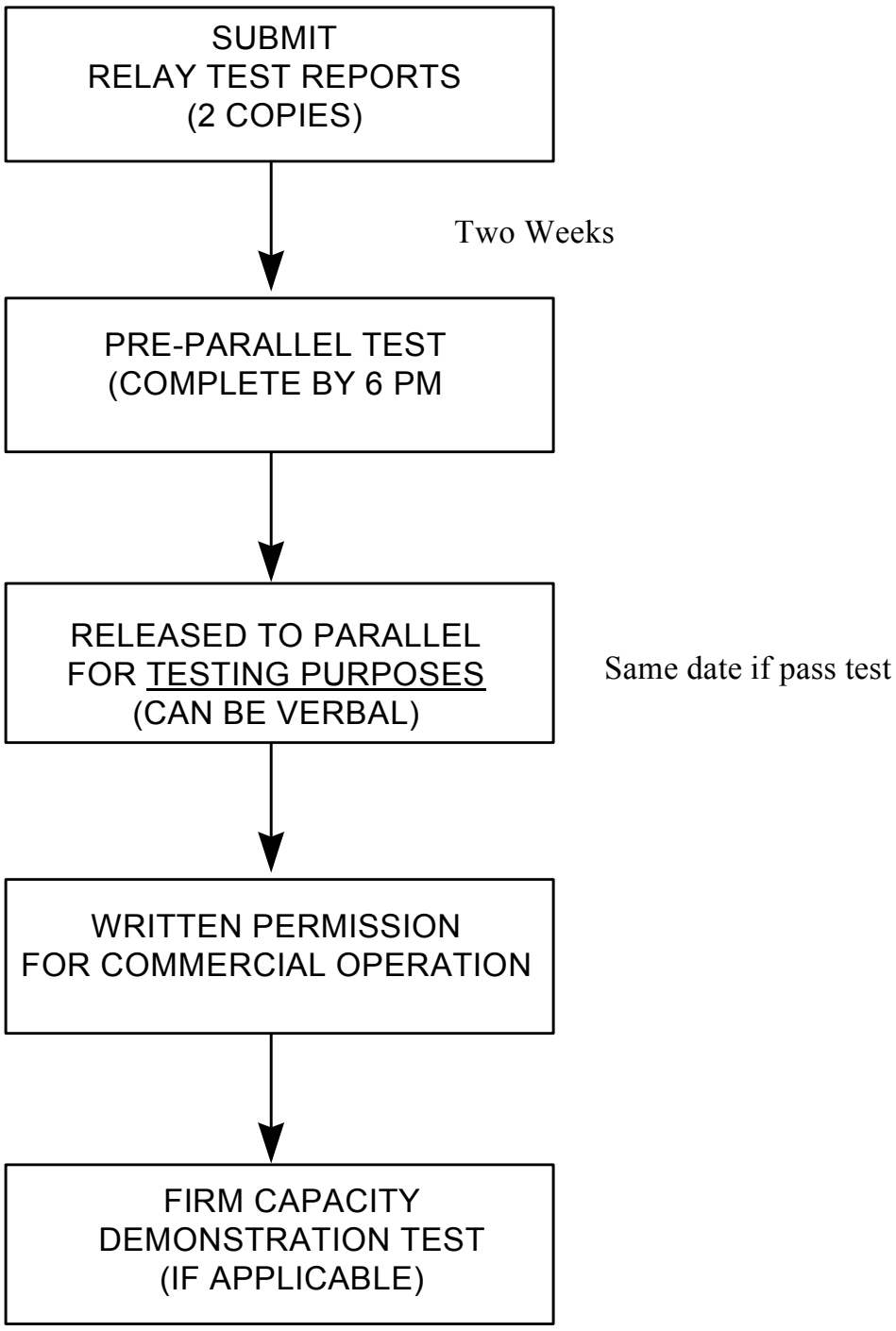
**GENERATORS OPERATION:**

(A). Verify operation of the generator(s) at 0.90 P.F. lag and at 0.95 P.F. lead while delivering rated output: PG&E inspector initials _____

(B). Verify operation of the generator(s) at 1.05 per unit voltage while delivering rated output: PG&E inspector initials _____

# Figure G5-1

**SIMPLIFIED FLOW CHART OF**
**PRE-PARALLEL / PARALLEL TEST PROCEDURE**



# Form G5-2

**POWER GENERATION - HYDRO GENERATION**
**VOLTAGE RESTRAINT OVERCURRENT RELAY**
LOAD CHECK FORM #74-961

Powerhouse _____ Unit NO. _____ PT Ratio _____
Date _____ Device NO. _____ Type _____
Tested By: _____ Gen. Nameplate Voltage Rating _____

LOAD CONDITIONS:
AMPS _____ VOLTS _____ MW _____ (IN) (OUT) MVAR _____ (IN) (OUT)

REFERENCE PHASE ANGLES USING GENERATOR A PHASE CURRENT:
MAIN TRANSF. HIGH SIDE POTENTIAL: 5(4-0) _____ 5(6-0) _____ 5(8-0) _____

PHASE ANGLES: (SOURCE OF POTENTIAL IS) _____
GENERATOR POTENTIAL TRANSFORMERS CONNECTED: OPEN Δ _____ WYE _____

| SEC. AMPS | POTENTIAL Y OR Δ | | READINGS TAKEN IN METERING BLOCKS Y OR Δ | | | Y OR Δ | |
|---|---|---|---|---|---|---|---|
| _____ | 5(4-0) | (4-8) | _____ | 5(4-0) | (4-8) | _____ | 5(4-0) (4-8) _____ |
| _____ | 7(6-0) | (6-4) | _____ | 5(6-0) | (6-4) | _____ | 7(4-0) (4-8) _____ |
| _____ | 9(8-0) | (8-6) | _____ | 5(8-0) | (8-6) | _____ | 9(4-0) (4-8) _____ |

MAIN TRANSFORMER BANK CONNECTED: $^{Y}/_{AB\ DELTA}$ _____ $^{Y}/_{AC\ DELTA}$ _____

Y T TRANSFORMER CONNECTED: $^{AB\ DELTA}/_{Y}$ _____ $^{AC\ DELTA}/_{Y}$ _____

PHASE ANGLES: (SOURCE OF POTENTIAL IS) _____

| SEC. AMPS | | READINGS TAKEN AT RELAYS | | | | | |
|---|---|---|---|---|---|---|---|
| _____ | 5(4-0) | _____ | 5(4-0) | _____ | 5(4-0) | _____ | |
| _____ | 7(6-0) | _____ | 5(6-0) | _____ | 7(4-0) | _____ | |
| _____ | 9(8-0) | _____ | 5(8-0) | _____ | 9(4-0) | _____ | |

| | CURENT | POTENTIAL | Ø ANGLE | CONTACTS: OPEN / CLOSING NORMAL ONE PHASE POTENTIAL | POT'L REMOVED |
|---|---|---|---|---|---|
| AØ RELAY | _____ | _____ | _____ | _____ | _____ |
| BØ RELAY | _____ | _____ | _____ | _____ | _____ |
| CØ RELAY | _____ | _____ | _____ | _____ | _____ |