



**Consumers
Power
Company**

COPY

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

October 31, 1979

Mr James G Keppler, Director
Office of Inspection and Enforcement
Region III
US Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - RESPONSE TO
IE BULLETIN NO 79-23: POTENTIAL
FAILURE OF EMERGENCY DIESEL GENERATOR
FIELD EXCITER TRANSFORMER

Consumers Power Company's response to the subject bulletin is forwarded as an attachment to this letter.

David A Bixel (Signed)

David A Bixel
Nuclear Licensing Administrator

CC Director, Office of Nuclear Reactor Regulation
Director, Office of Inspection and Enforcement

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7911090 234

RESPONSE TO IE BULLETIN 79-23

Question 1:

Determine whether or not connections have been made between low KVA rated transformers and high KVA rated EDGs without adequate limitations on the flow of circulating currents. If applicable, provide a description of the corrective action being taken to address this problem.

Response:

Review of the excitation circuitry used for the EDG at Big Rock Point Plant indicates that connections between the neutral of the generator and neutral of the primary windings of the excitation power transformer do not exist.

The EDG is a "package" unit utilizing a Caterpillar diesel engine rated at 350 bhp and Electric Machinery Manufacturing Company generator rated at 200 kw, 0.8 power factor. The generator utilizes an integral static exciter/voltage regulator as shown on the attached drawing (CPCo Dwg. #0740B 30833; Electric Machinery Manufacturing Company Dwg. #358B710).

Sensing voltage for control transformers used in the regulator is obtained from 480 V AC taps (T₂ and T₃) on the emergency generator output leads.

The generator output is ungrounded (T₀ tap unused) and is connected to the ungrounded 480 V AC Emergency Bus 2B through the generator air circuit breaker when an undervoltage condition exists (see Dwg. #0740G30105).

It is concluded that Question 1 is not applicable to Big Rock Point Plant.

Question 2:

Provide a schedule for the completion of a sustained full-load operation test of the EDGs for a duration of not less than 24 hours, or provide the results of a similar long duration, full-load test which has already been completed on the EDGs installed at your facility. The test should demonstrate full-load carrying capability for an interval of not less than 24 hours, of which 22 hours should be at a load equivalent to the continuous rating of the diesel generator and 2 hours at a load equivalent to the 2 hour rating of the diesel generator. The test should also verify that voltage and frequency requirements are maintained and that the cooling system functions within design limits.

Response:

Presently, load testing of the EDG at Big Rock Point Plant is performed each operating cycle as required by the Plant Technical Specifications (Section 11.4.5.3.A.1(a)). This is a short interval test of at least twenty (20) minutes at a load of 180 to 200 kw. This test is performed using a 200 kw, 3 phase resistive load bank.

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Question 2 Response (contd):

Actual testing consists of loading the EDG to 100 kw for 20 minutes; recording load, voltage, current, frequency, oil pressure and cooling water temperature parameters. The load is then increased to 190 ± 10 kw and maintained for a period of 30 minutes. The same parameters are monitored throughout the test interval. Acceptance criteria for a full load test is 190 ± 10 kw at 60 Hz $\pm 5\%$ for a period of not less than 20 minutes.

The preoperational testing of the EDG was performed in September of 1962. This test consisted of loading the EDG to an average load of 185 kw for four (4) hours. During the last hour of testing, a load of 340 amperes and 225 kw was applied intermittently to the EDG for 3-4 minutes of every 10 minutes. The overload was handled satisfactorily.

Original specifications on the EDG indicate that the diesel engine is rated at 10% overload for one-hour. This is based on a 350 bhp rating at the site (600 ft. elev.) and ambient temperature of 90°F DEMA Standard Practice. Full load rating of the generator is 200 kw at 80% power factor. Specific information regarding a two-hour rating is not provided.

Name Plate Data is as follows:

<u>Engine</u>	Caterpillar
	Serial #62B289, Series A
	Model #343A
	6 cyl 5.4 Bore 6.5 Stroke
	RPM 1800
	H.P. 319
	Bill of Material or ESO No.15260
<u>Generator</u>	Electric Machinery Manufacturing Company
	Serial #IR980611
	Type BRKT Frame R27
	KVA 250 RPM 1800
	V 480 Cycle 60
	Phase 3 P.F. 0.8
	AMP 300 Inst. Book 67

Based upon the one-hour 10% overload rating on the engine, lack of two-hour rating on the generator, absence of neutral connections between the generator and excitation transformer and maximum load demand on our generator of 215.8 kva (172.6 kw at 0.8 power factor) we do not feel that the test as outlined in this question is applicable to the EDG at Big Rock Point Plant (see attached load profile).

RESPONSE TO IE BULLETIN 79-23 (contd)

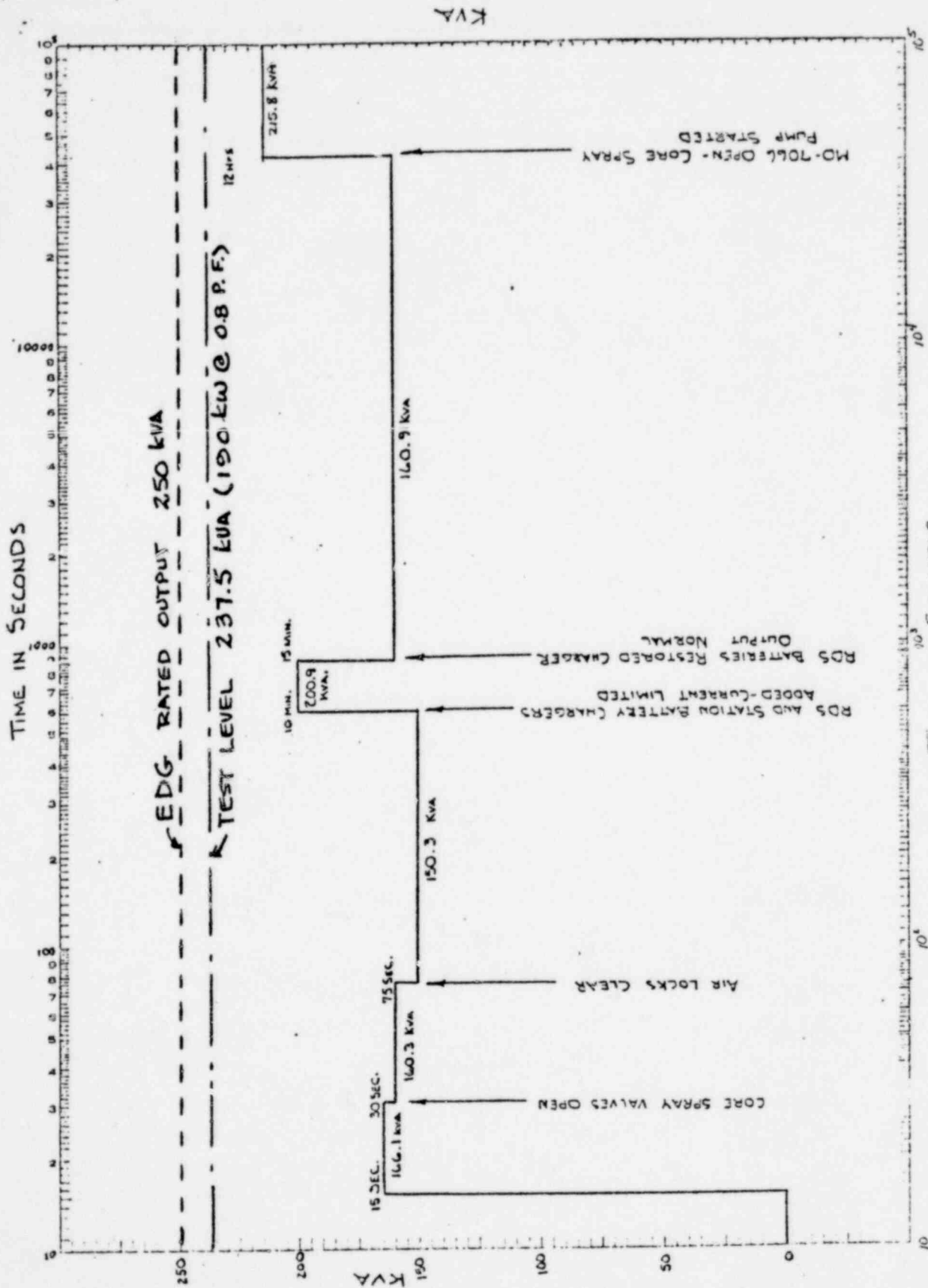
Question 2 Response (contd):

We do feel, however, that a full load 24 hour test at 190 ± 10 kw is a reasonable test to assure satisfactory operation of our EDG and we have no objection in performing such a test. Procurement of materials, test equipment, services (if required), etc.; preparation of a suitable test procedure and scheduling at a convenient outage will dictate the earliest opportunity to perform such a test. In any case, the test will be performed no later than the next refueling outage, currently scheduled for October, 1980.

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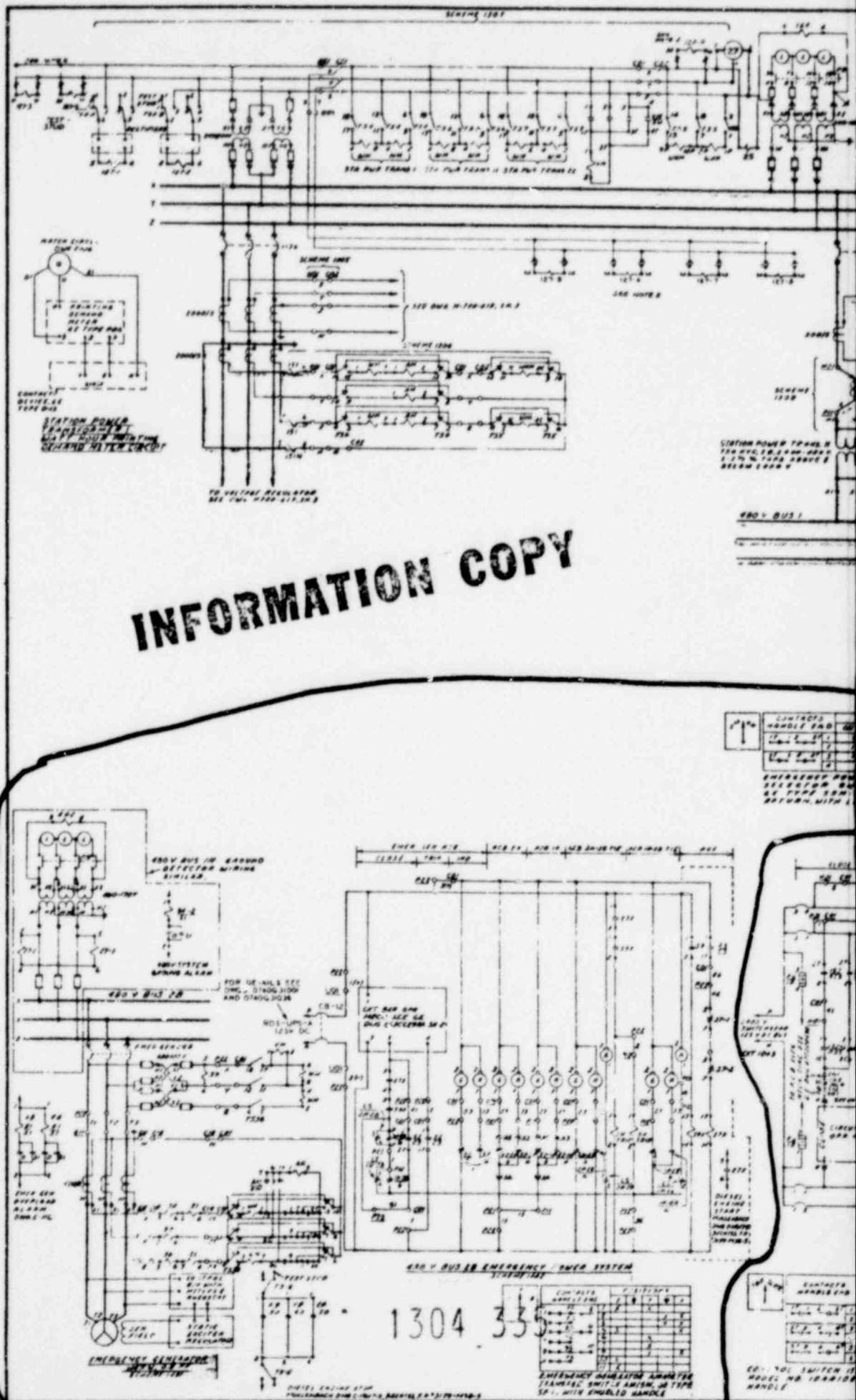
POOR ORIGINAL

FIGURE 2



1304 333

INFORMATION COPY

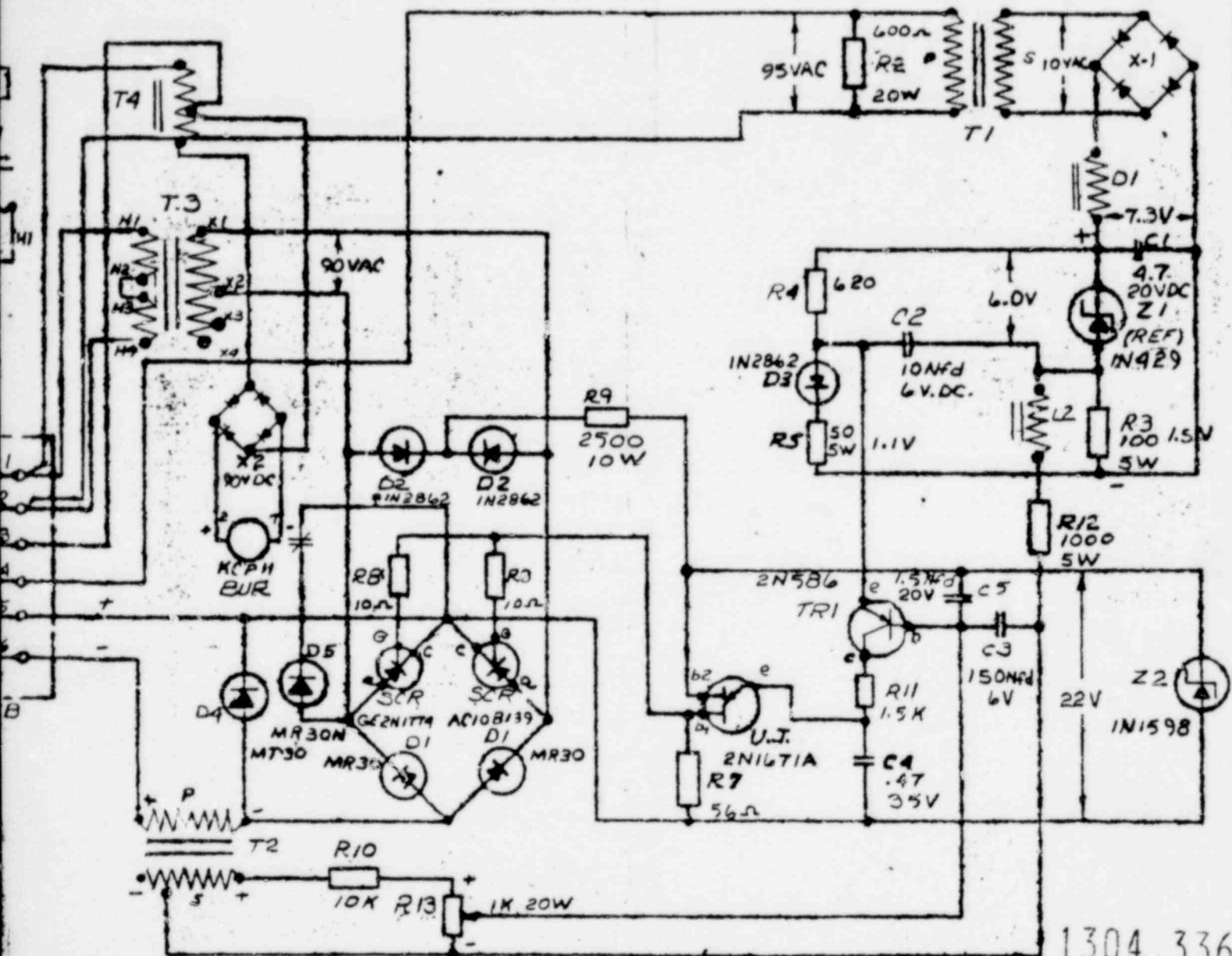


EN.
L C-17

POOR ORIGINAL

NOTES

1. 14 AWG WIRE TYPE SFF2
2. 18 AWG WIRE TYPE TFE



1304 336

HINGE

3159 M38-15-1

WARNING LABEL



FRONT
VIEW
PANEL
OPEN



Electric Machinery Mfg. Company
MINNEAPOLIS, MINNESOTA

TITLE
**VOLTAGE REGULATOR
SCHEMATIC DIAGRAM**

DIMENSIONS IN INCHES - DO NOT SCALE

DATE REF 11-20-61

DATE REF 11-21-61

DATE REF 12-6-61

DATE REF 11-20-61

DATE REF 11-21-61

DATE REF 12-6-61

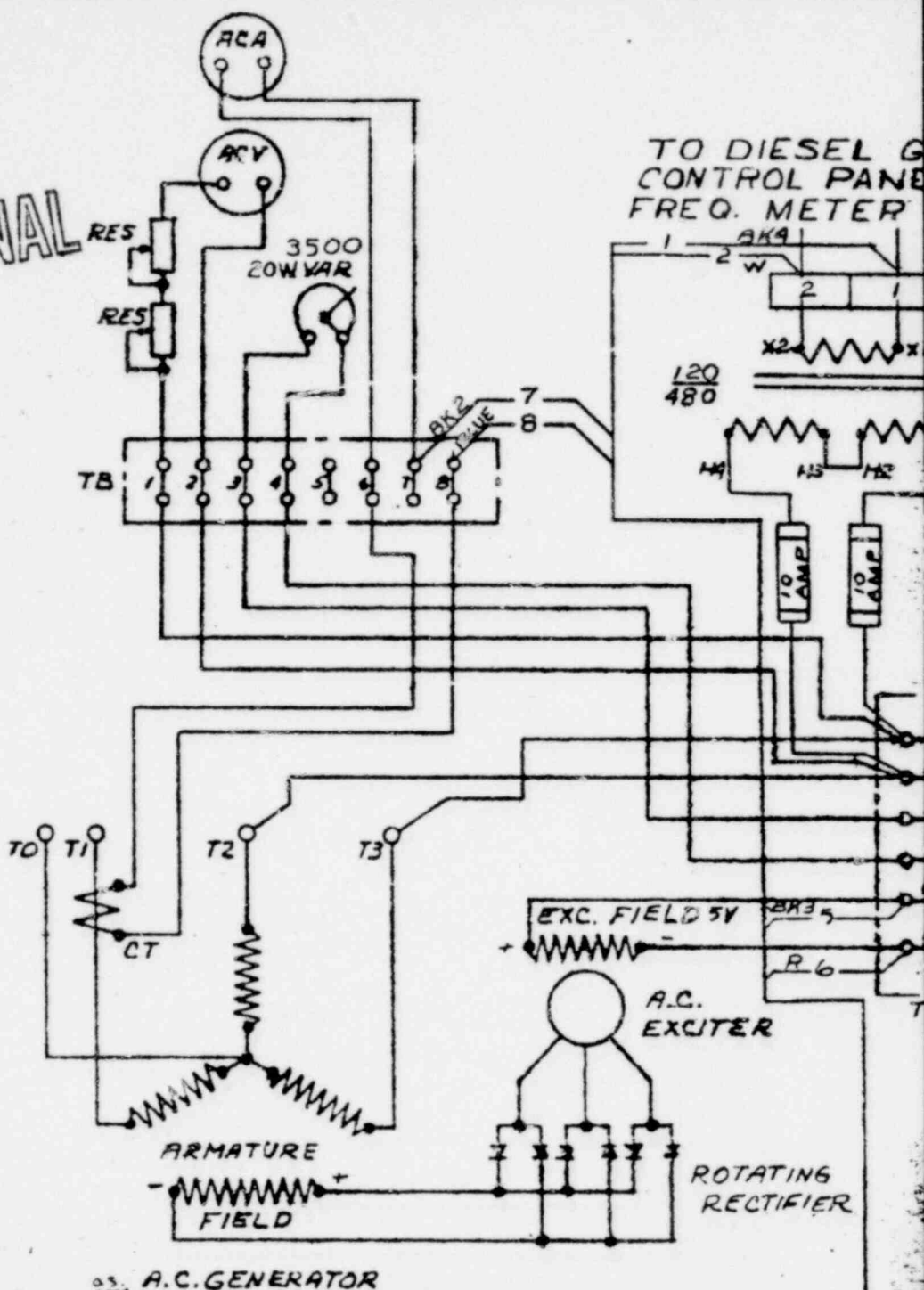
NEW CVC

0740B-30833 REV. B

KYE/3/1/70

POOR ORIGINAL

REPRODUCTION



Q3. A.C. GENERATOR

12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		C.W. E.J. D. 101 CALIFORNIA ST. SAN FRANCISCO	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		BECHTEL CORPORATION POWER & INDUSTRIAL DIVISION	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		JOB No. 5179	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		Signed Date	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		5.4.62	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		<input type="checkbox"/> (a) Approved without comment - Submit final prints	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		<input type="checkbox"/> (b) Approved with comments. Make changes and resubmit.	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		<input type="checkbox"/> (c) Approved with comments. Resubmit for final approval.	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		<input checked="" type="checkbox"/> (d) Approval of final submission.	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		VENDORS' DRAWING APPROVAL	
12-13 CHG. FREQ. MET. TRANS. 79 FUSES DGN-2-79		BOX ENTRY POINT	

R-1445-20
 CHANGED DWS
 NO. 2-8-62
 JWH

1 FREQ METER
 2 AC VOLT METER
 3 DC VOLT METER
 4 AC AMP METER

FRONT VIEW
PANEL CLOSED

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