SDGE **San Diego Gas & Electric**

INTERNAL CORRESPONDENCE

TO Distribution

DATE June 10, 1991

FROM D.L. Sullivan

FILE NO QFA 400.154

SUBJECT FIRST AMENDMENT TO LONG-RUN STANDARD OFFER FOR POWER PURCHASE AND INTERCONNECTION FROM QUALIFYING FACILITIES BETWEEN SDG&E AND **PACIFIC ENERGY** - Otay Landfill #2 (formally Bonsall Landfill)

Attached is a fully executed copy of the subject agreement. The agreement provides changes to the SO4, originally executed on December 21, 1983. Highlights of the agreement are:

1. Change in Plant Location from Bonsall Landfill to the Otay Landfill on Otay Valley Road, County of San Diego.

2. Change in Operation Date from January 1985 to July 1991.

3. Change in Contruction Begin Date from July 1984 to January 1991.

4. Change in Capacity Price from $108/kW to $127/kW.

5. Change in Effective Date and Term from more than 5 yrs to no more than 2 yrs from execution date of Amendment.

6. Extended Price Schedules to allow Pacific Energy to receive 10 full years of firm capacity payments and 20 full years of firm capacity payments, including the time the plant operated prior its shutdown in 1987.

Rule 21 is not attached.

D.L. Sullivan

Distribution:

(w/attachment)

H.L. Herrington (original)
D. Destiche
E.L McLaughlin
D.L. Sullivan
N.J. Hargett
J.L. Smith
H.R. Smith

(w/o attachment)

H.P. Morse
B.E. Alfonso
S.C. Kwong
M.W. Ward

FORM: INTERN_1.DOC

FIRST AMENDMENT
TO
LONG-RUN STANDARD OFFER FOR POWER PURCHASE
AND INTERCONNECTION
FROM QUALIFYING FACILITIES
BETWEEN
SAN DIEGO GAS & ELECTRIC COMPANY
AND
PACIFIC ENERGY

FIRST AMENDMENT
TO
LONG-RUN STANDARD OFFER FOR POWER PURCHASE
AND INTERCONNECTION
FROM QUALIFYING FACILITIES
BETWEEN
SAN DIEGO GAS & ELECTRIC COMPANY
AND
PACIFIC ENERGY

WHEREAS, SDG&E and Central Plants, Inc., entered into that certain Long-Run Standard Offer for Power Purchase and Interconnection From Qualifying Facilities Between San Diego Gas & Electric Company and Central Plants, Inc. dated December 29, 1983 (the "Power Purchase Agreement"), which Power Purchase Agreement was assigned to Pacific Lighting Energy Systems, which changed its name to Pacific Energy in February 1988 ("Seller"); and

WHEREAS, SDG&E and Seller now desire to amend the Power Purhcase Agreement by this First Amendment;

NOW THEREFORE, the Parties agree to modify the Power Purchase Agreement as follows:

1. Definitions. Capitalized terms used in this First Amendment shall have the meanings stated in the Power Purchase Agreement.

2. Plant Location. Section 1.3.1.3 of the Power Purchase Agreement is deleted and replaced with the following: "Location: Otay Landfill: Otay Valley Road, approximately one mile east of Highway 805, San Diego County. Not later than execution of this First Amendment, Seller shall supply to SDG&E written documentation of Seller's right to construct and operate the Plant at this location for the term of this Agreement."

3. Operation Date. Section 1.3.1.5 of the Power Purchase Agreement is modified by deleting "January, 1985" and substituting "July 1991."

4. Construction Begin Date. Section 1.3.1.5 of the Power Purchase Agreement is modified by deleting "July, 1984" and substituting "January 1991."

5. Capacity Price. Section 1.3.6.3.3 of the Power

Purchase Agreement is modified by deleting "$108/KW" and substituting "$127/KW."

6. Effective Date and Term. Section 2.3.2 of the Power Purchase Agreement is modified by deleting "be more than five (5) years from the date of execution of this Agreement" and substituting "occur after two years from the date of this First Amendment."

7. Voltage Fluctuation. Section 2.4.19 is added to the Power Purchase Agreement to read as follows:

> Seller shall operate the Plant in compliance with the Voltage Fluctuation Measurement Protocol attached as Appendix E. If Seller fails to comply with such requirements, SDG&E may disconnect Seller and Seller shall promptly pay for and implement remedial measures to ensure compliance.

8. Line Extension and Interconnection Facilities. Section 2.6.8 is added to the Power Purchase Agreement to read as follows:

> SDG&E shall install at its expense those Interconnection Facilities necessary for initial interconnection of the Plant to SDG&E's system other than distribution system or substation upgrades required by SDG&E to allow the proper operation of SDG&E's system with the Plant connected in accordance with prudent utility practices. Seller shall pay the cost of such upgrades. Additionally, Seller shall pay the cost of operation and maintenance of all such facilities in accordance with Section 2.6.6. Seller shall pay the cost of installing a parallel 12kV circuit along Otay Valley Road from existing tie switch 150-T1-463 east to the point where the existing circuit branch extends north along Maxwell Road, not to exceed two hundred fifty-five thousand dollars ($255,000). SDG&E shall select the design criteria for such circuit. Fifteen days after SDG&E supplies the estimated cost of such circuit, Seller shall advance to SDG&E the estimate cost, not to exceed $255,000. After completion of the parallel circuit, SDG&E shall return to Pacific any unspent funds, less gross-up, if applicable.

Sections 2.6.1, 2.6.3 and 2.6.4 of the Power Purchase Agremeent are modified by adding to the beginning of each section, "Except as provided in Section 2.6.8."

Sections 1.3.3.2, 1.3.3.3 and 1.3.3.4, which were supplemented by letter agreement dated July 3, 1986 between SDG&E and Central Plants, Incorporated, shall be modified to reflect the installed cost of the facilities in accordance with Rule 21. Line Extension and Interconnection Facilities installed at the Bonsall Landfill shall be removed and the cost of removal and salvage value shall be billed in accordance with Rule 21. Appendix C, which was added to the Agreement by the same letter agreement shall be modified accordingly and the modification shall be added to this Agremeent by separate letter agreement.

9. Price Schedules. Appendix A, Table 2, is hereby modified by adding ¢/Kwhr figures of 14.2¢ for each year subsequent to 1998 to enable Seller the opportunity to earn ten (10) years of prices under Appendix A, Table 2, commencing on the Operation Date of the Plant. Appendix B, Table 3, is hereby modified by adding $/Kwyr figures of one hundred twenty-seven dollars ($127.00) for each year subsequent to 1987 for twenty (20) year term power purchase agreements to enable Seller the opportunity to earn twenty (20) years of prices under Appendix B, Table 3, commencing on the Operation Date of the Plant.

10. Voltage Fluctuation Measurement Protocol Appendix. Appendix E, attached hereto, is added to the Power Purchase Agreement.

11. Rule 21. Appendix D, Rule 21, is replaced in its entirety by the Appendix D attached hereto.

12. Effect on Power Purchase Agreement. Except as expressly modified by this First Amendment, the Power Purchase Agreement shall remain in full force and effect.

IN WITNESS WHEREOF, the Parties have caused this First Amendment to be executed in their respective names in duplicate by their respective official representatives hereunto this 24th day of April, 1990.

PACIFIC ENERGY COMPANY

By: Christopher R. Sherman

Christopher R. Sherman
(Print Name)

President
(Title)

SAN DIEGO GAS & ELECTRIC

By: Donald E. Felsinger

Donald E. Felsinger
(Print Name)

Vice President -
Marketing & Resource Development
(Title)

APPENDIX D

RULE 21

APPENDIX E

EXHIBIT B

VOLTAGE FLUCTUATION MEASUREMENT PROTOCOL

1. PURPOSE

Measurements were made by both SDG&E and Pacific Energy in May 1990 at the existing electrical power plant operated by Pacific Energy at the Otay Landfill (Plant 1) to determine the percentage of voltage flicker at the primary (12kV) connection point with SDG&E's electrical distribution system. According to results from both tests, Plant 1 is presently in compliance with SDG&E standards on maximum allowable voltage flicker.

Compliance was based on a measured voltage flicker below 0.5% of nominal serving voltage for low frequency (1-10 HZ) current fluctuations occurring an average of 1 per minute in Plant 1 output. It was observed that no other current fluctuations at the point of 12 kV service resulted in a significant increase in RMS voltage flicker.

Pacific Energy plans to install a second engine-generator (Plant 2) at the Otay Landfill (Collectively, Plant 1 and Plant 2 are referred to as the "Otay Facility".). This Exhibit B sets forth:

a. The protocol for testing to be done prior to and after installation and start-up of Plant 2 to confirm compliance of the Otay Facility and each Plant with the SDG&E flicker standard set forth in Figure 1.

b. Any subsequent testing of Plant 1 and Plant 2, in order to determine compliance with the voltage fluctuation standard set forth in Figure 1.

c. A method for determining responsibility for corrective action if the voltage flicker standard is violated as a result of future operation of Plant 1, Plant 2 or both.

2. MEASUREMENT UPON INSTALLATION OF SECOND ENGINE-GENERATOR

2.1 Prior to the start-up and operation of Plant 2, both current and voltage flicker measurements will be made at both the point of service on Otay Circuit 150 and at the Otay Substation, with both generators off line. These measurements will be made in accordance with the procedures outlined in Section 3 of this Exhibit and used to determine the ambient voltage flicker on the circuit.

2.2 After installation of Plant 2 at the Otay Landfill, additional measurements shall be made in accordance with the procedures outlined in Section 3 of this Exhibit, and recorded for comparison with future measurements at the Otay Facility.

2.2.1 Measurements shall be made with only Plant 1 output connected to Otay Circuit 150.

2.2.2 Measurement shall be made with only Plant 2 output connected to Otay Circuit 150.

2.2.3 Additional measurements shall be made with Plant 1 and Plant 2 output connected to Otay Circuit 150.

Results of these measurements will determine if the Otay Facility is operating initially within the voltage flicker standard (Figure 1).

2.3 The following quantities will be continuously measured and recorded on a strip-chart recorder for an adequate period of time to be determined by SDG&E for a test period not to exceed one hour after both Plants 1 and 2 have reached stable operating temperatures after start-up. Measurements shall be made in accordance with the testing methodology set forth in Section 3 of this Exhibit. This is not intended to limit SDG&E's right to monitor at any time using equipment of SDG&E's choice.

2.3.1 Primary voltage (Va-b, Vb-c, or Vc-a) through a potential transformer and "True RMS" amplifier. Measurements for compliance with SDG&E standards shall be made at the point of 12 KV service through the billing meter potential transformers. Test results on the secondary side of the metering potential transformer shall be considered adequate to review for compliance with SDG&E standards.

2.3.2 Plant 1 and/or 2 current outputs through current transformers and "True RMS" amplifiers. Measurements for determining the times of maximum current fluctuation shall be made at each point of 12 KV service through the billing meter current transformers. Test results on the secondary side of the metering current transformers shall be considered adequate to determine the times of maximum current

fluctuations.

3. TESTING METHODOLOGY

To determine compliance with the voltage fluctuation standard set forth in Figure 1, both voltage fluctuation and rate of occurrence will be measured.

Voltage fluctuation, as defined in Section 3.3.2, is the change in the associated "True RMS" amplitude of the voltage waveform during the time of maximum current fluctuation and shall be measured and used to calculate the percentage of voltage flicker, as follows:

$$\text{Percentage of Flicker} = \frac{\text{RMS Voltage flicker } (V_f)}{\text{RMS Base Voltage } (V_b)} \times 100$$

(V_f) - RMS voltage variation as recorded on the strip chart recorder, observed during a maximum current fluctuation, from the output of the True RMS amplifier and DC amplifier (Max RMS voltage minus Min RMS voltage)

(V_b) - RMS base, nominal or average voltage of test circuit.

Rate of occurrence is the number of voltage fluctuations occurring in a given time base resulting from current fluctuation on both Plants 1 and/or 2, as defined in Section 3.3.1. The time base used in this particular test, not to exceed one hour, time of day, and specific day for the test period will be specified by SDG&E. This is not intended to limit SDG&E's right to monitor at any time, using equipment of SDG&E's choice.

3.1 Instrumentation

Instrumentation to be used for testing shall include the following:

a. Gould RS3000 Series thermal recorder (4 - 6 channel)
b. Gould "True RMS" amplifier (Model 13-G4618-10, Model 57-1302-00, or equivalent)
c. Gould High Voltage DC Amplifier (Model 13-G4615-90, Model 56-1340-00, or equivalent)
d. AC Calibrator (Fluke 5200A or Rotek 3960A)

Equipment of equal or better quality for testing purposes may be substituted as approved by SDG&E. Test

instrumentation shall be connected in the manner depicted in Figure 2, or in a suitable manner to utilize the capability of the equipment used for test.

3.1.1 Current and Potential Transformers

Primary circuit metering current transformers with turns ratio to provide nominal 5 amperes.

Primary circuit metering potential transformers with turns ratio to provide nominal 120 volts.

3.1.2 Chart Recorder

A Gould RS3000 multi-channel thermal Recorder Main Frame is used for making the current and flicker voltage measurements. This Gould main frame has multiple 4600 series signal conditioners, two Gould True RMS amplifiers, and a Gould High Voltage DC amplifier all of which are plugged into the mainframe.

3.1.3 Signal Conditioning

True RMS Level Amplifier

The Gould Model 13-G4618-10 True RMS amplifier or equivalent is used for precise amplitude measurements of the input AC currents and voltage. The amplifier also has provision for calibrated zero suppression for precise adjustment of the zero level.

High Voltage DC Amplifier

The Gould Model 13-G4615-90 High Voltage DC amplifier or equivalent with fully floating input, and isolated output has calibrated zero suppression, and is used to further amplify the voltage waveform from the output of the True RMS amplifier.

3.1.4 AC Calibrator

The Fluke 5200A or Rotek 3960A AC calibrator or equivalent is used to provide precise calibration signals for calibrating the zero suppression levels on the Gould True RMS amplifier and Gould High Voltage DC amplifier.

3.2 Test Procedures

The test procedures shall be as follows:

3.2.1 Voltage measurements are made using the Gould RS3000 series multi-channel thermal recorder main frame. The Gould signal conditioners, two/three Model 13-G4618-10 True RMS amplifier plug-ins and one Gould Model 13-G4615-90 High Voltage DC amplifier plug-in, or equivalent, are inserted into the Gould RS3000 series main frame. The output of one True RMS amplifier is also connected to the input of the High Voltage DC amplifier.

3.2.2 Connect the AC Calibrator to the input of one True RMS amplifier and adjust the zero suppression on the amplifier to achieve a zero level of 110 Vac.

3.2.3 Using the AC Calibrator, select the range step on the True RMS amplifier for a full-scale deflection of 135 Vac.

3.2.4 Repeat step 2 and 3, above, to adjust or measure the zero suppression and full scale deflection on the HVDC amplifier at voltage levels that will provide maximum deflection when responding to the flicker voltage resulting from a maximum current fluctuation.

3.2.5 Repeat steps 2 and 3, above, to adjust the zero suppression on the second and/or third True RMS amplifier to achieve a zero level of 1.5 AC amperes and full-scale deflection of 2.5 AC amperes.

3.2.6 After completing the calibration procedures, disconnect the AC calibrator and connect the input terminals of the Gould True RMS amplifier-DC amplifier to the low voltage side of the potential transformer, and the input terminals of the other Gould True RMS amplifiers to the secondary side of the high voltage current transformers.

3.2.7 Capture and record on the Gould strip chart recorder the current and voltage measurements detailed in Section 2.3. Data shall be taken to determine the rate of occurrence of flicker voltage attributable solely to the operation of the Otay Facility.

- Measurements will be taken at various chart speeds to ensure the voltage deviation (flicker) that is measured is coincident with a current fluctuation from operation of the Otay Facility only. The coincident occurrence of both voltage and current deviations that are not present during the time of the ambient voltage tests (outlined in Section 2.1) shall be attributed to the operation of the Otay Facility.

3.3 Compliance

Compliance with the Voltage Flicker Standard (Figure 1) shall be based upon results of the tests specified in Sections 2.2 and 3.2 of this Exhibit measured coincidentally with a maximum current anomaly observed during testing while either or both Plants are in operation.

Current anomalies can be caused by such things as plant loads, engine operation, generator regulation, or loads external to the Plant. Thus, flicker calculations will include all voltage variations resulting during the operation of the Otay Facility or from Pacific loads but not limited to the 3 HZ voltage variation observed during SDG&E's testing in May 1990.

Thus, the percentage of voltage flicker is computed as the ratio of the average maximum fluctuation in True RMS voltage level during the period of the current anomaly to the base RMS voltage.

3.3.1 Data Interpretation (Rate of Occurrence)

Prior to determining the Percent Flicker voltage limit from Figure 1, the flicker rate of occurrence must be determined.

For the purpose of determining the rate of occurrence, any one current anomaly is identified in the strip charts as that in which there is a voltage and current oscillation higher than other oscillations. The number of oscillations of either current or voltage during the test period shall be noted. The rate of occurrence is calculated as the number of oscillations divided by the time of the test period.

3.3.2 Data Interpretation (Percent Flicker Voltage)

- Once the rate of occurrence has been determined, Figure 1 will then be used to determine the maximum allowable Percent Voltage Flicker.

RMS Voltage Flicker (V_f) is determined as the maximum peak-to-peak fluctuation of the true RMS voltage in a direction perpendicular to the average voltage during the period of the current anomaly. This determination is repeated for at least five separate current anomalies. The value of V_f to be used in the percent flicker calculation of Section 3 will be the average of the five cases.

The above procedure will make sure that the ambient voltage flicker is taken into account.

3.3.3 Data Interpretation (Sample Analysis)

A sample analysis for compliance as outlined in 3.3.1 and 3.3.2 is included as Figure 3a, and b from test results taken during generator operation at Plant 1 in May 1990.

As noted in Figure 3a, the maximum current anomaly occurs approximately 4 times during a 210 second time window, or once every 1.1 minutes. Referring to Figure 1, the maximum allowable Percent Flicker is approximately 0.5%.

Using a higher speed recording as shown in Figure 3b to isolate the coincident voltage variation during a current anomaly, the maximum True RMS voltage variation can be calculated and averaged with four other peak values to determine the Percent Voltage Flicker.

The dashed line in the voltage trace in Fig. 3b is the average voltage during the current anomaly. This line can be drawn on an enlargement of the voltage trace as shown in Fig. 3b. The value of V_f is the peak-to-peak fluctuation about the average in a direction perpendicular to the average voltage as shown in Fig. 3b. In the case shown in Fig. 3b, V_f=0.25V, while V_b the average voltage is 123 V. Therefore, % flicker =

$$0.25/123 \times 100 = 0.20\%$$

- The above numbers are given only for illustration and do not represent the actual values.

The Otay Facility shall be deemed in compliance with applicable SDG&E standards if the average percentage of voltage flicker for the rate of occurrence is within the standard set forth in Figure 1 when calculated as specified in Section 3.3.1. and 3.3.2.

The Otay Facility will be considered out of compliance if the average percentage of voltage flicker for the frequency of occurrence exceeds the standard set forth in Figure 1 when calculated as specified in Section 3.3.1. and 3.3.2.

4. RESPONSIBILITY FOR CORRECTIVE ACTION

If the measurements taken pursuant to Sections 2 and 3, above, show that the primary voltage flicker exceeds the standard set forth in Figure 1 (upon installation and start-up of Plant 2 or subsequent tests of the Otay Facility for purposes of investigating flicker problems on the distribution system) then responsibility for any necessary corrective action will be determined in accordance with this Section 4.

Increase in voltage flicker on SDG&E's distribution system can be caused either by a degradation of the performance of the Otay Facility or either Plant individually or due to additional current (loads/generation) placed onto the SDG&E distribution system.

4.1 Responsibility for Corrective Action (Pacific Energy)

In the event the percent voltage flicker exceeds the limits set forth in Figure 1, Pacific Energy will be responsible for any necessary corrective action to reduce the percent flicker if either of the following conditions hold:

1. There is evidence of increase in the rate of occurrence or magnitude of the current anomalies as seen on the strip charts attributable to plant operation when either or both engines are in operation when compared to the base measurement taken in Section 2.2 (suggesting that a degradation of the operation of the plant

- has taken place and not caused by conditions external to the Otay Facility).

2. Additional electrical loads placed within the Otay Facility that could cause an increase in the rate of occurrence or magnitude of percent voltage flicker.

4.2 Responsibility for Corrective Action (San Diego Gas & Electric)

If the cause of increase in voltage flicker is outside the Otay Facility, SDG&E will be responsible for any necessary corrective action. Measurements taken at Plants 1 and 2 will reveal no appreciable increase in the rate or magnitude of current fluctuations coincident with the increased voltage variations.

1. If the increase in percent voltage flicker is due to loads placed onto the distribution system (other than Pacific's loads) as determined using the test procedures outlined in this Exhibit, or suitable measurement equipment, SDG&E will be responsible for identifying the source and cause of additional flicker and enforcing compliance by other contributors of voltage flicker to the guidelines of Figure 1, when necessary.

2. No customer will be held responsible for reducing their contribution of voltage flicker below the limits set forth in Figure 1, in accordance with the testing methods set forth in this Exhibit. SDG&E will be responsible for resolving accumulated flicker due to operation of multiple contributors who individually operate within the voltage flicker standard.

SCOPE

FIGURE 1

This standard defines permissible levels of voltage flicker on the primary distribution system. It also provides the analytical tools necessary to calculate motor starting inrush kVA. The subject of secondary flicker is discussed in Design Standard 5413.

PURPOSE

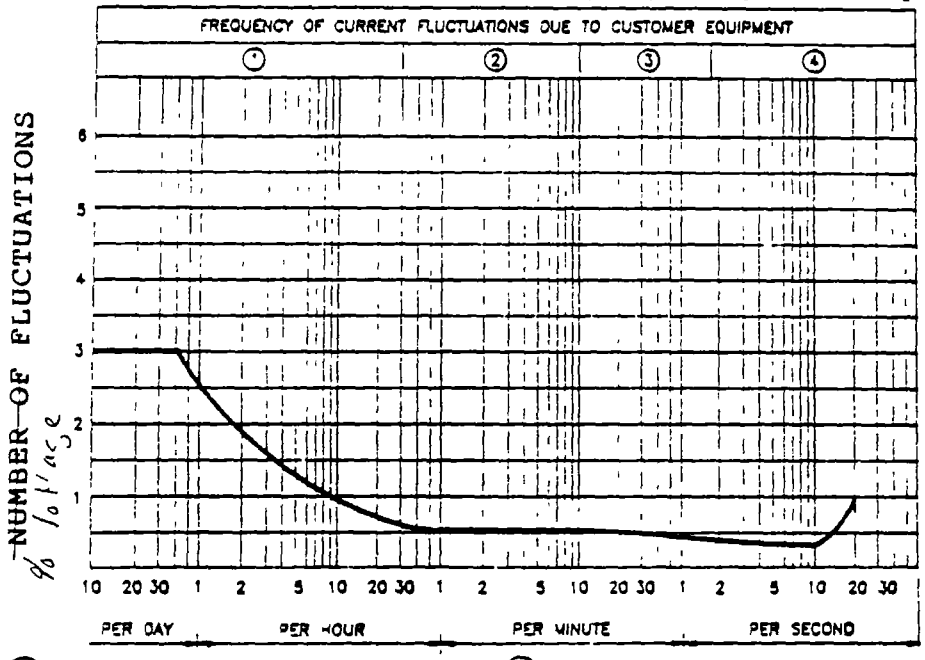
District Engineering personnel should use this standard as a reference when dealing with customer inquiries. It also provides a basis for specifying equipment operating limitations necessary to avoid customer complaints due to primary voltage flicker.

DEFINITIONS

Primary System Voltage Flicker, also known as primary flicker, is defined at SDG&E as the percentage voltage fluctuation from the distribution substation to the customer's primary metering station or primary terminals of the distribution transformer due to the operation of cyclic loads or motor starting.

CRITERIA

Sudden reductions in system voltage or rapid fluctuations in voltage effect the lumen output of lamps. This variation in light output is referred to as flicker. The acceptable amount of primary system voltage fluctuation as a function of frequency is illustrated in Figure 1. Primary system flicker limitations are more restrictive than secondary system limitations due to the larger number of affected customers, and the relatively high cost of eliminating a primary flicker problem.



③ ARC FURNACES
FLASHING SIGNS
ARC-WELDERS
MANUAL SPOT-WELDERS
DROP HAMMERS
SAWS
GROUP ELEVATORS

④ RECIPROCATING PUMPS
AUTOMATIC SPOT-WELDERS

① HOUSE PUMPS
SUMP PUMPS
COMPRESSORS
AIR CONDITIONING EQUIP.
THEATRICAL LIGHTING
DOMESTIC REFRIGERATORS
OIL BURNERS
COMPRESSORS

② SINGLE ELEVATOR HOISTS
CRANES
Y-DELTA CHANGES ON ELEVATOR-MOTOR-GENERATOR
X-RAY EQUIPMENT

FIGURE 1

FIGURE 2

TEST EQUIPMENT DIAGRAM

(To be developed and added by mutual agreement)

(TRUE RMS AMPLIFIER OUTPUT)
VOLTAGE V_{A-B}

OTAY LAND FILL - GENERATOR "ON"

FIGURE 3 A

FREQUENCY OF OCCURRENCE = 4 FLICKERS / 210 SECONDS ⇒ 1.1 FLICKERS PER MINUTE

PERCENT

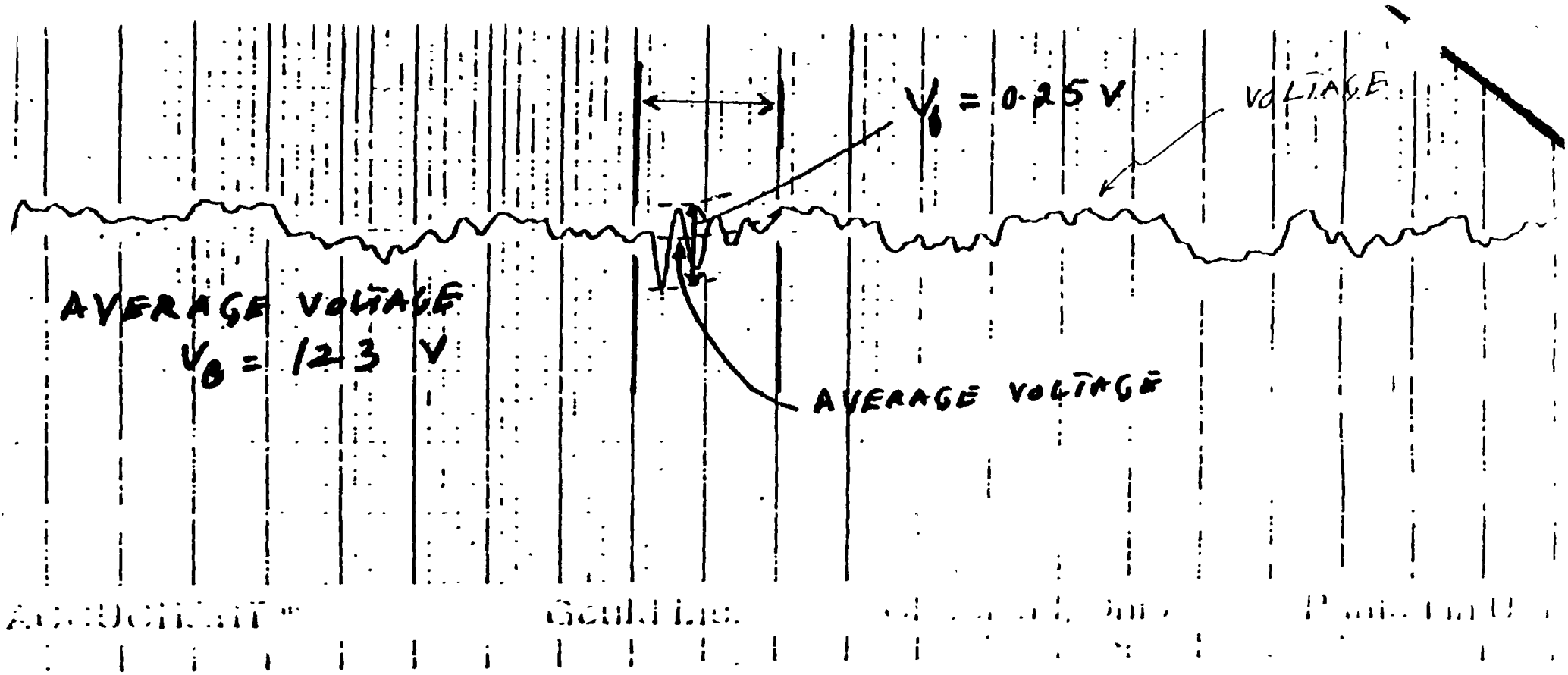
210 (SECONDS)

CURRENT ANOMALY

(TRUE RMS AMPLIFIER OUTPUT)
CURRENT I_A

ACCUCHART Gould Inc

SIMULATED
(HVDC OUTPUT)
AMPLIFIED VOLTAGE V_{A-B}



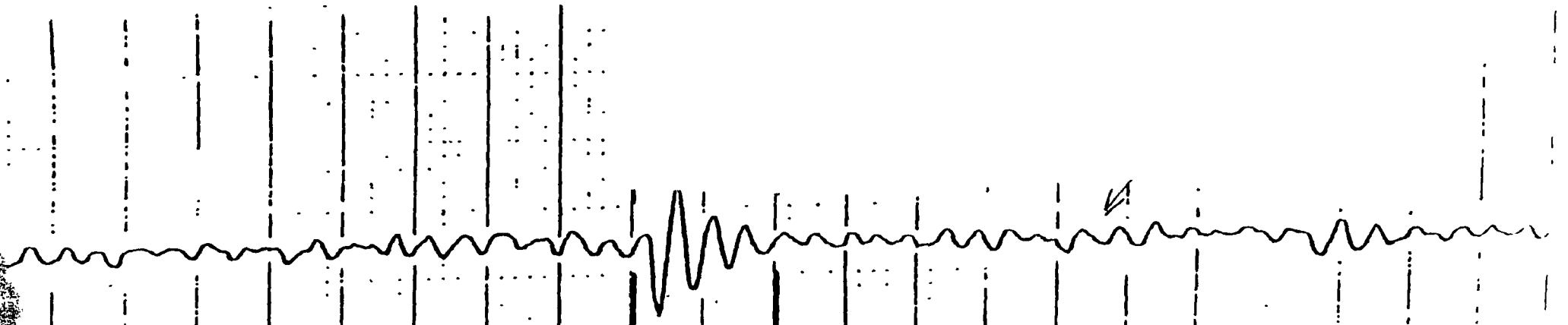


FIG. 3b

RUN # 2 - OTAY PLANT ON LINE ... IN MAY 1990)