orig → SoCal Gas Goleta U'ground Storage PTO 7500-1

cc 1991 Annual Test Report

SOUTHERN CALIFORNIA gas COMPANY

DIVISION OFFICES: 1171 MORE ROAD, GOLETA, CALIFORNIA

COASTAL TRANSMISSION DIVISION

MAILING ADDRESS: BOX 818, GOLETA, CA 93116-0818

November 5, 1991

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Mr. George Economus
County of Santa Barbara
Air Pollution Control District
26 Castillian Drive, Suite B-23
Goleta, California 93117

Subject: IC Engine Source Tests - Permit #7500-1

Dear Mr. Economus:

Enclosed for your review and approval you will find the 1991 annual source test results for the eight Ingersoll Rand engine compressor units operated by Southern California Gas Company at the Goleta Underground Storage Facility. The tests were conducted September 23-26, 1991, by Steiner Environmental Inc., in accordance with methods approved by the Santa Barbara County Air Pollution Control District.

Additionally you will find attached an updated "Oxygen Sensor Millivolt Range Limits" sheet to replace the sheet dated January. 1991, that is in Tab #6 of the "Air/Fuel Ratio Controller (AFRC) Compliance Plan for Southern California Gas Company, Goleta Underground Storage Facility".

The revised millivolt range limits were verified by Steiner Environmental during the September testing and are displayed in Table 3-30 on page 3-31 of the enclosed report.

If you have any questions or need additional information, please contact me at 681-8064.

Sincerely,

James H Fox (for J.E. Ford)

Jack E. Ford
Station Superintendent

JFH/skp

Enclosures

cc: T. Cook
S. Cummings
H. A. Haimov

OXYGEN SENSOR MILLIVOLT COMPLIANCE RANGE LIMITS

September, 1991

Unit	Minimum MV Reading for Compliance	Maximum MV Reading for Compliance
MU #2 Ingersoll Rand LVG-82	885	950
MU #3 Ingersoll Rand LVG-82	880	920
MU #4 Ingersoll Rand LVG-82	875	920
MU #5 Ingersoll Rand LVG-82	900	950
MU #6 Ingersoll Rand KVG-62	875	940
MU #7 Ingersoll Rand KVG-62	830	880
MU #8 Ingersoll Rand KVG-62	850	900

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I. C. ENGINE EMISSION TESTS AT SOUTHERN CALIFORNIA GAS GOLETA STATION

September 23 through 26, 1991

Prepared for

Southern California Gas Company
Test Center
P.O. Box 3249
Terminal Annex
Los Angeles, California 90051

October 1991

Prepared by

Steiner Environmental, Inc
4930 Boylan Street
Bakersfield, California 93308

Report PS-91-2571/Project 7081-91

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SECTION 1

INTRODUCTION

At the request of Southern California Gas Company, Steiner Environmental, Inc. conducted a series of emission tests at SoCal's Goleta Station. The purpose of these tests was to measure NO_x and CO emission data at the inlet and outlet of the catalyst when the air-to-fuel ratio controllers were manually set at a minimum, average and maximum value and automatically set at an average value to insure each engine was in compliance throughout the normal operating range of the air-to-fuel ratio controller.

Southern California Gas Company operates IC engines at their Goleta Station. These engines are used to inject gas into the Goleta natural gas storage field. Four Ingersol-Rand LVG 8-cylinder engines and three Ingersol-Rand LVG 6-cylinder engines are equipped with Englehard NO_x control catalysts and air-to-fuel ratio controllers.

Section 2 of this report presents the test matrix for this program.

SECTION 2

TEST PROGRAM

Tables 2-1 and 2-2 summarizes the test matrix for the tests done with the air-to-fuel ratio controller manually set at the minimum, average and maximum settings and automatically set at the average setting.

Section 3 summarizes the results of these tests.

TABLE 2-1. GOLETA STATION TEST MATRIX WITH AFR IN MANUAL MODE

Date	Engine Number	Test Location	Test Number	AFR Settings (millivolts)	Test Parameter	Test Time	Swing
9/23/91	7	Inlet	4A	Minimum at Inlet AFR = 830	NO_x, CO, CO_2, O_2	1:41 pm	RB 755-840 LB 774-882
		Outlet	4A	Minimum at Outlet AFR = 830	NO_x, CO, CO_2, O_2	1:41 pm	RB 755-840 LB 774-882
		Outlet	4B	Maximum at Outlet AFR = 880	NO_x, CO, CO_2, O_2	1:58 pm	RB 836-897 LB 831-907
		Inlet	4B	Maximum at Inlet AFR = 880	NO_x, CO, CO_2, O_2	1:58 pm	RB 836-897 LB 831-907
		Inlet	4C	#4 Setpoint at Inlet AFR = 840	NO_x, CO, CO_2, O_2	2:15 pm	RB 722-874 LB 756-887
		Outlet	4C	#4 Setpoint at Outlet AFR = 840	NO_x, CO, CO_2, O_2	2:15 pm	RB 722-874 LB 756-887
9/24/91	8	Inlet	4A	Minimum at Inlet AFR = 850	NO_x, CO, CO_2, O_2	11:02 am	RB 818-873 LB 833-866
		Outlet	4A	Minimum at Outlet AFR = 850	NO_x, CO, CO_2, O_2	11:02 am	RB 818-873 LB 833-866
		Outlet	4B	Maximum at Outlet AFR = 900	NO_x, CO, CO_2, O_2	11:24 am	RB 896-907 LB 900-911
		Inlet	4B	Maximum at Inlet AFR = 900	NO_x, CO, CO_2, O_2	11:24 am	RB 896-907 LB 900-911
		Inlet	4C	#4 Setpoint at Inlet AFR = 875	NO_x, CO, CO_2, O_2	11:40 am	RB 862-883 LB 845-891
		Outlet	4C	#4 Setpoint at Outlet AFR = 875	NO_x, CO, CO_2, O_2	11:40 am	RB 862-883 LB 845-891

TABLE 2-1. GOLETA STATION TEST MATRIX WITH AFR IN MANUAL MODE (CONTINUED)

Date	Engine Number	Test Location	Test Number	AFR Settings (millivolts)	Test Parameter	Test Time	Swing
9/24/91	6	Inlet	4A	Minimum at Inlet AFR = 875	NO_x, CO, CO_2, O_2	4:21 pm	RB 786-897 LB 772-904
		Outlet	4A	Minimum at Outlet AFR = 875	NO_x, CO, CO_2, O_2	4:21 pm	RB 786-897 LB 772-904
		Outlet	4B	Maximum at Outlet AFR = 940	NO_x, CO, CO_2, O_2	4:35 pm	RB 933-948 LB 936-950
		Inlet	4B	Maximum at Inlet AFR = 940	NO_x, CO, CO_2, O_2	4:35 pm	RB 933-948 LB 936-950
		Inlet	4C	#4 Setpoint at Inlet AFR = 920	NO_x, CO, CO_2, O_2	4:50 pm	RB 912-925 LB 912-931
		Outlet	4C	#4 Setpoint at Outlet AFR = 920	NO_x, CO, CO_2, O_2	4:50 pm	RB 912-925 LB 912-931
9/25/91	2	Inlet	4A	Minimum at Inlet AFR = 885	NO_x, CO, CO_2, O_2	12:30 pm	864-897
		Outlet	4A	Minimum at Outlet AFR = 885	NO_x, CO, CO_2, O_2	12:30 pm	864-897
		Outlet	4B	Maximum at Outlet AFR = 950	NO_x, CO, CO_2, O_2	1:07 pm	948-953
		Inlet	4B	Maximum at Inlet AFR = 950	NO_x, CO, CO_2, O_2	1:07 pm	948-953
		Inlet	4C	#4 Setpoint at Inlet AFR = 920	NO_x, CO, CO_2, O_2	1:26 pm	914-922
		Outlet	4C	#4 Setpoint at Outlet AFR = 920	NO_x, CO, CO_2, O_2	1:26 pm	914-922

TABLE 2-1. GOLETA STATION TEST MATRIX WITH AFR IN MANUAL MODE (CONTINUED)

Date	Engine Number	Test Location	Test Number	AFR Settings (millivolts)	Test Parameter	Test Time	Swing
9/25/91	4	Inlet	4A	Minimum at Inlet AFR = 875	NO_x, CO, CO_2, O_2	2:47 pm	852-891
		Outlet	4A	Minimum at Outlet AFR = 875	NO_x, CO, CO_2, O_2	2:47 pm	852-891
		Outlet	4B	Maximum at Outlet AFR = 920	NO_x, CO, CO_2, O_2	5:04 pm	918-927
		Inlet	4B	Maximum at Inlet AFR = 920	NO_x, CO, CO_2, O_2	5:04 pm	918-927
		Inlet	4C	#4 Setpoint at Inlet AFR = 900	NO_x, CO, CO_2, O_2	5:24 pm	893-915
		Outlet	4C	#4 Setpoint at Outlet AFR = 900	NO_x, CO, CO_2, O_2	5:24 pm	893-915
9/26/91	3	Inlet	4A	Minimum at Inlet AFR = 880	NO_x, CO, CO_2, O_2	10:17 am	873-891
		Outlet	4A	Minimum at Outlet AFR = 880	NO_x, CO, CO_2, O_2	10:17 am	873-891
		Outlet	4B	Maximum at Outlet AFR = 920	NO_x, CO, CO_2, O_2	10:36 am	923-927
		Inlet	4B	Maximum at Inlet AFR = 920	NO_x, CO, CO_2, O_2	10:36 am	923-927
		Inlet	4C	#4 Setpoint at Inlet AFR = 900	NO_x, CO, CO_2, O_2	10:52 am	897-906
		Outlet	4C	#4 Setpoint at Outlet AFR = 900	NO_x, CO, CO_2, O_2	10:52 am	897-906

TABLE 2-1. GOLETA STATION TEST MATRIX WITH AFR IN MANUAL MODE (CONCLUDED)

Date	Engine Number	Test Location	Test Number	AFR Settings (millivolts)	Test Parameter	Test Time	Swing
9/26/91	5	Inlet	4A	Minimum at Inlet AFR = 900	NO_x, CO, CO_2, O_2	2:03 pm	854-938
		Outlet	4A	Minimum at Outlet AFR = 900	NO_x, CO, CO_2, O_2	2:03 pm	854-938
		Outlet	4B	Maximum at Outlet AFR = 950	NO_x, CO, CO_2, O_2	2:22 pm	925-957
		Inlet	4B	Maximum at Inlet AFR = 950	NO_x, CO, CO_2, O_2	2:22 pm	925-957
		Inlet	4C	#4 Setpoint at Inlet AFR = 920	NO_x, CO, CO_2, O_2	2:41 pm	916-940
		Outlet	4C	#4 Setpoint at Outlet AFR = 920	NO_x, CO, CO_2, O_2	2:41 pm	916-940

TABLE 2-2. GOLETA STATION TEST MATRIX WITH AFR IN AUTOMATIC MODE

Date	Engine No.	Test Location	Test No.	AFR Setpoint	HP Rated	HP Actual	Test Parameter	Test Time
9/23/91	7	Inlet/Outlet	1	850 MV	660	650	NO_x, CO, CO_2, O_2	10:50 am - 11:30 am
		Inlet/Outlet	2		660	650	NO_x, CO, CO_2, O_2	11:50 am - 12:30 pm
		Inlet/Outlet	3		660	650	NO_x, CO, CO_2, O_2	12:45 pm - 1:25 pm
9/24/91	8	Inlet/Outlet	1	860 MV	660	650	NO_x, CO, CO_2, O_2	8:15 am - 8:55 am
		Inlet/Outlet	2		660	650	NO_x, CO, CO_2, O_2	9:13 am - 9:53 am
		Inlet/Outlet	3		660	650	NO_x, CO, CO_2, O_2	10:07 am - 10:47 am
	6	Inlet/Outlet	1	890 MV	660	650	NO_x, CO, CO_2, O_2	1:34 pm - 2:14 pm
		Inlet/Outlet	2		660	650	NO_x, CO, CO_2, O_2	2:25 pm - 3:05 pm
		Inlet/Outlet	3		660	650	NO_x, CO, CO_2, O_2	3:16 pm - 3:56 pm
9/25/91	2	Inlet/Outlet	1	900 MV	650	650	NO_x, CO, CO_2, O_2	9:33 am - 10:13 am
		Inlet/Outlet	2		650	650	NO_x, CO, CO_2, O_2	10:27 am - 11:07 am
		Inlet/Outlet	3		650	650	NO_x, CO, CO_2, O_2	11:16 am - 11:56 am
	4	Inlet/Outlet	1	890 MV	650	650	NO_x, CO, CO_2, O_2	2:14 pm - 2:54 pm
		Inlet/Outlet	2		650	650	NO_x, CO, CO_2, O_2	3:06 pm - 3:46 pm
		Inlet/Outlet	3		650	650	NO_x, CO, CO_2, O_2	3:55 pm - 4:35 pm

TABLE 2-2. GOLETA STATION TEST MATRIX WITH AFR IN AUTOMATIC MODE (CONCLUDED)

Date	Engine No.	Test Location	Test No.	AFR Setpoint	HP Rated	HP Actual	Test Parameter	Test Time
9/26/91	3	Inlet/Outlet	1	890 MV	650	648	NO_x, CO, CO_2, O_2	7:45 am - 8:25 am
		Inlet/Outlet	2		650	648	NO_x, CO, CO_2, O_2	8:35 am - 9:15 am
		Inlet/Outlet	3		650	648	NO_x, CO, CO_2, O_2	9:26 am - 10:06 am
	5	Inlet/Outlet	1	910 MV	650	633	NO_x, CO, CO_2, O_2	11:34 am - 12:14 pm
		Inlet/Outlet	2		650	633	NO_x, CO, CO_2, O_2	12:24 pm - 1:04 pm
		Inlet/Outlet	3		650	633	NO_x, CO, CO_2, O_2	1:13 pm - 1:53 pm

SECTION 3

TEST RESULTS

3.1 AUTOMATIC MODE

Tables 3-1 to 3-7 and 3-8 to 3-14 summarize the results of the tests performed with automatic AFR settings at the inlet and outlet, respectively. Table 3-15 presents the average NO_x reduction efficiencies for each engine.

3.2 MANUAL MODE

Tables 3-16 to 3-22 and 3-23 to 3-29 summarizes the results of the tests performed with manual AFR settings at the inlet and outlet, respectively. Table 3-30 presents the individual NO_x reduction efficiencies for each set point for each engine.

TABLE 3-1. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 23, 1991
Source: Goleta Unit #7 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6695.73	6570.65	6558.93	6608.43
Heat Input (MMBtu/hr)	6.99	6.86	6.85	6.90
Horsepower	650	650	650	650
Oxygen (%)	0.03	0.05	0.06	0.05
NO_x (ppm)	1715.05	1905.13	1949.44	1856.54
NO_x (ppm @ 15% O_2)	484.85	539.10	551.90	525.29
NO_x (lb/MMBtu)	1.7626	1.9598	2.0064	1.9096
NO_x (lb/hr)	12.32	13.44	13.73	13.16
NO_x (g/HP-hr)	8.60	8.68	9.58	9.18
CO (ppm)	5323.76	5276.23	5257.95	5285.98
CO (ppm @ 15% O_2)	1505.04	1493.03	1488.58	1495.55
CO (lb/MMBtu)	3.3312	3.3046	3.2948	3.3102
CO (lb/hr)	23.28	22.66	22.55	22.83
CO (g/HP-hr)	16.25	15.81	15.74	15.93
CO_2 (%)	11.96	12.04	12.03	12.01

TABLE 3-2. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 24, 1991
Source: Goleta Unit #8 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6462.82	6220.54	6088.95	6257.44
Heat Input (MMBtu/hr)	6.93	6.67	6.53	6.71
Horsepower	650	650	650	650
Oxygen (%)	0.03	0.08	0.07	0.06
NO_x (ppm)	2377.05	2280.45	2275.75	2311.08
NO_x (ppm @ 15% O_2)	672.00	646.24	644.60	654.28
NO_x (lb/MMBtu)	2.4513	2.3573	2.3513	2.3866
NO_x (lb/hr)	16.99	15.73	15.36	16.02
NO_x (g/HP-hr)	11.86	10.98	10.72	11.18
CO (ppm)	3675.00	3720.00	3872.09	3755.70
CO (ppm @ 15% O_2)	1038.93	1054.18	1096.75	1063.29
CO (lb/MMBtu)	2.3074	2.3413	2.4358	2.3615
CO (lb/hr)	15.99	15.62	15.91	15.84
CO (g/HP-hr)	11.16	10.90	11.10	11.05
CO_2 (%)	10.94	11.85	11.99	11.59

TABLE 3-3. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 24, 1991
Source: Goleta Unit #6 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6212.21	6242.70	6208.51	6221.14
Heat Input (MMBtu/hr)	6.67	6.70	6.66	6.68
Horsepower	650	650	650	650
Oxygen (%)	0.05	0.06	0.07	0.06
NO_x (ppm)	1909.48	1923.60	1896.25	1909.78
NO_x (ppm @ 15% O_2)	540.33	544.59	537.10	540.68
NO_x (lb/MMBtu)	1.9710	1.9865	1.9592	1.9723
NO_x (lb/hr)	13.13	13.30	13.05	13.16
NO_x (g/HP-hr)	9.16	9.28	9.10	9.18
CO (ppm)	5644.99	5507.30	5655.40	5602.56
CO (ppm @ 15% O_2)	1597.38	1559.17	1601.87	1586.14
CO (lb/MMBtu)	3.5477	3.4628	3.5576	3.5227
CO (lb/hr)	23.64	23.19	23.69	23.50
CO (g/HP-hr)	16.49	16.18	16.53	16.40
CO_2 (%)	12.08	12.02	11.89	12.00

TABLE 3-4. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 25, 1991
Source: Goleta Unit #2 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6846.82	6755.99	6495.64	6699.48
Heat Input (MMBtu/hr)	7.18	7.08	6.81	7.02
Horsepower	650	650	650	650
Oxygen (%)	0.23	0.23	0.23	0.23
NO_x (ppm)	1987.42	2023.58	2037.47	2016.16
NO_x (ppm @ 15% O_2)	567.28	577.61	581.57	575.49
NO_x (lb/MMBtu)	2.0657	2.1033	2.1177	2.0956
NO_x (lb/hr)	14.82	14.89	14.41	14.70
NO_x (g/HP-hr)	10.34	10.39	10.06	10.26
CO (ppm)	6361.72	6136.23	6036.24	6178.06
CO (ppm @ 15% O_2)	1815.88	1751.51	1722.97	1763.45
CO (lb/MMBtu)	4.0259	3.8832	3.8199	3.9096
CO (lb/hr)	28.87	27.48	25.99	27.45
CO (g/HP-hr)	20.15	19.18	18.14	19.16
CO_2 (%)	11.73	11.86	11.97	11.85

TABLE 3-5. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 25, 1991
Source: Goleta Unit #4 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6272.19	6317.09	6281.64	6290.31
Heat Input (MMBtu/hr)	6.57	6.62	6.58	6.59
Horsepower	650	650	650	650
Oxygen (%)	0.29	0.30	0.34	0.31
NO_x (ppm)	1906.61	1965.48	1963.31	1945.13
NO_x (ppm @ 15% O_2)	545.80	562.93	563.40	557.38
NO_x (lb/MMBtu)	1.9875	2.0498	2.0516	2.0296
NO_x (lb/hr)	13.06	13.56	13.50	13.37
NO_x (g/HP-hr)	9.11	9.47	9.42	9.33
CO (ppm)	8325.05	8326.52	9001.24	8550.94
CO (ppm @ 15% O_2)	2383.20	2384.78	2583.04	2450.34
CO (lb/MMBtu)	5.2836	5.2871	5.7267	5.4325
CO (lb/hr)	34.72	34.99	37.68	35.80
CO (g/HP-hr)	24.23	24.42	26.30	24.98
CO_2 (%)	11.78	11.78	11.62	11.73

TABLE 3-6. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 26, 1991
Source: Goleta Unit #3 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6535.51	6407.59	6448.71	6463.94
Heat Input (MMBtu/hr)	6.81	6.68	6.72	6.74
Horsepower	648	648	648	648
Oxygen (%)	0.21	0.20	0.18	0.20
NO_x (ppm)	2058.92	2212.54	2137.66	2136.37
NO_x (ppm @ 15% O_2)	587.13	630.63	608.70	608.82
NO_x (lb/MMBtu)	2.1367	2.2950	2.2152	2.2156
NO_x (lb/hr)	14.54	15.32	14.88	14.91
NO_x (g/HP-hr)	10.18	10.72	10.41	10.44
CO (ppm)	4864.48	4848.77	4722.50	4811.92
CO (ppm @ 15% O_2)	1387.16	1382.02	1344.73	1371.30
CO (lb/MMBtu)	3.0736	3.0622	2.9795	3.0384
CO (lb/hr)	20.92	20.44	20.01	20.46
CO (g/HP-hr)	14.65	14.31	14.01	14.32
CO_2 (%)	12.00	11.91	12.01	11.97

TABLE 3-7. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 26, 1991
Source: Goleta Unit #5 Inlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6700.49	6744.19	6546.08	6663.59
Heat Input (MMBtu/hr)	6.98	7.03	6.82	6.94
Horsepower	633	633	633	633
Oxygen (%)	0.55	0.52	0.54	0.54
NO_x (ppm)	1736.67	1718.75	1744.22	1733.21
NO_x (ppm @ 15% O_2)	503.51	497.58	505.45	502.18
NO_x (lb/MMBtu)	1.8324	1.8108	1.8394	1.8275
NO_x (lb/hr)	12.79	12.72	12.54	12.68
NO_x (g/HP-hr)	9.16	9.11	8.99	9.09
CO (ppm)	7015.04	6978.67	6820.00	6937.90
CO (ppm @ 15% O_2)	2033.84	2020.32	1976.33	2010.16
CO (lb/MMBtu)	4.5064	4.4765	4.3790	4.4540
CO (lb/hr)	31.45	31.44	29.86	30.92
CO (g/HP-hr)	22.54	22.53	21.39	22.15
CO_2 (%)	11.61	11.75	11.72	11.69

TABLE 3-8. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 23, 1991
Source: Goleta Unit #7 Outlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6695.73	6570.65	6558.93	6608.43
Heat Input (MMBtu/hr)	6.99	6.86	6.85	6.90
Horsepower	650	650	650	650
Oxygen (%)	0.07	0.05	0.02	0.05
NO_x (ppm)	202.03	207.20	219.68	209.64
NO_x (ppm @ 15% O_2)	57.22	58.63	62.07	59.31
NO_x (lb/MMBtu)	0.2080	0.2131	0.2257	0.2156
NO_x (lb/hr)	1.45	1.46	1.54	1.49
NO_x (g/HP-hr)	1.01	1.02	1.08	1.04
CO (ppm)	4217.68	4095.12	4237.03	4183.28
CO (ppm @ 15% O_2)	1194.64	1158.81	1197.25	1183.56
CO (lb/MMBtu)	2.6442	2.5649	2.6499	2.6197
CO (lb/hr)	18.48	17.59	18.14	18.07
CO (g/HP-hr)	12.89	12.27	12.66	12.61
CO_2 (%)	11.92	12.02	11.98	11.97

TABLE 3-9. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 24, 1991
Source: Goleta Unit #8 Outlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6462.82	6220.54	6088.95	6257.44
Heat Input (MMBtu/hr)	6.93	6.67	6.53	6.71
Horsepower	650	650	650	650
Oxygen (%)	0.01	0.01	0.02	0.01
NO_x (ppm)	24.33	23.25	26.19	24.59
NO_x (ppm @ 15% O_2)	6.87	6.57	7.40	6.95
NO_x (lb/MMBtu)	0.0251	0.0240	0.0270	0.0253
NO_x (lb/hr)	0.17	0.16	0.18	0.17
NO_x (g/HP-hr)	0.12	0.11	0.12	0.12
CO (ppm)	1466.89	1820.48	1894.79	1727.39
CO (ppm @ 15% O_2)	414.30	514.16	535.41	487.95
CO (lb/MMBtu)	0.9201	1.1419	1.1891	1.0837
CO (lb/hr)	6.38	7.62	7.77	7.25
CO (g/HP-hr)	4.45	5.32	5.42	5.06
CO_2 (%)	11.77	12.05	12.09	11.97

TABLE 3-10. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 24, 1991
Source: Goleta Unit #6 Outlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6276.88	6178.39	6208.51	6221.26
Heat Input (MMBtu/hr)	6.74	6.63	6.66	6.68
Horsepower	650	650	650	650
Oxygen (%)	0.02	0.03	0.02	0.02
NO_x (ppm)	79.95	68.44	59.75	69.38
NO_x (ppm @ 15% O_2)	22.59	19.35	16.88	19.61
NO_x (lb/MMBtu)	0.0824	0.0706	0.0616	0.0715
NO_x (lb/hr)	0.55	0.47	0.41	0.48
NO_x (g/HP-hr)	0.39	0.33	0.29	0.33
CO (ppm)	3212.74	3195.17	3261.91	3223.27
CO (ppm @ 15% O_2)	907.81	903.28	921.71	910.94
CO (lb/MMBtu)	2.0162	2.0061	2.0470	2.0231
CO (lb/hr)	13.57	13.29	13.63	13.50
CO (g/HP-hr)	9.47	9.28	9.51	9.42
CO_2 (%)	11.99	12.12	12.04	12.05

TABLE 3-11. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 25, 1991
Source: Goleta Unit #2 Outlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6846.82	6755.99	6495.64	6699.48
Heat Input (MMBtu/hr)	7.18	7.08	6.81	7.02
Horsepower	650	650	650	650
Oxygen (%)	0.03	0.02	0.02	0.02
NO_x (ppm)	112.52	117.55	130.14	120.07
NO_x (ppm @ 15% O_2)	31.81	33.22	36.77	33.93
NO_x (lb/MMBtu)	0.1158	0.1210	0.1339	0.1236
NO_x (lb/hr)	0.83	0.86	0.91	0.87
NO_x (g/HP-hr)	0.58	0.60	0.64	0.60
CO (ppm)	3428.60	3072.22	3143.52	3214.78
CO (ppm @ 15% O_2)	969.27	868.11	888.26	908.55
CO (lb/MMBtu)	2.1489	1.9246	1.9693	2.0143
CO (lb/hr)	15.41	13.62	13.40	14.14
CO (g/HP-hr)	10.76	9.51	9.35	9.87
CO_2 (%)	11.89	12.06	12.06	12.00

TABLE 3-12. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 25, 1991
Source: Goleta Unit #4 Outlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6272.19	6317.09	6281.64	6290.31
Heat Input (MMBtu/hr)	6.57	6.62	6.58	6.59
Horsepower	650	650	650	650
Oxygen (%)	0.03	0.04	0.03	0.03
NO_x (ppm)	62.14	67.38	68.00	65.84
NO_x (ppm @ 15% O_2)	17.57	19.06	19.22	18.62
NO_x (lb/MMBtu)	0.0640	0.0694	0.0700	0.0678
NO_x (lb/hr)	0.42	0.46	0.46	0.45
NO_x (g/HP-hr)	0.29	0.32	0.32	0.31
CO (ppm)	5118.34	5156.29	5701.99	5325.54
CO (ppm @ 15% O_2)	1446.97	1458.39	1611.97	1505.78
CO (lb/MMBtu)	3.2080	3.2333	3.5738	3.3384
CO (lb/hr)	21.08	21.40	23.52	22.00
CO (g/HP-hr)	14.71	14.93	16.41	15.35
CO_2 (%)	12.09	11.96	11.86	11.97

TABLE 3-13. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 26, 1991
Source: Goleta Unit #3 Outlet

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6535.51	6407.59	6448.71	6463.94
Heat Input (MMBtu/hr)	6.81	6.68	6.72	6.74
Horsepower	648	648	648	648
Oxygen (%)	0.02	0.02	0.01	0.02
NO_x (ppm)	14.46	16.17	18.97	16.53
NO_x (ppm @ 15% O_2)	4.09	4.57	5.36	4.67
NO_x (lb/MMBtu)	0.0149	0.0166	0.0195	0.0170
NO_x (lb/hr)	0.10	0.11	0.13	0.11
NO_x (g/HP-hr)	0.07	0.08	0.09	0.08
CO (ppm)	928.76	1133.24	1123.00	1061.67
CO (ppm @ 15% O_2)	262.44	320.22	317.17	299.94
CO (lb/MMBtu)	0.5815	0.7095	0.7028	0.6646
CO (lb/hr)	3.96	4.74	4.72	4.47
CO (g/HP-hr)	2.77	3.31	3.30	3.13
CO_2 (%)	12.08	12.08	12.15	12.10

TABLE 3-14. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #5 Outlet
Date: September 26, 1991

Test Number	1	2	3	Average
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6700.49	6744.19	6546.08	6663.59
Heat Input (MMBtu/hr)	6.98	7.03	6.82	6.94
Horsepower	633	633	633	633
Oxygen (%)	0.03	0.03	0.05	0.04
NO_x (ppm)	3.98	3.04	2.94	3.32
NO_x (ppm @ 15% O_2)	1.13	0.86	0.83	0.94
NO_x (lb/MMBtu)	0.0041	0.0031	0.0030	0.0034
NO_x (lb/hr)	0.03	0.02	0.02	0.02
NO_x (g/HP-hr)	0.02	0.02	0.01	0.02
CO (ppm)	890.01	964.64	787.50	880.72
CO (ppm @ 15% O_2)	251.61	272.71	222.84	249.05
CO (lb/MMBtu)	0.5575	0.6042	0.4938	0.5518
CO (lb/hr)	3.89	4.24	3.37	3.83
CO (g/HP-hr)	2.79	3.04	2.41	2.75
CO_2 (%)	12.12	12.59	12.26	12.32

TABLE 3-15. NO_x REDUCTION EFFICIENCIES IN THE AUTOMATIC MODE

Date	Engine Number	Test Number	AFR Setpoint	Inlet NO_x (ppm @ 15% O_2)	Outlet NO_x (ppm @ 15% O_2)	NO_x Reduction %*
9/23/91	7	Average	850 MV	525.29	59.31	89
9/24/91	8	Average	860 MV	654.28	6.95	99
	6	Average	890 MV	540.68	19.61	96
9/25/91	2	Average	900 MV	575.49	33.93	94
	4	Average	890 MV	557.38	18.62	97
9/26/91	3	Average	890 MV	608.82	4.67	99
	5	Average	910 MV	502.18	0.94	> 99

Avg 96

* NO_x Reduction Efficiency = $\frac{(NO_x \text{ @ } 15\% \ O_2) \text{ in} - (NO_x \text{ @ } 15\% \ O_2) \text{ out}}{(NO_x \text{ @ } 15\% \ O_2) \text{ in}} \times 100$

TABLE 3-16. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #7 Inlet

Date: September 23, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6558.93	6558.93	6558.93
Heat Input (MMBtu/hr)	6.85	6.85	6.85
Horsepower	650	650	650
Oxygen (%)	0.08	0.06	0.06
NO_x (ppm)	1999.19	1907.69	1876.21
NO_x (ppm @ 15% O_2)	566.53	540.08	531.17
NO_x (lb/MMBtu)	2.0595	1.9634	1.9310
NO_x (lb/hr)	14.10	13.44	13.22
NO_x (g/HP-hr)	9.84	9.38	9.23
CO (ppm)	4900.37	6102.60	5252.57
CO (ppm @ 15% O_2)	1388.67	1727.70	1487.05
CO (lb/MMBtu)	3.0736	3.8240	3.2914
CO (lb/hr)	21.04	26.17	22.53
CO (g/HP-hr)	14.68	18.56	15.72
CO_2 (%)	12.12	12.00	12.02

TABLE 3-17. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #8 Inlet
Date: September 24, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6088.95	6088.95	6088.95
Heat Input (MMBtu/hr)	6.53	6.53	6.53
Horsepower	650	650	650
Oxygen (%)	0.06	0.05	0.06
NO_x (ppm)	2351.90	1989.82	2208.91
NO_x (ppm @ 15% O_2)	665.85	563.07	625.36
NO_x (lb/MMBtu)	2.4288	2.0539	2.2812
NO_x (lb/hr)	15.86	13.41	14.90
NO_x (g/HP-hr)	11.07	9.36	10.40
CO (ppm)	3696.19	2208.91	4558.42
CO (ppm @ 15% O_2)	1046.43	625.06	1290.53
CO (lb/MMBtu)	2.3240	1.3882	2.8662
CO (lb/hr)	15.18	9.07	18.72
CO (g/HP-hr)	10.59	6.33	13.06
CO_2 (%)	12.07	11.89	12.04

TABLE 3-18. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #6 Inlet
Date: September 24, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6208.51	6208.51	6208.51
Heat Input (MMBtu/hr)	6.66	6.66	6.66
Horsepower	650	650	650
Oxygen (%)	0.06	0.05	0.05
NO_x (ppm)	1852.24	1189.32	1494.04
NO_x (ppm @ 15% O_2)	524.39	336.55	422.77
NO_x (lb/MMBtu)	1.9128	1.2276	1.5422
NO_x (lb/hr)	12.74	8.17	10.27
NO_x (g/HP-hr)	8.89	5.70	7.17
CO (ppm)	5431.07	13162.35	9337.25
CO (ppm @ 15% O_2)	1537.59	3724.60	2642.20
CO (lb/MMBtu)	3.4149	8.2721	5.8681
CO (lb/hr)	22.74	55.08	39.07
CO (g/HP-hr)	15.87	38.44	27.27
CO_2 (%)	11.94	11.45	11.68

TABLE 3-19. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #2 Inlet
Date: September 25, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6495.64	6495.64	6495.64
Heat Input (MMBtu/hr)	6.81	6.81	6.81
Horsepower	650	650	650
Oxygen (%)	0.30	0.09	0.16
NO_x (ppm)	2194.69	1240.99	1956.32
NO_x (ppm @ 15% O_2)	628.58	351.84	556.52
NO_x (lb/MMBtu)	2.2889	1.2812	2.0265
NO_x (lb/hr)	15.57	8.72	13.79
NO_x (g/HP-hr)	10.87	6.08	9.62
CO (ppm)	5141.62	13894.23	6463.05
CO (ppm @ 15% O_2)	1472.60	3939.26	1838.57
CO (lb/MMBtu)	3.2648	8.7335	4.0762
CO (lb/hr)	22.22	59.43	27.74
CO (g/HP-hr)	15.50	41.47	19.36
CO_2 (%)	11.99	11.46	11.94

TABLE 3-20. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #4 Inlet

Date: September 25, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6281.64	6281.64	6281.64
Heat Input (MMBtu/hr)	6.58	6.58	6.58
Horsepower	650	650	650
Oxygen (%)	0.40	0.26	0.33
NO_x (ppm)	2064.17	1682.96	1876.21
NO_x (ppm @ 15% O_2)	594.08	481.08	538.14
NO_x (lb/MMBtu)	2.1633	1.7518	1.9596
NO_x (lb/hr)	14.23	11.53	12.89
NO_x (g/HP-hr)	9.93	8.04	9.00
CO (ppm)	8120.00	11000.00	9750.00
CO (ppm @ 15% O_2)	2336.98	3144.38	2796.55
CO (lb/MMBtu)	5.1812	6.9712	6.2001
CO (lb/hr)	34.09	45.87	40.80
CO (g/HP-hr)	23.79	32.01	28.47
CO_2 (%)	11.51	11.42	11.54

TABLE 3-21. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #3 Inlet
Date: September 26, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6448.71	6448.71	6448.71
Heat Input (MMBtu/hr)	6.72	6.72	6.72
Horsepower	648	648	648
Oxygen (%)	0.17	0.09	0.14
NO_x (ppm)	2231.80	1623.93	2063.33
NO_x (ppm @ 15% O_2)	635.20	460.41	586.40
NO_x (lb/MMBtu)	2.3116	1.6755	2.1340
NO_x (lb/hr)	15.53	11.25	14.33
NO_x (g/HP-hr)	10.87	7.88	10.03
CO (ppm)	4150.85	9135.63	5455.61
CO (ppm @ 15% O_2)	1181.38	2590.11	1550.49
CO (lb/MMBtu)	2.6176	5.7390	3.4355
CO (lb/hr)	17.58	38.55	23.07
CO (g/HP-hr)	12.31	26.98	16.15
CO_2 (%)	12.10	11.79	12.12

TABLE 3-22. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #5 Inlet
Date: September 26, 1991

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6546.08	6546.08	6546.08
Heat Input (MMBtu/hr)	6.82	6.82	6.82
Horsepower	633	633	633
Oxygen (%)	0.52	0.45	0.52
NO_x (ppm)	1800.73	1411.71	1703.44
NO_x (ppm @ 15% O_2)	521.31	407.29	493.15
NO_x (lb/MMBtu)	1.8972	1.4822	1.7947
NO_x (lb/hr)	12.93	10.11	12.24
NO_x (g/HP-hr)	9.27	7.24	8.77
CO (ppm)	6300.00	10000.00	6770.00
CO (ppm @ 15% O_2)	1823.85	2885.09	1959.91
CO (lb/MMBtu)	4.0411	6.3926	4.3426
CO (lb/hr)	27.55	43.58	29.61
CO (g/HP-hr)	19.74	31.23	21.22
CO_2 (%)	11.82	11.46	11.68

TABLE 3-23. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas Date: September 23, 1991
Source: Goleta Unit #7 Outlet

				Avg.
Test Number	4A	4B	4C	
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6560.99	6558.93	6558.93	
Heat Input (MMBtu/hr)	6.85	6.85	6.85	
Horsepower	650	650	650	
Oxygen (%)	0.03	0.03	0.03	
NO_x (ppm)	215.19	222.60	226.01	
NO_x (ppm @ 15% O_2)	60.83	62.93	63.89	
NO_x (lb/MMBtu)	0.2212	0.2288	0.2323	
NO_x (lb/hr)	1.51	1.57	1.59	1.56
NO_x (g/HP-hr)	1.06	1.09	1.11	
CO (ppm)	3757.58	5322.28	4192.30	
CO (ppm @ 15% O_2)	1062.28	1504.62	1185.17	
CO (lb/MMBtu)	2.3512	3.3303	2.6232	
CO (lb/hr)	16.10	22.79	17.95	– 18.95
CO (g/HP-hr)	11.23	15.91	12.53	
CO_2 (%)	12.08	12.00	12.03	

TABLE 3-24. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #8 Outlet
Date: September 24, 1991

Test Number	4A	4B	4C	Avg.
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6088.95	6088.95	6088.95	
Heat Input (MMBtu/hr)	6.53	6.53	6.53	
Horsepower	650	650	650	
Oxygen (%)	0.02	0.02	0.02	
NO_x (ppm)	23.96	22.68	23.00	
NO_x (ppm @ 15% O_2)	6.77	6.41	6.50	
NO_x (lb/MMBtu)	0.0247	0.0234	0.0237	
NO_x (lb/hr)	0.16	0.15	0.15	0.15
NO_x (g/HP-hr)	0.11	0.11	0.11	
CO (ppm)	1551.88	5720.78	2666.14	
CO (ppm @ 15% O_2)	438.51	1616.50	753.36	
CO (lb/MMBtu)	0.9739	3.5901	1.6732	
CO (lb/hr)	6.36	23.45	10.93	13.58
CO (g/HP-hr)	4.44	16.36	7.63	
CO_2 (%)	12.18	11.88	12.13	

TABLE 3-25. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #6 Outlet

Date: September 24, 1991

Test Number	4A	4B	4C	
Pressure Standard (in. Hg)	29.92	29.92	29.92	Avg
Fuel Flow (scfh)	6208.51	6208.51	6208.51	
Heat Input (MMBtu/hr)	6.66	6.66	6.66	
Horsepower	650	650	650	
Oxygen (%)	0.02	0.01	0.01	
NO_x (ppm)	52.00	16.00	35.00	
NO_x (ppm @ 15% O_2)	14.69	4.52	9.89	
NO_x (lb/MMBtu)	0.0536	0.0165	0.0361	
NO_x (lb/hr)	0.36	0.11	0.24	— 0.24
NO_x (g/HP-hr)	0.25	0.08	0.17	
CO (ppm)	3001.21	10512.73	6513.14	
CO (ppm @ 15% O_2)	848.04	2969.13	1839.52	
CO (lb/MMBtu)	1.8834	6.5942	4.0854	
CO (lb/hr)	12.54	43.91	27.20	27.66
CO (g/HP-hr)	8.75	30.64	18.98	
CO_2 (%)	12.11	11.62	11.83	

TABLE 3-26. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #2 Outlet

Date: September 25, 1991

Test Number	4A	4B	4C	Avg.
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6495.64	6495.64	6495.64	
Heat Input (MMBtu/hr)	6.81	6.81	6.81	
Horsepower	650	650	650	
Oxygen (%)	0.02	0.03	0.03	
NO_x (ppm)	96.26	42.15	117.46	
NO_x (ppm @ 15% O_2)	27.20	11.92	33.21	
NO_x (lb/MMBtu)	0.0990	0.0434	0.1209	
NO_x (lb/hr)	0.67	0.30	0.82	.60
NO_x (g/HP-hr)	0.47	0.21	0.57	
CO (ppm)	897.46	13089.08	4338.72	
CO (ppm @ 15% O_2)	253.59	3700.31	1226.57	
CO (lb/MMBtu)	0.5622	8.2037	2.7193	
CO (lb/hr)	3.83	55.82	18.50	26.05
CO (g/HP-hr)	2.67	38.95	12.91	
CO_2 (%)	12.20	11.48	11.95	

TABLE 3-27. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #4 Outlet

Date: September 25, 1991

Test Number	4A	4B	4C	Avg
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6281.64	6281.64	6281.64	
Heat Input (MMBtu/hr)	6.58	6.58	6.58	
Horsepower	650	650	650	
Oxygen (%)	0.04	0.06	0.05	
NO_x (ppm)	56.39	60.44	65.80	
NO_x (ppm @ 15% O_2)	15.95	17.11	18.62	
NO_x (lb/MMBtu)	0.0581	0.0623	0.0678	
NO_x (lb/hr)	0.38	0.41	0.45	0.41
NO_x (g/HP-hr)	0.27	0.29	0.31	
CO (ppm)	3801.53	9411.39	6513.14	
CO (ppm @ 15% O_2)	1075.22	2664.45	1843.05	
CO (lb/MMBtu)	2.3838	5.9072	4.0861	
CO (lb/hr)	15.69	38.87	26.89	27.15
CO (g/HP-hr)	10.95	27.13	18.76	
CO_2 (%)	11.91	11.59	11.76	

TABLE 3-28. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #3 Outlet

Date: September 26, 1991

Avg

Test Number	4A	4B	4C
Pressure Standard (in. Hg)	29.92	29.92	29.92
Fuel Flow (scfh)	6448.71	6448.71	6448.71
Heat Input (MMBtu/hr)	6.72	6.72	6.72
Horsepower	648	648	648
Oxygen (%)	0.02	0.02	0.02
NO_x (ppm)	11.48	46.21	25.74
NO_x (ppm @ 15% O_2)	3.24	13.06	7.27
NO_x (lb/MMBtu)	0.0118	0.0475	0.0265
NO_x (lb/hr)	0.08	0.32	0.18
NO_x (g/HP-hr)	0.06	0.22	0.12
CO (ppm)	600.73	7125.88	2263.70
CO (ppm @ 15% O_2)	169.75	2013.54	639.65
CO (lb/MMBtu)	0.3761	4.4615	1.4173
CO (lb/hr)	2.53	29.97	9.52
CO (g/HP-hr)	1.77	20.98	6.66
CO_2 (%)	12.24	11.79	12.18

0.19

14.01

TABLE 3-29. SUMMARY OF EMISSIONS TEST DATA (60°F)

Plant: So Cal Gas
Source: Goleta Unit #5 Outlet

Date: September 26, 1991

Test Number	4A	4B	4C	Avg
Pressure Standard (in. Hg)	29.92	29.92	29.92	
Fuel Flow (scfh)	6770.09	6770.09	6770.09	
Heat Input (MMBtu/hr)	7.05	7.05	7.05	
Horsepower	633	633	633	
Oxygen (%)	0.01	0.02	0.02	
NO_x (ppm)	3.54	4.61	3.33	
NO_x (ppm @ 15% O_2)	1.00	1.30	0.94	
NO_x (lb/MMBtu)	0.0036	0.0047	0.0034	
NO_x (lb/hr)	0.03	0.03	0.02	.03
NO_x (g/HP-hr)	0.02	0.02	0.02	
CO (ppm)	594.53	5513.37	951.26	
CO (ppm @ 15% O_2)	167.91	1557.90	268.79	
CO (lb/MMBtu)	0.3721	3.4519	0.5956	
CO (lb/hr)	2.62	24.34	4.20	10.39
CO (g/HP-hr)	1.88	17.44	3.01	
CO_2 (%)	12.23	11.07	12.24	

TABLE 3-30. TEST RESULTS WITH MANUAL AIR SETTINGS

Date	Engine Number	Test Number	AFR Settings (millivolts)	Inlet NO_x	Inlet NO_x	Outlet NO_x	Outlet NO_x	NO_x Reduction %
				ppm	ppm @ 15% O_2	ppm	ppm @ 15% O_2	
9/23/91	7	4A	Minimum AFR = 830	1999.19	566.53	215.19	60.83	89
		4B	Maximum AFR = 880	1907.69	540.08	222.60	62.93	88
		4C	#4 Setpoint AFR = 840	1876.21	531.17	226.01	63.89	88
9/24/91	8	4A	Minimum AFR = 850	2351.90	665.85	23.96	6.77	99
		4B	Maximum AFR = 900	1989.82	563.07	22.68	6.41	99
		4C	#4 Setpoint AFR = 875	2208.91	625.36	23.00	6.50	99
9/24/91	6	4A	Minimum AFR = 875	1852.24	524.39	52.00	14.69	97
		4B	Maximum AFR = 940	1189.32	336.55	16.00	4.52	99
		4C	#4 Setpoint AFR = 920	1494.04	422.77	35.00	9.89	98
9/25/91	2	4A	Minimum AFR = 885	2194.69	628.58	96.26	27.20	96
		4B	Maximum AFR = 950	1240.99	351.84	42.15	11.92	97
		4C	#4 Setpoint AFR = 920	1956.32	556.52	117.46	33.21	94
9/25/91	4	4A	Minimum AFR = 875	2064.17	594.08	56.39	15.95	97
		4B	Maximum AFR = 920	1682.96	481.08	60.44	17.11	96
		4C	#4 Setpoint AFR = 900	1876.21	538.14	65.80	18.62	97
9/26/91	3	4A	Minimum AFR = 880	2231.80	635.20	11.48	3.24	99
		4B	Maximum AFR = 920	1623.93	460.41	46.21	13.06	97
		4C	#4 Setpoint AFR = 900	2063.33	586.40	25.74	7.27	99
9/26/91	5	4A	Minimum AFR = 900	1800.73	521.31	3.54	1.00	> 99
		4B	Maximum AFR = 950	1411.71	407.29	4.61	1.30	> 99
		4C	#4 Setpoint AFR = 920	1703.44	493.15	3.33	0.94	> 99

SECTION 4

SAMPLING EQUIPMENT AND PROCEDURES

This section of the report describes the equipment and procedures used for these tests.

4.1 SAMPLING PROCEDURES FOR CONTINUOUS MONITORING

The continuous monitors used in the Steiner Environmental, Inc. Mobile Monitoring Lab are shown in Table 4-1. Figure 4-1 is a schematic of the continuous monitoring system. The procedures used to continuously monitor stack gases for NO_x, CO, CO_2 and O_2 strictly follow CARB Method 1-100.

Sample was taken from the stack (at a single point) using a 316 stainless steel probe. A heated Balston filter holder and fiberglass filter (99.9999 percent efficiency retention of 0.6 micron particles) was connected to the outlet of the probe. Sample gas was transported through heated Teflon sample line (maintained at >250°F) by a Teflon-lined diaphragm pump to a 316 stainless steel refrigeration type conditioner (Hankison Model E-4G-SS). The sample gas was passed through the conditioner two separate times under vacuum before entering the pump, then two additional times under pressure. The clean, dry sample gas (~35°F) was then transported to the continuous analyzer system through an unheated Teflon line. A TECO Model 300 NO_2 to NO converter was placed before the

TABLE 4-1. CONTINUOUS MONITORING LAB - TRAILERS 1, 2 AND 4

NO_x CHEMILUMINESCENT ANALYZER – THERMO ELECTRON MODEL 10

Response Time (0-90%)	1.5 sec -- NO mode; 1.7 sec -- NO_x mode
Zero Drift	Negligible after 1/2 hour warmup
Linearity	±1% of full scale
Accuracy	Derived from the NO or NO_2 calibration gas, ±1% of full scale
Output	0-10 V
Operating Ranges	0-2, 10, 25, 100, 250, 1000, 2500 and 10,000 ppm
Flowrate = 2 scfh	0-2.5

O_2 ANALYZER, FUEL TYPE – TELEDYNE MODEL 326

Response Time (0-90%)	60 seconds
Accuracy	±1% of scale at constant temperatures; ±1% of scale of ±5% of reading, whichever is greater, over the operating temperature range
Output	0-1 V
Operating Ranges	0-5%, 10%, 25% O_2
Flowrate	2 scfh

CO_2/CO INFRARED ANALYZER – ANARAD MODEL AR-600

Response Time (0-90%)	5 seconds
Zero Drift	±1%
Span Drift	±1%
Linearity	1%
Resolution	Less than 1% of full scale
Output	0-1 V
Operating Ranges	0-20% CO_2/0-10,000 ppm CO
Flowrate	1000 cc/min

CO GAS FILTER CORRELATION – THERMO ELECTRON MODEL 48

Response Time (0-95%)	1 minute
Zero Drift	±0.2 ppm CO
Span Drift	Less than 1% full scale in 24 hours
Linearity	±1% full scale, all ranges
Accuracy	±0.1 ppm CO
Output	0-10 V
Operating Ranges	1, 2, 5, 10, 20, 50, 100, 200, 500, 1000 ppm
Flowrate	.5 - 2 lpm

SO_2 UV ANALYZER – DUPONT MODEL 400

Response Time (0-90%)	Less than 60 seconds
Zero Drift	Less than 2% full scale in 24 hours
Linearity	±1% full scale
Accuracy	±2% full scale
Output	0-5 V
Operating Ranges	0-100 ppm, 1-1000 ppm
Flowrate	500 - 1500 cc/min

STRIP CHART RECORDERS (3) – LINSEIS 7025

Pen Response	0.35 seconds Full Scale
Input Spans	1, 2, 5, 10, 20, 50, 100 MV
Zero Set	Stable access entire chart-width ±100%
Accuracy	.35% of Span
Dead Band	.15% of Span
Linearity	.25% of Span
Chart Speed	1, 2, 5, 10, 20, 50, 100 cm/min; 1, 2, 5, 10, 20, 50 cm/hr; fast advance 100 cm/min; LED indicator; forward and reverse selector
Recording Pen	Fiber tip pen
Chart Width	250 mm

SCOTSMAN TRAILER

Fully Insulated	Air Conditioned -- 8 feet x 14 feet x 11 feet

1. Filter 0.6 μ, 99.9999 percent efficient
2. Duct
3. 316 stainless steel probe
4. 3/8-inch, heated (250°F) Teflon
5. Four-pass conditioner-dryer, 316 stainless steel internals
6. 3/8-inch, unheated Teflon
7. Teflon-lined sample pump
8. 3/8-inch unheated Teflon
9. Rotameter
10. 1/4-inch Teflon tubing
11. Calibration gas manifold
12. Calibration gas selector valve
13. Calibration gas cylinders
14. Backpressure regulator
15. Auxiliary analysis port

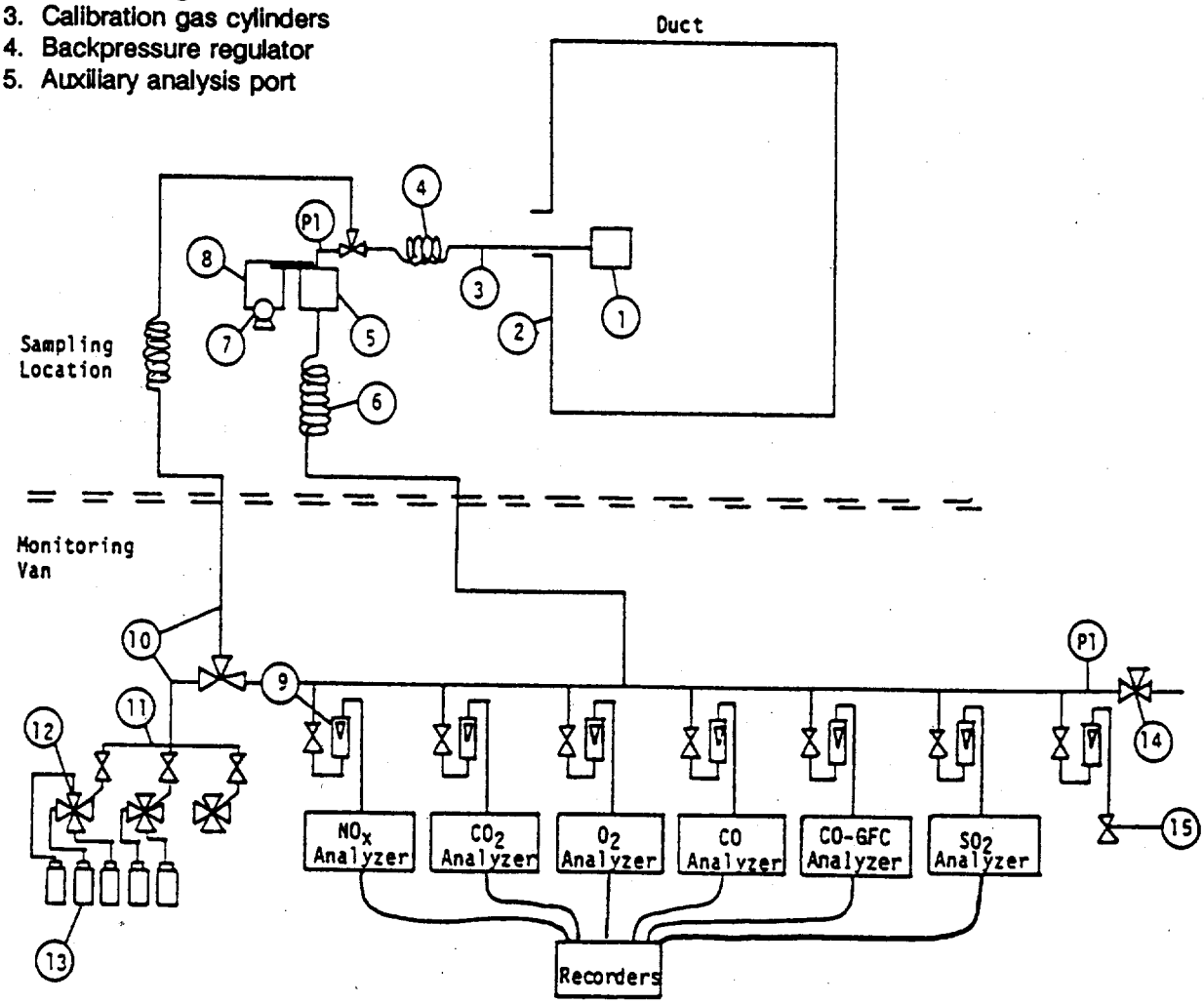

FIGURE 4-1. SCHEMATIC OF CONTINUOUS MONITORING SYSTEM

NO_x analyzer to prevent NH_3 interference with the NO_x reading. A series of flowmeters, valves, and regulators maintain constant flow through the system at a constant pressure.

Calibrations of the continuous analyzers were performed using EPA Protocol 1 calibration gases (±1%) for NO_x and CO; and NBS certified calibration gases (±1%) for CO_2 and O_2. Copies of the gas certifications are included in the Appendix of this report. All pertinent data (date, time, test locations, analyzer range, cal gas value) were recorded on both the field data sheets and continuous analyzer strip charts in the field.

At the start of a test day, a leak-check was performed. The sample probe was removed from the stack and the end was sealed. A leak-check was successful only if pressure at the analyzer system and flow through the rotameters to the individual analyzers all dropped to zero. A mandatory leak-check was performed at the completion of each test day.

An initial calibration was performed at the start of a test period by introducing zero and span gases for each analyzer and making the necessary adjustments. Calibration gas values were recorded on the continuous monitor strip charts and field data sheets. A calibration check was completed at the end of a test and adjustments (if necessary) to the analyzers were made in preparation for another test.

An external calibration of the sampling system was performed at the start of a test day. EPA Protocol 1 gas was flowed through the entire sampling system from the probe tip. The response of the analyzers had to be within ±5% of the certified tank value before testing could proceed. An external calibration was also performed at the end of each test day.

Test data were collected by recording 10-minute averages from the strip chart recordings onto the field data sheets. Data collected over the 40-minute test period were averaged and reported.

SECTION 5

ANALYSIS

5.1 FUEL

A sample of the fuel fired during this test program was collected and sent to Pacific Gas Technology for analysis. Analysis was performed by PGT in accordance with EPA Title 40 Section 60.45. The specific procedures are itemized in Table 5-1. The results appear at the end of this section.

TABLE 5-1. FUEL ANALYSIS METHODS

LABORATORY TEST PROCEDURES FOR FUEL OILS AND FUEL GASES

Reference: EPA Title 40, Section 60.45

FUEL OIL TESTS:	
Sediment and Water, Vol. %	ASTM D4007-81
Gravity by Hydrometer (API)	ASTM D1298-80
API Gravity Corrected to 60°F	ASTM Table 5A
Gross Calorific Value (Btu/lb)	ASTM D2015-77
Ultimate Analysis (C, H, O, N, S, wt. %)	
Carbon, Hydrogen	ASTM D3178-73
Nitrogen (chemiluminescence detector)	ASTM D3431-80
Sulfur	ASTM D2622-82
Ash	ASTM D482
Oxygen	ASTM D3176-74
GASEOUS FUELS BY GAS-LIQUID CHROMATOGRAPHY:	
Gas Analysis	ASTM D1945-81
Sulfur Analysis	CPA B16
Calculation of Gross Calorific Value	ASTM D3588-81
Component Weight %, F-factor calculations	EPA 40:60.45
PROCEDURES FOR SCRUBBER LIQUOR ANALYSIS:	
Specific Gravity	ASTM D1429
Chlorides	ASTM D512-67

PACIFIC GAS TECHNOLOGY

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Bakersfield, California 93309
805/324-1317
Fax: 805/324-2746

GAS ANALYSIS BY CHROMATOGRAPH

STEINER ENVIRONMENTAL, INC
4930 Boylan Street
Bakersfield, CA 93308

Attention: Jim Steiner

RECEIVED
OCT - 9 1991
Ans'd.....

SAMPLED: SEPTEMBER 23, 1991
SUBMITTED: SEPTEMBER 26, 1991
REPORTED: OCTOBER 8, 1991

LAB # 3866-1

Sample ID : SO CAL GAS
UNIT 7
GOLETA
PUC FUEL GAS

STEINER ID # 30514

ANALYZED GAS

	MOLE %	WT %	CHONS WT %	
OXYGEN	0.16	0.27	CARBON	70.99
ITROGEN	1.10	1.64	HYDROGEN	21.83
CARBON DIOXIDE	3.10	7.25	OXYGEN	5.54
HYDROGEN	ND	0.00	NITROGEN	1.64
CARBON MONOXIDE	ND	0.00	SULFUR	0.00
HYDROGEN SULFIDE	ND	0.00		
METHANE	86.11	73.40		
ETHANE	6.78	10.83		
PROPANE	2.61	6.12		
iso-BUTANE	0.03	0.09		
n-BUTANE	0.06	0.19		
iso-PENTANE	0.01	0.04		
n-PENTANE	0.01	0.04		
HEXANE +	0.03	0.14		

SPECIFIC GRAVITY * : 0.650

SPECIFIC VOLUME : 20.34 cu ft/lb

HYDROGEN SULFIDE (Draeger) : ppm

TOTAL * BTU/cu ft DRY : 1063
WET : 1044

NET * BTU/cu ft DRY : 960
WET : 943

TU/lb : 21624

BTU/lb : 19529

* CALCULATED ACCORDING TO : ASTM D-3588

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GAS ANALYSIS BY CHROMATOGRAPH

STEINER ENVIRONMENTAL, INC
4930 Boylan Street
Bakersfield, CA 93308

Attention: Jim Steiner

RECEIVED
OCT - 9 1991
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SAMPLED: SEPTEMBER 24, 1991
SUBMITTED: SEPTEMBER 26, 1991
REPORTED: OCTOBER 8, 1991
LAB # 3866-2

Sample ID : SO CAL GAS
UNIT 6
GOLETA
PUC FUEL GAS

STEINER ID # 30515

ANALYZED GAS

	MOLE %	WT %	CHONS WT %	
OXYGEN	0.05	0.09	CARBON	73.89
NITROGEN	0.45	0.69	HYDROGEN	23.09
CARBON DIOXIDE	1.28	3.08	OXYGEN	2.33
HYDROGEN	ND	0.00	NITROGEN	0.69
CARBON MONOXIDE	ND	0.00	SULFUR	0.00
HYDROGEN SULFIDE	ND	0.00		
METHANE	89.72	78.75		
ETHANE	4.93	8.11		
PROPANE	2.88	6.95		
iso-BUTANE	0.20	0.64		
n-BUTANE	0.35	1.11		
iso-PENTANE	0.06	0.24		
n-PENTANE	0.04	0.16		
HEXANE +	0.04	0.19		

SPECIFIC GRAVITY * : 0.631

SPECIFIC VOLUME : 20.84 cu ft/lb

HYDROGEN SULFIDE (Draeger) : ppm

TOTAL * BTU/cu ft	DRY	1092	NET * BTU/cu ft	DRY	986
	WET	1073		WET	969
BTU/lb		22753	BTU/lb		20552

* CALCULATED ACCORDING TO : ASTM D-3588

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GAS ANALYSIS BY CHROMATOGRAPH

STEINER ENVIRONMENTAL, INC
4930 Boylan Street
Bakersfield, CA 93308

Attention: Jim Steiner

RECEIVED
OCT - 9 1991
Ans'd.....

SAMPLED: SEPTEMBER 25, 1991
SUBMITTED: SEPTEMBER 26, 1991
REPORTED: OCTOBER 8, 1991

LAB # 3866-3

Sample ID : SO CAL GAS
UNITS 2 & 4
GOLETA
PUC FUEL GAS

STEINER ID # 30516

ANALYZED GAS

	MOLE %	WT %	CHONS WT %	
OXYGEN	0.16	0.28	CARBON	72.00
NITROGEN	1.09	1.66	HYDROGEN	22.43
CARBON DIOXIDE	2.09	4.99	OXYGEN	3.91
HYDROGEN	ND	0.00	NITROGEN	1.66
CARBON MONOXIDE	ND	0.00	SULFUR	0.00
HYDROGEN SULFIDE	ND	0.00		
METHANE	88.37	76.95		
ETHANE	5.32	8.68		
PROPANE	2.64	6.32		
iso-BUTANE	0.10	0.32		
n-BUTANE	0.16	0.50		
iso-PENTANE	0.02	0.08		
n-PENTANE	0.02	0.08		
HEXANE +	0.03	0.14		

SPECIFIC GRAVITY * : 0.636

SPECIFIC VOLUME : 20.72 cu ft/lb

HYDROGEN SULFIDE (Draeger) : ppm

TOTAL * BTU/cu ft DRY : 1067
WET : 1048

NET * BTU/cu ft DRY : 963
WET : 946

BTU/lb : 22109

BTU/lb : 19959

* CALCULATED ACCORDING TO : ASTM D-3588

PACIFIC GAS TECHNOLOGY

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Bakersfield, California 93309
805/324-1317
Fax: 805/324-2746

GAS ANALYSIS BY CHROMATOGRAPH

STEINER ENVIRONMENTAL, INC
4930 Boylan Street
Bakersfield, CA 93308

Attention: Jim Steiner

RECEIVED
OCT -9 1991
Ans'd.....

SAMPLED: SEPTEMBER 26, 1991
SUBMITTED: SEPTEMBER 26, 1991
REPORTED: OCTOBER 8, 1991

LAB # 3866-4

Sample ID : SO CAL GAS
UNITS 3 & 5
GOLETA
PUC FUEL GAS

STEINER ID # 30517

ANALYZED GAS

	MOLE %	WT %	CHONS WT %	
OXYGEN	0.14	0.24	CARBON	71.20
ITROGEN	1.19	1.79	HYDROGEN	22.00
CARBON DIOXIDE	2.78	6.55	OXYGEN	5.01
HYDROGEN	ND	0.00	NITROGEN	1.79
CARBON MONOXIDE	ND	0.00	SULFUR	0.00
HYDROGEN SULFIDE	ND	0.00		
METHANE	87.14	74.89		
ETHANE	6.03	9.71		
PROPANE	2.37	5.60		
iso-BUTANE	0.09	0.28		
n-BUTANE	0.15	0.47		
iso-PENTANE	0.03	0.12		
n-PENTANE	0.02	0.08		
HEXANE +	0.06	0.28		

SPECIFIC GRAVITY * : 0.644

SPECIFIC VOLUME : 20.49 cu ft/lb

HYDROGEN SULFIDE (Draeger) : ppm

TOTAL * BTU/cu ft DRY : 1061
WET : 1042

NET * BTU/cu ft DRY : 959
WET : 942

BTU/lb : 21741

BTU/lb : 19641

* CALCULATED ACCORDING TO : ASTM D-3588

SECTION 6

QUALITY ASSURANCE

This section of the report describes the QA/QC procedures employed on the test program.

6.1 CONTINUOUS MONITORS QUALITY ASSURANCE

The NO_x and CO analyzers are calibrated before and after each test using an EPA Protocol 1 gas (±1%) traceable to NBS. The CO_2 and O_2 analyzers are calibrated before and after each test using a NBS certified gas mixture (±1%). Copies of the calibration gas certificates appear in the Appendix of this report.

Multipoint calibration linearity checks of the continuous analyzers were performed on May 16 and 17, 1990 for trailer #1 and on July 19, 1990 through July 24, 1990 for trailer #2. These results were well within CARB limitations of ±2% of full scale. Tables 6-1 through 6-12 list the results of these checks.

TABLE 6-1. NO_x CALIBRATION SUMMARY

Monitoring Trailer: 1		Calibrated by: JP 5/16/90	
Analyzer:	TECO	Calibrator Manufacturer:	Environics
Model:	10 AR	Model:	201-1520
Serial Number:	14751-150	Serial Number:	1122
NO_x Standard:	ALM2355, ALM2882		
Concentration:	8805 ppm, 2973 ppm		
Cylinder Pressure:	1700 psi, 1200 psi		

NO_x CALIBRATION AND LINEARITY CHECKS

Range 0-10,000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	1012	---	0	0	0
80% URL	104.8	918.8	7904	7904	0
1	327	690.5	5975	6020	+ 0.45
2	554.4	462.6	4005	4110	+ 1.05
3	781.7	230.4	2004	2100	+ 0.96

Range 0-1000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	6007.5	---	0	0	0
80% URL	5465.5	547.6	802	802	0
1	5595.3	410.3	601.5	608	+ 0.65
2	5732.7	274.0	401.6	412	+ 1.04
3	5867.6	137.7	202	215	+ 1.3

Form MULTI-2(8/91)

TABLE 6-1. NO_x CALIBRATION AND LINEARITY CHECKS (Concluded)

TECO Model 10-AR/Trailer #1/May 16, 1990

Range 0-100 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9500	---	0	0	0
80% URL	9244.9	257.1	80.5	80.5	0
1	9307.3	193.2	60.5	61.3	+ 0.8
2	9372.3	129.3	40.5	42	+ 1.5
3	9437.2	65.1	20.4	21.5	+ 1.1

TABLE 6-2. CO CALIBRATION SUMMARY

Monitoring Trailer: 1		Calibrated by: JP 5/16/90	
Analyzer:	ANARAD	Calibrator Manufacturer:	Environics
Model:	AR 602	Model:	201-1520
Serial Number:	1842	Serial Number:	1122
CO Standard:	AAL5660		
Concentration:	9942 ppm		
Cylinder Pressure:	1550 psi		

CO CALIBRATION AND LINEARITY CHECKS

Range 0-10,000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	1000	---	0	0	0
80% URL	187.2	815.4	8065	8065	0
1	392.0	609.3	6050	6050	0
2	594.4	406.1	4045	4180	+ 1.35
3	791.7	203.1	2030	2220	+ 1.9

Form MULTI-4 (8/91)

TABLE 6-3. CO CALIBRATION SUMMARY

Monitoring Trailer: 1		Calibrated by: JP 5/16/90	
Analyzer:	TECO	Calibrator Manufacturer:	Environics
Model:	48	Model:	201-1520
Serial Number:	21130-195	Serial Number:	1122
CO Standard:	AAL5660, AAL114, ALM12660		
Concentration:	9942 ppm, 1003 ppm, 199.6 ppm		
Cylinder Pressure:	1550 psi, 1400 psi, 1750 psi		

CO CALIBRATION AND LINEARITY CHECKS

Range 0-1000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9500	---	0	0	0
80% URL	8730.3	764.1	800.0	800.0	0
1	8925.2	573.3	600.1	600.0	+ 0.01
2	9112.5	382.8	401	405	+ 0.5
3	9304.8	192	201	210	+ 1.0

Range 0-100 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9500	---	0	0	0
80% URL	8740	757.7	80.0	80.0	0
1	8927.7	568.6	60.0	59.6	- 0.4
2	9115	379.3	40.0	40.0	0
3	9304.8	190	20.0	20.0	0

Form MULTI-1(8/91)

TABLE 6-3. CO CALIBRATION AND LINEARITY CHECKS (Concluded)

TECO Model 48/Trailer #1/May 16, 1990

Range 0-20 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9500	---	0	0	0
80% URL	8735	762	16.01	16.01	0
1	8925.2	571.5	12.01	12.00	- 0.01
2	9120	381.5	8.02	8.00	- 0.02
3	9304.8	191.3	4.02	4.1	+ 0.4

TABLE 6-4. CO_2 CALIBRATION SUMMARY

Monitoring Trailer: 1		Calibrated by: JP 5/16/90	
Analyzer:	ANARAD	Calibrator Manufacturer:	Environics
Model:	AR 602	Model:	201-1520
Serial Number:	1842	Serial Number:	1122
CO_2 Standard:	AAL779		
Concentration:	20%		
Cylinder Pressure:	950 psi		

CO_2 CALIBRATION AND LINEARITY CHECKS

Range 0-20 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO_2 out %	Chart %	% Difference +2% Full Scale
Zero	1015	---	0	0	0
80% URL	204.7	800.9	15.9	15.9	0
1	399.5	601	12.01	11.96	- 0.25
2	599.4	400.9	8.02	7.98	- 0.20
3	794.2	201	4.03	3.92	- 0.55

Form MULTI-6(8/91)

TABLE 6-5. O_2 CALIBRATION SUMMARY

Monitoring Trailer: 1		Calibrated by: JP 5/17/90	
Analyzer:	Teledyne	Calibrator Manufacturer:	Environics
Model:	326A	Model:	201-1520
Serial Number:	36423	Serial Number:	1122
O_2 Standard:	A14722		
Concentration:	45%		
Cylinder Pressure:	1850 psi		

O_2 CALIBRATION AND LINEARITY CHECKS

Range 0-25 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	O_2 out %	Chart %	% Difference +2% Full Scale
Zero	2000	---	0	0	0
80% URL	1116.5	890.9	19.97	19.97	0
1	1338.8	668.3	14.98	15.05	+ 0.28
2	1561.1	445.9	10.00	10.05	+ 0.2
3	1783.4	223.6	5.01	5.30	+ 1.16

Range 0-10 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	O_2 out %	Chart %	% Difference +2% Full Scale
Zero	2000	---	0	0	0
80% URL	1648.5	357.1	8.00	8.00	0
1	1738.5	268.2	6.00	6.12	+ 1.20
2	1828.4	179.0	4.01	4.20	+ 1.9
3	1918.3	90.4	2.03	2.2	+ 1.7

Form MULTI-5(8/91)

TABLE 6-5. O_2 CALIBRATION AND LINEARITY CHECKS (Concluded)

Teledyne Model 326A/Trailer #1/May 17, 1990

Range 0-5 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	O_2 out %	Chart %	% Difference +2% Full Scale
Zero	7000	---	0	0	0
80% URL	6379.7	623.3	4.00	4.00	0
1	6534.6	467.7	3.00	3.05	+ 1.0
2	6689.5	312.0	2.00	2.05	+ 1.0
3	6844.3	156.8	1.00	1.09	+ 1.8

TABLE 6-6. SO_2 CALIBRATION SUMMARY

Monitoring Trailer: 1		Calibrated by: JP 5/17/90	
Analyzer:	Dupont	Calibrator Manufacturer:	Environics
Model:	400	Model:	201-1520
Serial Number:	6329	Serial Number:	1122
SO_2 Standard:	AAL9414		
Concentration:	972 ppm		
Cylinder Pressure:	1800 psi		

SO_2 CALIBRATION AND LINEARITY CHECKS

Range 0-1000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	SO_2 out ppm	Chart ppm	% Difference +2% Full Scale
Zero	1000	---	0	0	0
80% URL	167.3	845.7	812	812	0
1	377.1	629.6	608	620	+ 1.2
2	1166.4	835	406	421	+ 1.5
3	3182.3	824.6	200	210	+ 1.0

Range 0-100 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	SO_2 out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9000	---	0	0	0
80% URL	8263.2	743.3	80.2	80.2	0
1	8450.5	557.5	60.2	61.0	+ 0.8
2	8635.4	372.4	40.2	41.1	+ 0.9
3	8817.7	186.8	20.2	21.2	+ 1.0

Form MULTI-3(8/91)

TABLE 6-7. NO_x CALIBRATION SUMMARY

Monitoring Trailer: 2		Calibrated by: JP 7/20/90	
Analyzer:	TECO	Calibrator Manufacturer:	Environics
Model:	10 AR	Model:	201-1520
Serial Number:	8816-103-5	Serial Number:	1122
NO_x Standard:	ALM21987, ALM2355		
Concentration:	1171.4 ppm, 8805 ppm		
Cylinder Pressure:	2000 psi, 1800 psi		

NO_x CALIBRATION AND LINEARITY CHECKS

Range 0-25 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	5000	---	0	0	0
80% URL	4826.8	84.3	20.1	20.1	0
1	4846.3	62.3	14.9	15.05	+ 0.6
2	4865.9	41.8	9.96	10.2	+ 0.96
3	4885.5	21.2	5.05	5.2	+ 0.6

Range 0-100 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9000	---	0	0	0
80% URL	8233.4	597.6	79.3	79.3	0
1	8387.6	499.3	59.6	60	+ 0.4
2	8536.9	300.5	39.8	40.1	+ 0.3
3	8688.6	152.3	20.2	20	- 0.2

Form MULTI-2(8/91)

TABLE 6-7. NO_x CALIBRATION AND LINEARITY CHECKS (Concluded)

TECO Model 10-AR/Trailer #2/July 20, 1990

Range 0-1000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	8837.9	---	0	0	0
80% URL	8035.2	805.6	802	802	0
1	8235.9	595.6	593.7	600	+ 0.63
2	8436.6	398.4	397.4	402	+ 0.46
3	8634.8	201	200.3	202	+ 0.17

Range 0-2500 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	NO_x out ppm	Chart ppm	% Difference +2% Full Scale
Zero	3926.1	---	0	0	0
80% URL	3035.3	895.3	2005	2005	0
1	3255.7	661.4	1486.3	1505	+ 0.748
2	3480.7	442.1	992.3	1002.5	+ 0.408
3	3703.4	222.8	499.7	500	+ 0.012

TABLE 6-8. CO CALIBRATION SUMMARY

Monitoring Trailer: 2		Calibrated by: JP 7/19/90	
Analyzer:	ANARAD	Calibrator Manufacturer:	Environics
Model:	AR 602	Model:	201-1520
Serial Number:	1793	Serial Number:	1122
CO Standard:	AAL5660		
Concentration:	9942 ppm		
Cylinder Pressure:	1700 psi		

CO CALIBRATION AND LINEARITY CHECKS

Range 0-10,000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	984.5	—	0	0	0
80% URL	201.3	794.1	7931	7931	0
1	394.6	587.2	5945	5920	- 0.25
2	590.4	392.7	3971	4100	+ 1.29
3	786.2	198.3	2002	2120	+ 1.18

Form MULTI-4 (8/91)

TABLE 6-9. CO CALIBRATION SUMMARY

Monitoring Trailer: 2		Calibrated by: JP 7/24/90	
Analyzer:	TECO	Calibrator Manufacturer:	Environics
Model:	48	Model:	201-1520
Serial Number:	25149-219	Serial Number:	1122
CO Standard:	AAL114, AAL5660		
Concentration:	1003 ppm, 9942 ppm		
Cylinder Pressure:	1300 psi		

CO CALIBRATION AND LINEARITY CHECKS

Range 0-20 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	5893.8	---	0	0	0
80% URL	5800.8	94.3	16.04	16.04	0
1	5827.7	69.8	11.88	12.00	+ 0.6
2	5849.7	46.8	7.96	8.02	+ 0.3
3	5874.2	23.7	4.03	4.08	+ 0.25

Range 0-100 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9329.8	---	0	0	0
80% URL	8585.9	747.8	80.3	80.3	0
1	8771.8	552.7	59.4	60	+ 0.6
2	8957.8	369.6	39.7	39.9	+ 0.2
3	9146.3	186.8	20	20	0

Form MULTI-1(8/91)

TABLE 6-9. CO CALIBRATION AND LINEARITY CHECKS (Concluded)

TECO Model 48/Trailer #2/July 24, 1990

Range 0-500 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9800	---	0	0	0
80% URL	9236.8	384.8	397.6	397.6	0
1	9332.3	289.3	299.1	305	+ 1.18
2	9430.2	194.3	200.9	202.5	+ 0.32
3	4374	44.2	99.5	102	+ 0.50

Range 0-1000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO out ppm	Chart ppm	% Difference +2% Full Scale
Zero	9800	---	0	0	0
80% URL	8850.2	778.5	803.6	803.6	0
1	9045.9	575.3	594.3	600	+ 0.57
2	9239.3	384.5	397.3	402	+ 0.47
3	9435.1	194.3	200.6	205	+ 0.44

TABLE 6-10. CO_2 CALIBRATION SUMMARY

Monitoring Trailer: 2		Calibrated by: JP 7/19/90	
Analyzer:	ANARAD	Calibrator Manufacturer:	Environics
Model:	AR 602	Model:	201-1520
Serial Number:	1793	Serial Number:	1122
CO_2 Standard:	AAL799		
Concentration:	20%		
Cylinder Pressure:	1000 psi		

CO_2 CALIBRATION AND LINEARITY CHECKS

Range 0-20 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	CO_2 out %	Chart %	% Difference +2% Full Scale
Zero	1000	---	0.0	0	0
80% URL	206.2	851.6	16.1	16.1	0
1	397.1	629.2	12.3	12.3	0
2	592.9	420.5	8.3	8.5	+ 1.0
3	786.2	211.8	4.25	4.6	+ 1.75

Form MULTI-6(8/91)

TABLE 6-11. O_2 CALIBRATION SUMMARY

Monitoring Trailer: 2		Calibrated by: JP 7/19/90	
Analyzer:	Teledyne	Calibrator Manufacturer:	Environics
Model:	326A	Model:	201-1520
Serial Number:	43292	Serial Number:	1122
O_2 Standard:	A14722		
Concentration:	45%		
Cylinder Pressure:	1800 psi		

O_2 CALIBRATION AND LINEARITY CHECKS

Range 0-25 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	O_2 out %	Chart %	% Difference +2% Full Scale
Zero	1500	---	0	0	0
80% URL	822.9	622.8	20.07	20.07	0
1	984.5	498.2	15.12	15.2	+ 0.32
2	1145.9	332.9	10.13	10.05	- 0.32
3	1309.9	168.1	5.12	5.0	- 0.48

Range 0-10 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	O_2 out %	Chart %	% Difference +2% Full Scale
Zero	5000	---	0	0	0
80% URL	4041.2	897.7	8.18	8.18	0
1	4258.9	662.3	6.05	6.15	+ 1.0
2	4476.8	442.3	4.05	4.12	+ 0.7
3	4694.6	222.8	2.04	2.08	+ 0.4

Form MULTI-5(8/91)

TABLE 6-11. O_2 CALIBRATION AND LINEARITY CHECKS (Concluded)

Teledyne Model 326A/Trailer #2/July 19, 1990

Range 0-5 %

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	O_2 out %	Chart %	% Difference +2% Full Scale
Zero	8837.9	---	0	0	0
80% URL	8054.8	806.8	4.10	4.10	0
1	8250.6	596.4	3.03	3.10	+ 1.4
2	8446.4	398.7	2.03	2.10	+ 1.4
3	8642.1	201	1.02	1.05	+ 0.6

TABLE 6-12. SO_2 CALIBRATION SUMMARY

Monitoring Trailer: 2		Calibrated by: JP 7/19/90	
Analyzer:	Dupont	Calibrator Manufacturer:	Environics
Model:	400	Model:	201-1520
Serial Number:	6328	Serial Number:	1122
SO_2 Standard:	AAL9414		
Concentration:	972 ppm		
Cylinder Pressure:	1800 psi		

SO_2 CALIBRATION AND LINEARITY CHECKS

Range 0-100 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	SO_2 out ppm	Chart ppm	% Difference +2% Full Scale
Zero		---	0	0	0
80% URL	7212.9	640.5	79.3	79.3	0
1	7374.4	481.4	59.6	60.2	+ 0.6
2	7531	322.1	39.8	40.0	+ 0.2
3	7692.6	163.1	20.2	19.4	- 0.8

Range 0-1000 ppm

Calibration Points	Flow, Dil. cc/min	Flow, Std. cc/min	SO_2 out ppm	Chart ppm	% Difference +2% Full Scale
Zero	1956	---	0	0	0
80% URL	176.8	813.3	796.4	796.4	0
1	375.1	600.9	598.5	610	+ 1.15
2	1150.9	813.3	402.5	408	+ 0.55
3	1552.2	401.8	199.6	205	+ 0.54

Form MULTI-3(8/91)

APPENDIX A

STEINER ENVIRONMENTAL RAW DATA (INLET)

Stein Environmental, Inc.

(1)

CONTINUOUS MONITOR DATA SHEET

tel 805-961 8826

Plant Southern California Gas
Date 9/23/91 Run No. 1
Test Location unit #7 inlet IC ENGINE
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number RAY McCAFFRY SBCAPCD
Client Rep JIM ERDELY
Generator Type
Burner Type
O_2 Controller Type

[Dry Uncorrected]

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
		0.972	9.32	4016			4130	Linearity ✓ Mid
		3.78	14.49	8000			8250	High
		0	0	0			0	
		0	0	0			0	Interference ✓
								Converter ✓
		0.98	9.38	4200			3950	External Bias ✓
		0	0	0			0	External zero
		0.0						QA Leak ✓
1050	1	0.070	11.80	5460			1730	Run #1
	2	0.010	11.80	5380			1730	
	3	0.003	11.80	5480			1735	
	4	0.003	11.80	5460			1690	
		0.965	9.26	4200			4160	SPAN
		-0.01	0.0	0.0			0.0	zero
		0.0	0.0	0.0			6.0	zero ADJ
		0.972	9.52	4016			4130	SPAN ADJ

CALIBRATION GASES

NO_x CC12270 CC66841 NO_2 CC83831
SO_2
CO CC91374 ALM012106
$CO/CO_2/O_2$ CC83869 CC7862

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: 41 Downscale: 35
Upscale: 43 Downscale: 32
Upscale: 43 Downscale: 34

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	0	0
NO_2	20.5	20.0

Conv. Efficiency: 97.6 %

Steiner Environmental, Inc.

(2)

CONTINUOUS MONITOR DATA SHEET

Plant: Southern California Gas
Date: 9/23/91 Run No.: 2, 3
Test Location: unit #7 inlet IC. ENGINE
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: Jim Erdely
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	Zero
1150		0.07	1200	5340			1930	Run #2
1200		0.05	12.00	5400			1900	
1210		0.05	12.08	5420			1920	
1220		0.05	12.02	5230			1935	
		0.0	0.0	20			0.0	Zero
		0.980	9.50	4130			4200	SPAN
		0.972	9.52	4016			4130	SPAN ADJ
		0.0	0.0	0.0			0.0	Zero ADJ
1245		0.06	12.02	5250			1950	Run #3
1255		0.06	1200	5300			1965	
1305		0.06	1198	5250			1950	
1315		0.06	12.02	5190			1980	
		0.0	0.0	0.0			0.0	Zero
		0.960	9.48	4000			4180	SPAN
		0.972	9.52	4016			4130	SPAN ADJ
		0.0	0.0	0.0			0.0	Zero

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

(3)

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas
Date 9/23/91 Run No. Set Pt. AFR
Test Location unit#7 inlet JC. ENGINE
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep Jim ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values High
		0.972	9.52	4016			4130	Mid
		0.0	0.0	0.0			0.0	Zero
1 1340	830mV	0.08	12.12	4900			2000	Set Pt. 830mV AFR
1350								10min PTS
2 1358	880mV	0.06	12.00	6100			1910	Set Pt. 880mV AFR
1408								10min Pt
3 1415	840mV	0.06	12.02	5250			1880	Set Pt 840mV AFR
1425								
		0.0	0.0	10			0.0	Zero
		0.980	9.52	4016			4140	SPAN
		1.03	9.36	4030			4070	Bias SPAN
		-0.01						QA Leak ✓

Miscellaneous Information

CALIBRATION GASES

NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

(1)

CONTINUOUS MONITOR DATA SHEET

Plant: Southern California Gas Goleta
Date: 9/24/91 Run No.: 1+2
Test Location: unit 8 inlet IC. ENGINE
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: JIM ERDELY
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
		0	0	0			0	Zero
		0.972	9.52	4016			4130	SPAN
		0.985	9.26	4000			4140	Ext SPAN
		0.01						QA Leak ✓
815		0.020	10.78	3520			2395	Run 1 unit 8
825		0.010	10.74	3710			2360	
835		0.020	10.68	3706			2440	- Chart stopped at 835
845		0.020	10.70	3770			2440	Fixed at 845 (co+co2)
		0.940	9.14	4016			4240	SPAN
		-0.03	0	0			0	Zero
		0	0	0			0	Zero Adjust
		0.972	9.52	4016			4130	SPAN Adjust
913		0.080	11.86	3750			2265	Run 2 unit 8
923		0.080	11.84	3730			2290	
933		0.060	11.84	3750			2300	
943		0.070	11.92	3650			2300	
		0	0	0			0	Zero
		0.972	9.54	4016			4160	SPAN

CALIBRATION GASES

NO_x:
SO_2:
CO:
$CO/CO_2/O_2$:

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	0	0
NO_2	20.5	19.57

Conv. Efficiency: 95.46 %

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

(2)

Plant: Southern California Gas Goleta
Date: 9/24/91 Run No.: 3, 3 Set Points 850, 875, 900 AFR
Test Location: unit 8 inlet
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: Jim ERDELY
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	Zero
1007		0.065	12.00	3860			2290	RUN # 3
1017		0.065	12.00	3970			2260	
1027		0.070	11.96	3990			2260	
1037		0.065	12.00	3910			2260	
		0.965	9.52	4140			4100	SPAN
		0	0	40			0	Zero
		0.972	9.52	4016			4130	SPAN ADJ
		0	0	0			0	Zero
1102	850 AFR	0.06	12.07	3710			2350	Set Pt. 850 AFR
1112								10 min Pts
1124	900 AFR	0.04	11.89	6810			1985	set Pt 900 AFR
1134								
1140	875 AFR	0.045	12.04	4630			2200	Set Pt 875 AFR
1150								
		-0.02	0.0	70			0.0	Zero
		0.985	9.52	4100			4110	SPAN
								SPAN ADJ
		0	0	0			0	Zero ADJ

Miscellaneous Information

CALIBRATION GASES

NO_x:
SO_2:
CO:
$CO/CO_2/O_2$:

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Steiner Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

(3)

Plant: Southern California Gas Goleta
Date: 9/24/91 Run No.: 1,2
Test Location: unit #6 INlet
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: JIM EROELY
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	ZERO
1334		0.050	12.00	5715			1860	RUN # 1
1344		0.050	12.00	5760			1920	
1354		0.050	12.00	5630			1910	
1404		0.045	12.00	5670			1920	
		0	0	50			0	ZERO
		0.935	9.40	4100			4100	SPAN
		0	0	0			0	ZERO ADJ
		0.972	9.52	4016			4130	SPAN ADJ
1425		0.06	12.00	5400			1900	Run # 2
1435		0.06	11.98	5525			1920	
1445		0.06	11.98	5490			1970	
1455		0.06	11.96	5630			1970	
		0	0	30			0	ZERO
		0.940	9.46	4030			4200	SPAN
		0.972	9.52	4016			4130	SPAN ADJ
		0	0	0			0	ZERO ADJ

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET (4)

Plant Southern California Gas Goleta
Date 9/24/91 Run No. 3 set Pts 875.
Test Location unit 6 inlet
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep Jim ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		3.80	14.49	8110			8230	SPAN Gas Values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
1516		0.065	11.88	5590			1900	Run # 3
1526		0.065	11.88	5630			1900	
1536		0.065	11.88	5685			1895	
1546		0.065	11.88	5700			1890	
		0	0	20			0	zero
		0.945	9.50	4016			4130	SPAN
		0	0	0			0	zero ADJ
		0.972	9.52	4016			4130	SPAN ADJ
1621	875 AFR	0.060	11.94	5450			1850	set Pt 875 AFR
1631								
1635	940 AFR	0.050	11.44	*			1185	Set Pt 940 AFR
1645								*CO OFFscale 10000+ ppm
								approx ave 13300 ppm
1650	920 AFR	0.050	11.66	9500			1485	Set Pt 920 AFR
1700								

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Steiner Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

(5)

Plant Southern California Gas Goleta
Date 9/24/91 Run No. Final Calibrations
Test Location unit 6 inlet
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep JIM ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		3.80	14.45	8110			8230	SPAN Gas Values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
		0.005	0	0			0	zero
		0.972	9.50	4100			4100	SPAN
		0.890	9.05	4090			4040	BIAS SPAN
		0.05						QA Leak ✓

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant: Southern California Gas Goleta
Date: 9/25/91 Run No.: 1,2
Test Location: unit 2 inlet
Operator: DH
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: JIM ERDELY
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	span Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	Zero
		0	0	0			0	zero
		0.972	9.52	4016			4130	SPAN
		0.980	9.02	4016			4080	Bias SPAN
		0.09						QA Leak ✓
				8110				SPAN ADJUST For CO
								6000ppm at Start Run 1
0933		0.23	11.66	6480			1950	Run #1
0943		0.24	11.60	6300			2000	
0953		0.24	11.60	6310			1990	
1063		0.23	11.60	6310			2000	
		0	0	30			0	zero
		0.990	9.34	8110			4120	SPAN
		0.972	9.52	8110			4130	SPAN ADJUST
		0	0	0			0	zero ADJUST
1027		0.23	1184	6330			2020	Run #2
1037		0.23	11.82	6020			2000	
1047		0.22	11.77	6300			1995	
1057		0.23	11.78	5910			2040	

Dry Uncorrected

Miscellaneous Information

CALIBRATION GASES

NO_x:
SO_2:
CO:
$CO/CO_2/O_2$:

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	0	0
NO_2	20.5	19.70

Conv. Efficiency: 96.10 %

Stein[illegible] Environmental, Inc.

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CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas Goleta
Date 9/25/91 Run No. 3 + Set Pts 885, 950, 920 AFR
Test Location unit 2 inlet
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep Jim Erdely
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		[Dry Uncorrected]						
		3.80	14.49	8110			8230	SPAN Gas Values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
		0	0	40			0	zero
		0.960	9.42	8100			4090	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ
1116		0.230	11.82	5890			2000	RUN 3
1126		0.230	11.82	5995			2000	
1136		0.225	11.94	6220			2040	
1146		0.240	11.98	6100			2080	
		0	0	0			0	zero
		1.00	9.40	8150			4100	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ
1230	885 AFR	0.30	12.00	5130			2200	Set Pt AFR 885
1240								(10 min Pts)
1307	950 AFR	0.09	11.48	*			1250	Set pt AFR 950
1317								*CO OFFscale approx. ave 13[illegible]00 PPM
1326		0.16	11.98	6390			1980	Set Pt AFR 920
1336								

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Steiner Environmental, Inc.

(③ (

CONTINUOUS MONITOR DATA SHEET

Plant: Southern California Gas Goleta
Date: 9/25/91 Run No.: 1,2
Test Location: unit # 4 inlet
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: JIM ERDELY
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	Span Gas Values High
		0.972	9.52	4016			4130	Mid
		0	0				0	zero
		0	0	0			0	zero
		0.965	9.56	8000			4190	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	Zero ADJ
1414		0.290	11.78	8800			1880	RUN 1
1424		0.285	11.80	8420			1905	
1434		0.290	11.80	8100			1930	
1444		0.290	11.82	8000			1930	
		0	0	30			0	zero
		0.965	9.56	8120			4150	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	Zero ADJ
1506		0.300	11.74	8420			1960	RUN 2
1516		0.300	11.68	8200			1980	
1526		0.29	11.72	8275			1980	
1536		0.030	11.74	8390			1980	
		0	0	10			0	zero
		0.960	9.42	8100			4170	SPAN

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

(4)

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas Goleta
Date 9/25/91 Run No. 3, Set Pts
Test Location unit #4 inlet
Operator DH
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep JIM ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		[Dry Uncorrected]						
		3.80	14.49	8110			8230	SPAN Gas Values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ
1555		0.316	11.66	8830			1975	RUN 3
1605		0.340	11.58	8900			1990	
1615		0.340	11.58	8690			2000	
1625		0.360	11.48	9630			1945	1628 CO OFFscale ave.
								1080 ppm while offscale
		0	0	0			0	zero
		0.965	9.44	8130			4190	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	Zero ADJ
1647	875 AFR	0.395	11.50	8120			2065	Set Pt. 875 AFR
1657								(10 min Pts)
1704	920 AFR	0.260	11.40	*			1685	Set Pt 920 AFR
1714								*CO offscale ave 11000ppm
1724	900 AFR	0.325	11.50	9750			1880	Set Pt 900 AFR
1734								

Miscellaneous Information

CALIBRATION GASES

NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

(5)

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas Goleta
Date 9/25/91 Run No. final Cals
Test Location unit #4 inlet
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep JIM ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		3.80	14.49	8110			8230	SPAN Gas Values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	Zero
		0	0	0			0	Zero
		0.972	9.48	8110			4140	SPAN
		1.000	9.20	8010			4100	Bias Span
		0.03						QA Leak ✓

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant: Southern California Gas Goleta
Date: 9/26/91 Run No.: 1, 2
Test Location: unit #3 inlet
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: JIM ERDELY
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	Zero
		0.965	9.20	7930			4000	BIAS SPAN
		0.06						RA Leak ✓
0745		0.225	11.95	4750			2100	RUN 1
0755		0.213	11.98	4850			2080	
0805		0.200	12.00	4920			2065	
0815		0.198	11.96	4950			2060	
		0	0	0			0	ZERO
		0.955	9.48	8120			4200	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	ZERO ADJ
0835		0.200	11.94	4790			2230	RUN 2
0845		0.198	11.96	4870			2220	
0855		0.193	11.96	4955			2245	
0905		0.193	12.00	4840			2230	
		0	0	0			0	ZERO
		0.955	9.60	8160			4200	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	ZERO ADJ

Miscellaneous Information

CALIBRATION GASES

NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	0	0
NO_2	20.5	19.57

Conv. Efficiency: 95.46%

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas Goleta
Date 9/26/91 Run No. 3
Test Location unit # 3 inlet
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep JIM ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
0926		0.185	11.92	4610			2165	Run 3
0936		0.185	11.92	4740			2130	
0946		0.170	11.93	4820			2105	
0956		0.170	12.00	4720			2130	
		0	0	0			0	zero
		0.960	9.42	8110			4110	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ
1017	880 AFR	0.173	12.08	4150			2230	set Pt 880 AFR
1027								(10 min pts)
1036	920 AFR	0.093	11.74	9130			1620	set Pt 920 AFR
1046								
1052	900 AFR	0.135	12.04	5450			2055	set Pt 900 AFR
1102								
		0	0	0			0	zero
		0.970	9.44	8100			4110	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

(3)

CONTINUOUS MONITOR DATA SHEET

Plant: Southern California Gas
Date: 9/26/91 Run No.: 1,2
Test Location: unit 5 inlet
Operator: DM
Fuel Type: Nat Gas Trailer No.: 1

APCD Witness/Number:
Client Rep: Jim Erdely
Generator Type:
Burner Type:
O_2 Controller Type:

Time	Sample Point	O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas values High
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
1134		0.550	11.58	6870			1760	RUN 1
1144		0.545	11.60	6730			1760	
1154		0.550	11.60	7100			1720	
1204		0.540	11.63	7325			1690	
		0	0	0			0	zero
		0.972	9.50	8090			4110	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ
1224		0.510	11.76	7110			1730	RUN 2
1234		0.515	11.72	7100			1715	
1244		0.525	11.66	6890			1720	
1254		0.525	11.70	6900			1710	
		0	0	0			0	zero
		0.955	9.46	8160			4130	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ

Dry Uncorrected

Miscellaneous Information

CALIBRATION GASES

NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stei[redacted] Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas Goleta
Date 9/26/91 Run No. 3, 900, 950, 920 set Pts AFR.
Test Location Unit 5 inlet
Operator DM
Fuel Type Nat Gas Trailer No. 1

APCD Witness/Number
Client Rep Jim ERDELY
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		3.80	14.49	8110			8230	SPAN Gas Values high
		0.972	9.52	4016			4130	Mid
		0	0	0			0	zero
1313		0.535	11.66	6810			1750	RUN 3
1323		0.535	11.66	6920			1740	
1333		0.535	11.66	6850			1720	
1343		0.535	11.66	6700			1750	
		0	0	0			0	zero
		0.972	9.44	8110			4110	SPAN
		0.972	9.52	8110			4130	SPAN ADJ
		0	0	0			0	zero ADJ
1403	900 AFR	0.515	11.80	6300			1800	Set Pt 900 AFR
1413								(10 min Pts)
1422	950 AFR	0.450	11.40	10000*			1410	Set Pt. 950 AFR
1432								*Spiked offscale CO ave 10000 ppm
1441	920 AFR	0.515	11.58	6770			1700	Set Pt. 920 AFR
1451								
		0	0	0			0	Zero
		0.972	9.42	8110			4120	SPAN
		0.985	9.28	8090			4105	Bias SPAN
		0.035						QA Leak ✓

Miscellaneous Information

CALIBRATION GASES
NO_x
SO_2
CO
$CO/CO_2/O_2$

Wet Bulb: Dry Bulb:
Barometric Press:

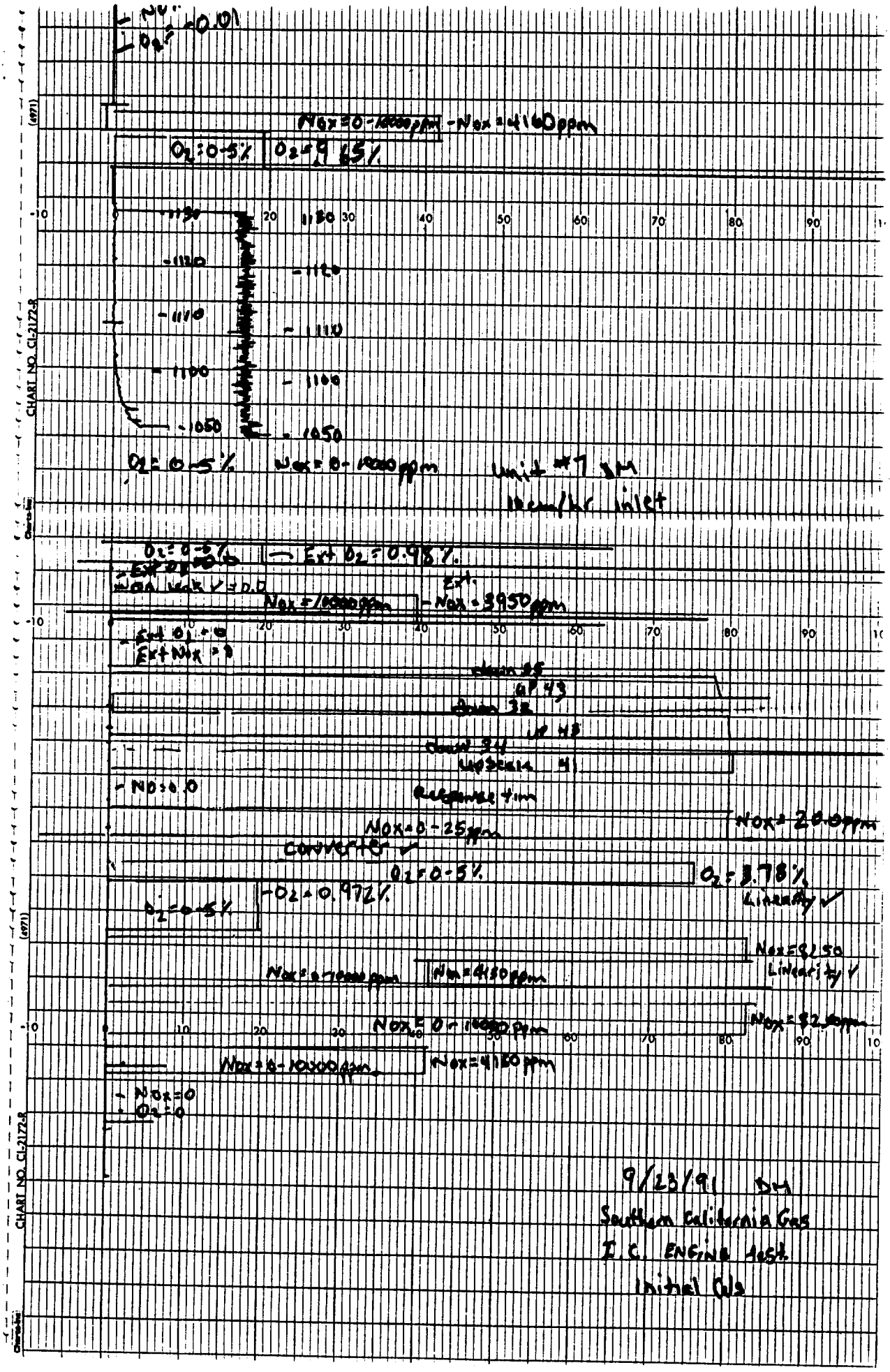
RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

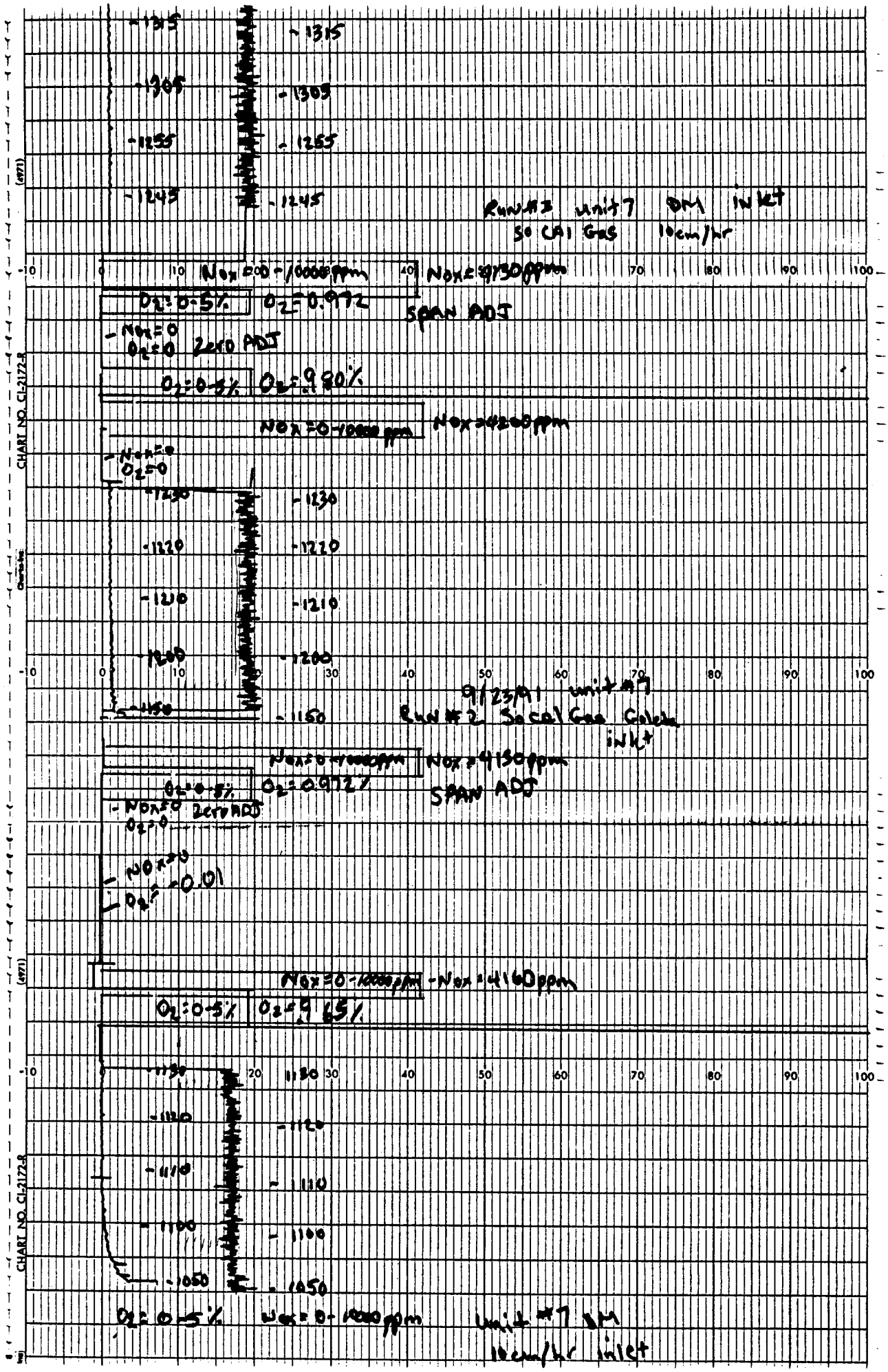
CONVERTER GAS

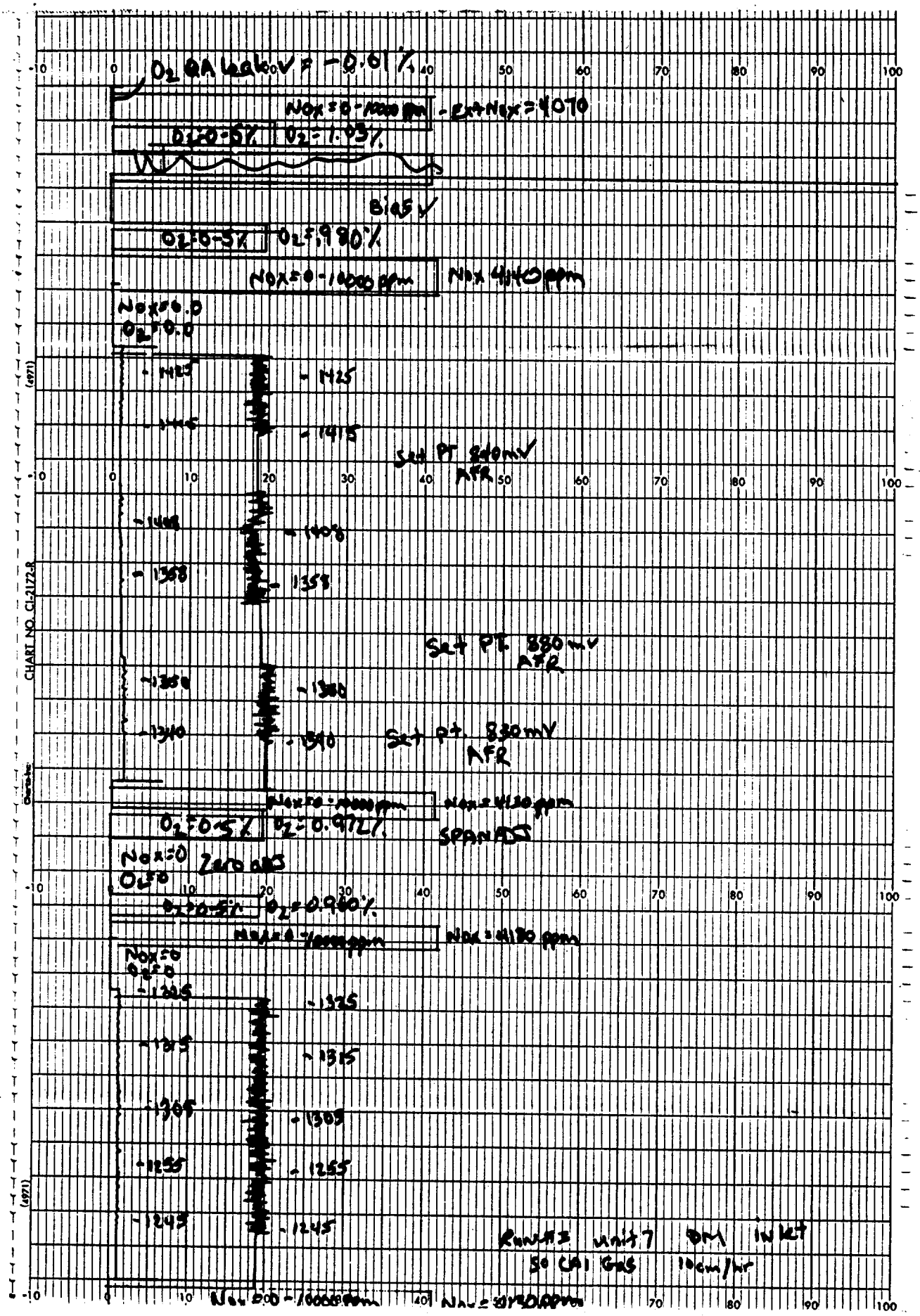
	Cal Gas Values	Actual Values
NO		
NO_2		

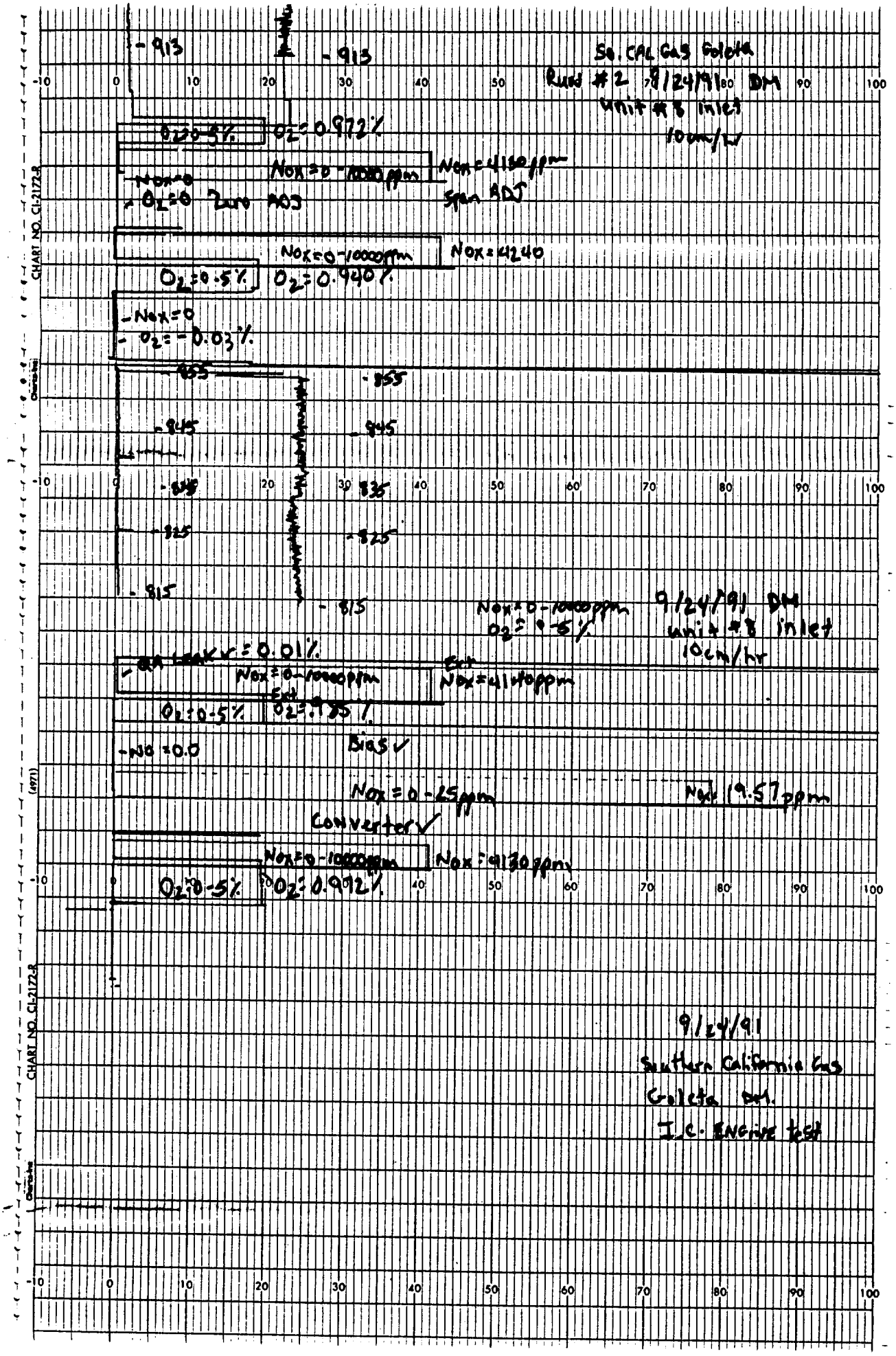
Conv. Efficiency:

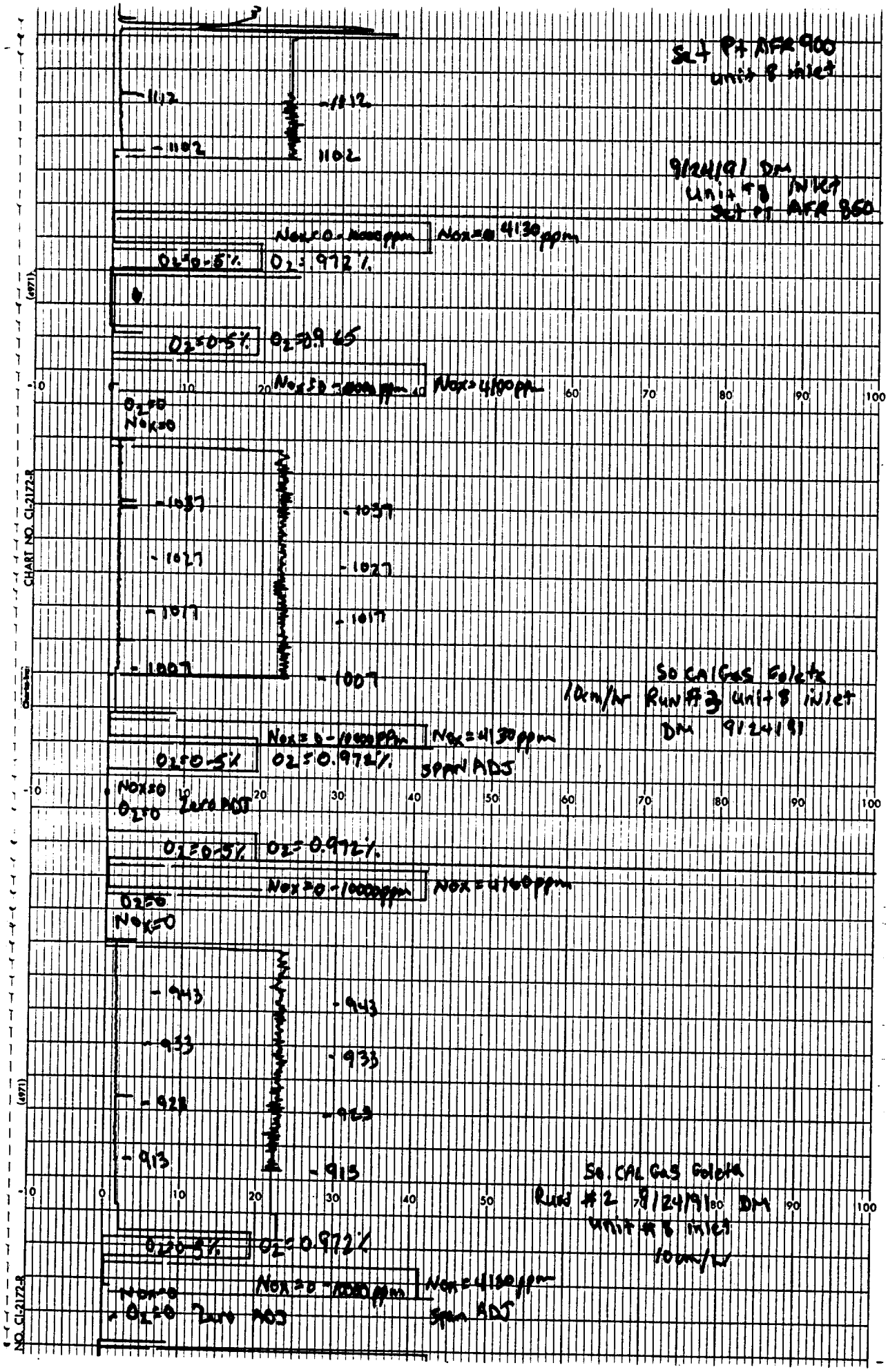


9/23/91 DH
Southern California Gas
I.C. ENGINE test
Initial Cals


Run #3 unit 7 DM inlet
50 CAI Gas 10cm/hr
NOx=200-10000ppm
NOx=8750ppm
O2:0-5%
O2=0.972
SPAN ADJ
NOx=0
O2=0
ZERO ADJ
O2:0-5%
O2=9.80%
NOx=0-10000ppm
NOx=4200ppm
NOx=0
O2=0
9/23/91 unit #7
Run #2 Socal Gas Calib.
inlet
NOx=0-10000ppm
NOx=4150ppm
O2:0-5%
O2=0.972
SPAN ADJ
NOx=0
ZERO ADJ
O2=0
NOx=0
O2=-0.01
NOx=0-10000ppm
NOx=4160ppm
O2:0-5%
O2=9.65%
O2=0-5%
NOx=0-10000ppm
unit #7 DM
10cm/hr inlet
CHART NO. CI-2172-8


O2 QA Leak mV = -0.01 %
NOx = 0 - 10000 ppm
- Ex + NOx = 4070
O2 = 0-5%
O2 = 1.05%
Bias ✓
O2 = 0-5%
O2 = .980%
NOx = 0 - 10000 ppm
NOx 4140 ppm
NOx = 0.0
O2 = 0.0
- 1425
- 1415
Set Pt 840mV
AFR
- 1400
- 1358
- 1350
Set Pt 880 mV
AFR
- 1360
- 1340
Set pt. 830 mV
AFR
NOx = 0 - 10000 ppm
NOx = 4130 ppm
O2 = 0-5%
O2 = 0.972%
SPAN ADJ
NOx = 0
O2 = 0
Zero adj
O2 = 0-5%
O2 = 0.980%
NOx = 0 - 10000 ppm
NOx = 4130 ppm
NOx = 0
O2 = 0
- 1325
- 1315
- 1305
- 1255
- 1245
Runs = unit 7 DM inlet
50 CAI Gas 10cm/hr
NOx = 0.0 - 10000 ppm
NOx = 0 - 10000 ppm
CHART NO. CL-2172-R


So. CAL GAS Goleta
Run #2 9/24/91 DM
unit #8 inlet
10cm/hr
-913
-913
0.20-5%
O2=0.972%
NOx=0-10000ppm
NOx=4180ppm
-NOx=0
-O2=0 Zero ADJ
Span ADJ
NOx=0-10000ppm
NOx=4240
O2=0-5%
O2=0.940%
-NOx=0
-O2=-0.03%
-855
-845
-835
-825
-815
NOx=0-10000ppm
O2=0-5%
9/24/91 DM
unit #8 inlet
10cm/hr
-O2=0.01%
NOx=0-10000ppm
NOx=4140ppm
O2=0-5%
O2=.985%
Bias ✓
-NO=0.0
NOx=0-25ppm
NOx=19.57ppm
Converter ✓
NOx=0-10000ppm
NOx=9130ppm
O2=0-5%
O2=0.992%
9/24/91
Southern California Gas
Goleta DM.
I.C. ENGINE test
CHART NO. CL-2172-R
(4971)


Set Pt AFR 900
unit 8 inlet
9/24/91 DM
unit #8 INLET
Set pt AFR 860
NOx=0-10000 ppm
NOx=4130 ppm
O2=0-5%
O2=.972%
O2=0-5%
O2=0.965
NOx=0-10000 ppm
NOx=4100 ppm
O2=0
NOx=0
1112
1102
1057
1027
1017
1007
So CAL Gas Goleta
10cm/hr Run #3 unit 8 inlet
DM 9/24/91
NOx=0-10000 PPM
NOx=4130 ppm
O2=0-5%
O2=0.972%
5ppm ADJ
NOx=0
O2=0
Zero ADJ
O2=0-5%
O2=0.972%
NOx=0-10000 ppm
NOx=4100 ppm
O2=0
NOx=0
943
933
923
913
915
So. CAL GAS Goleta
Run #2 9/24/91 DM
unit #8 inlet
10cm/hr
O2=0-5%
O2=0.972%
NOx=0-10000 ppm
NOx=4130 ppm
NOx=0
O2=0
Zero ADJ
Span ADJ
CHART NO. CL-2172-8
(4971)

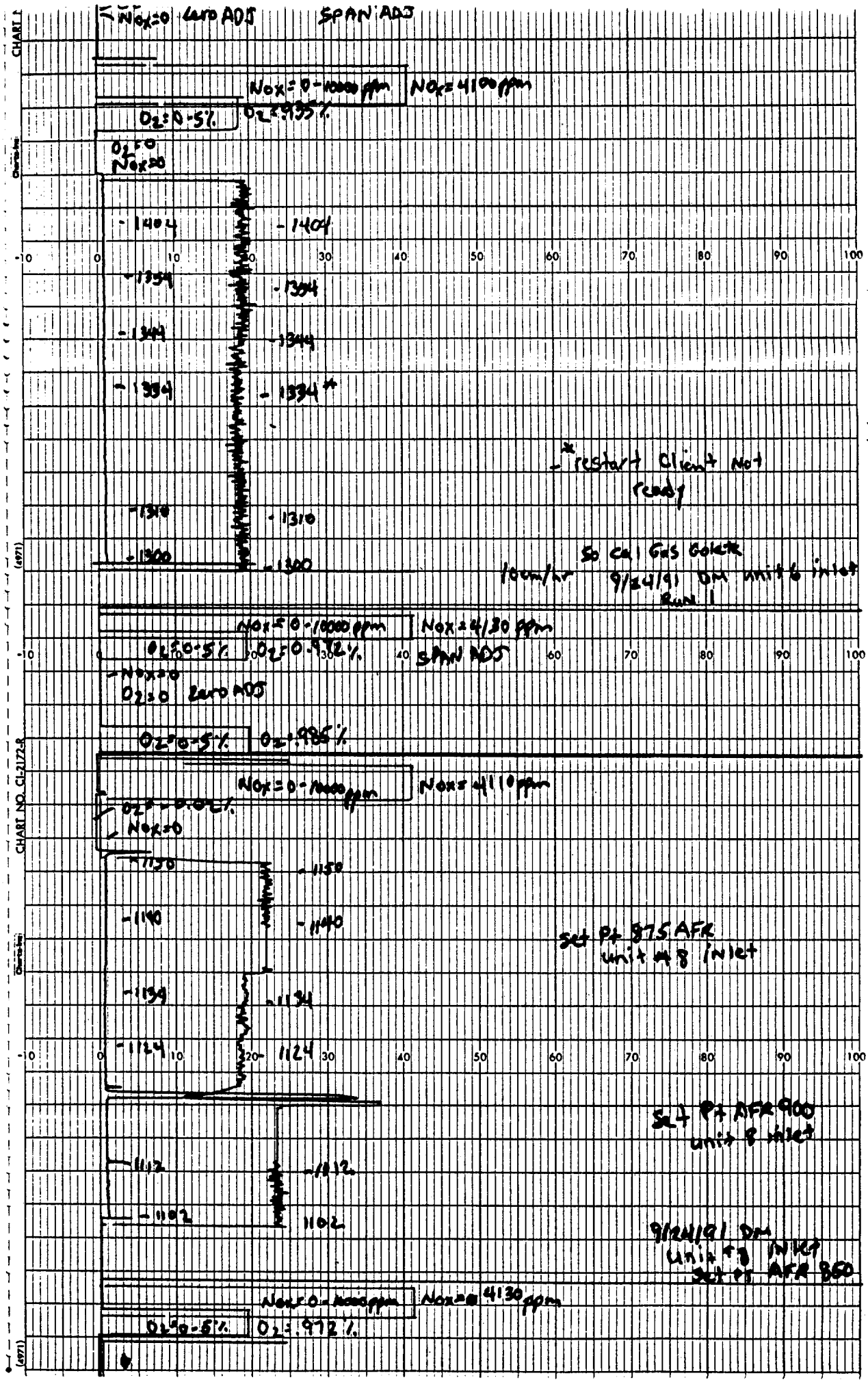
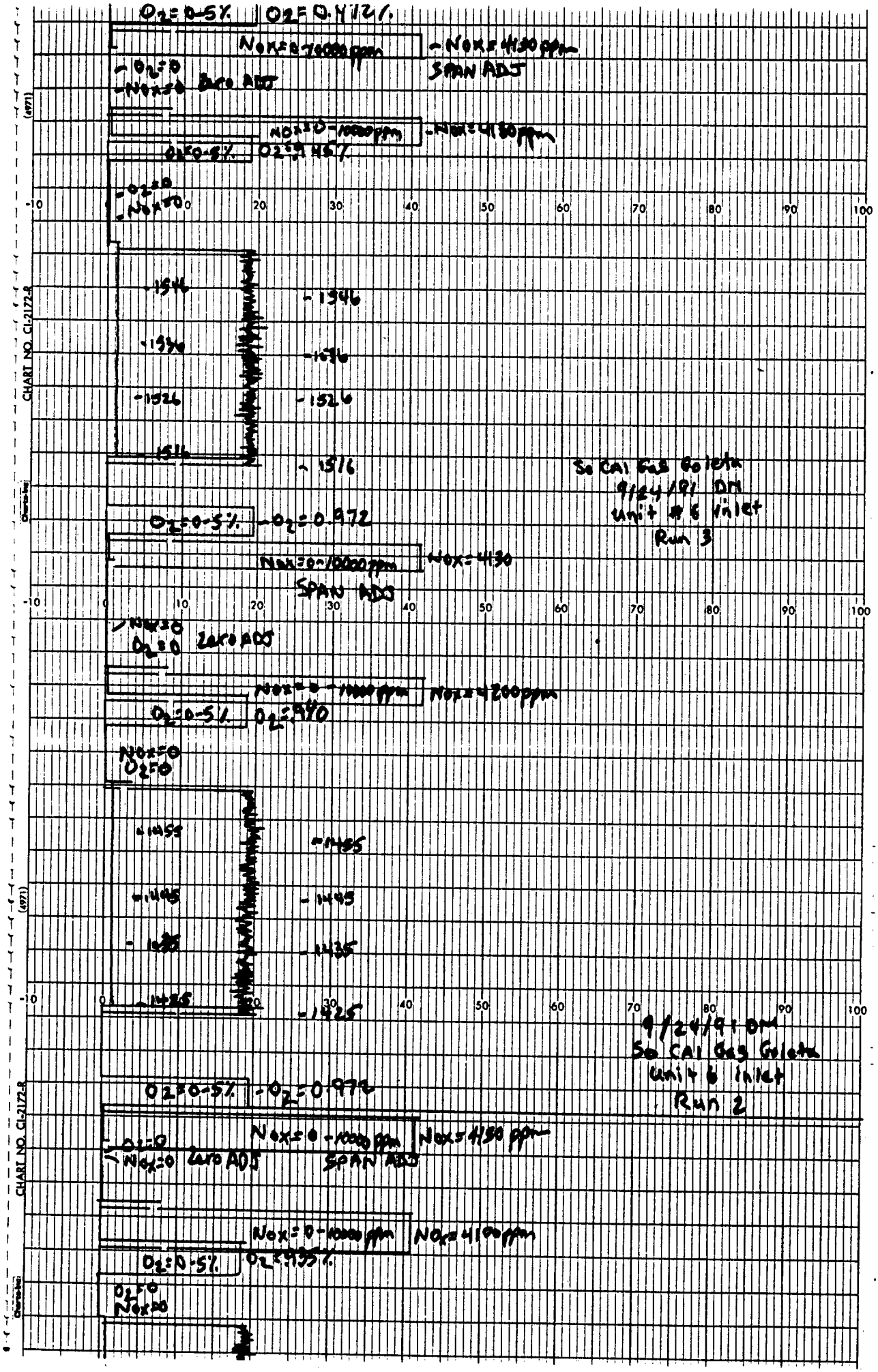
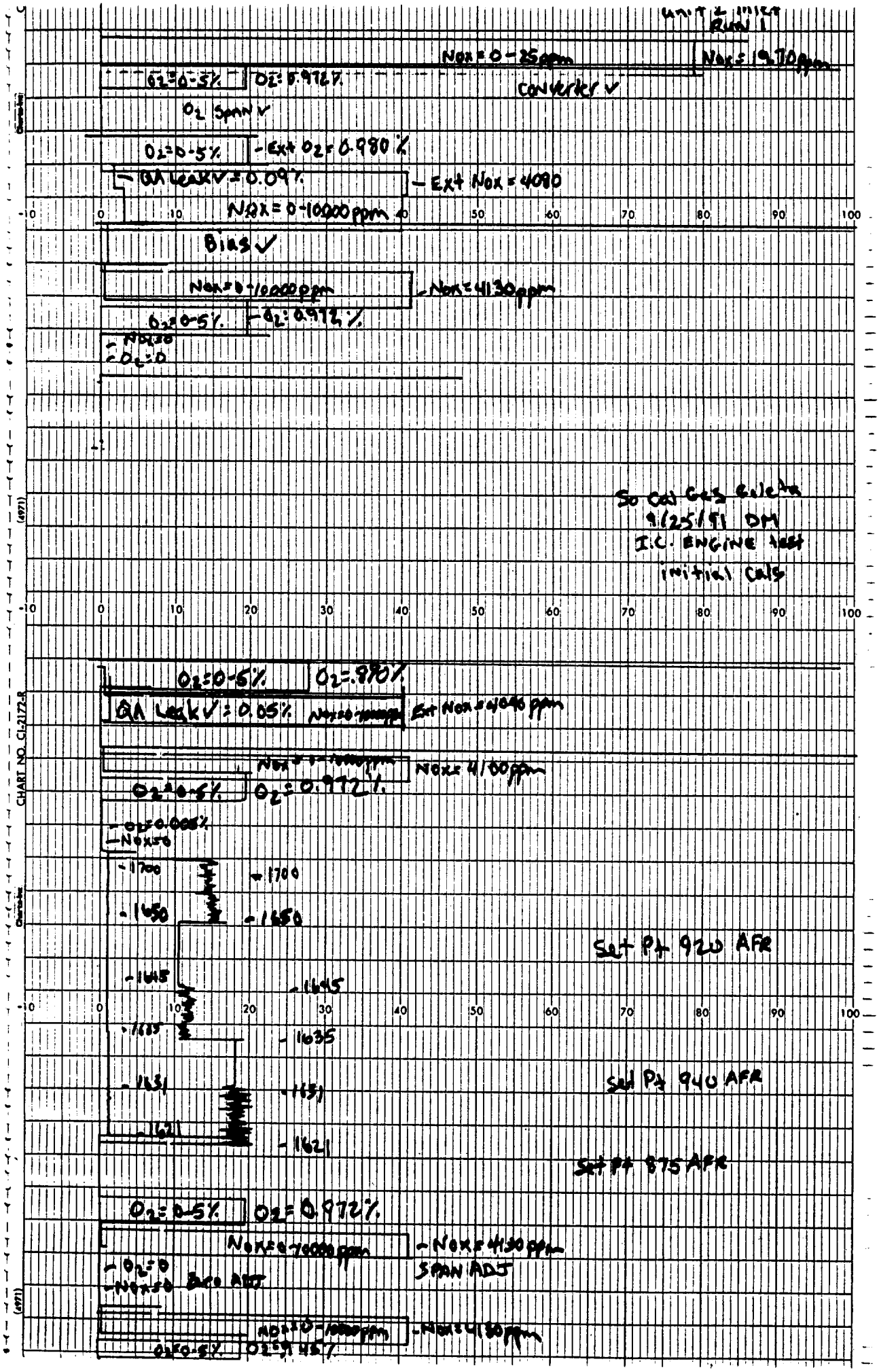
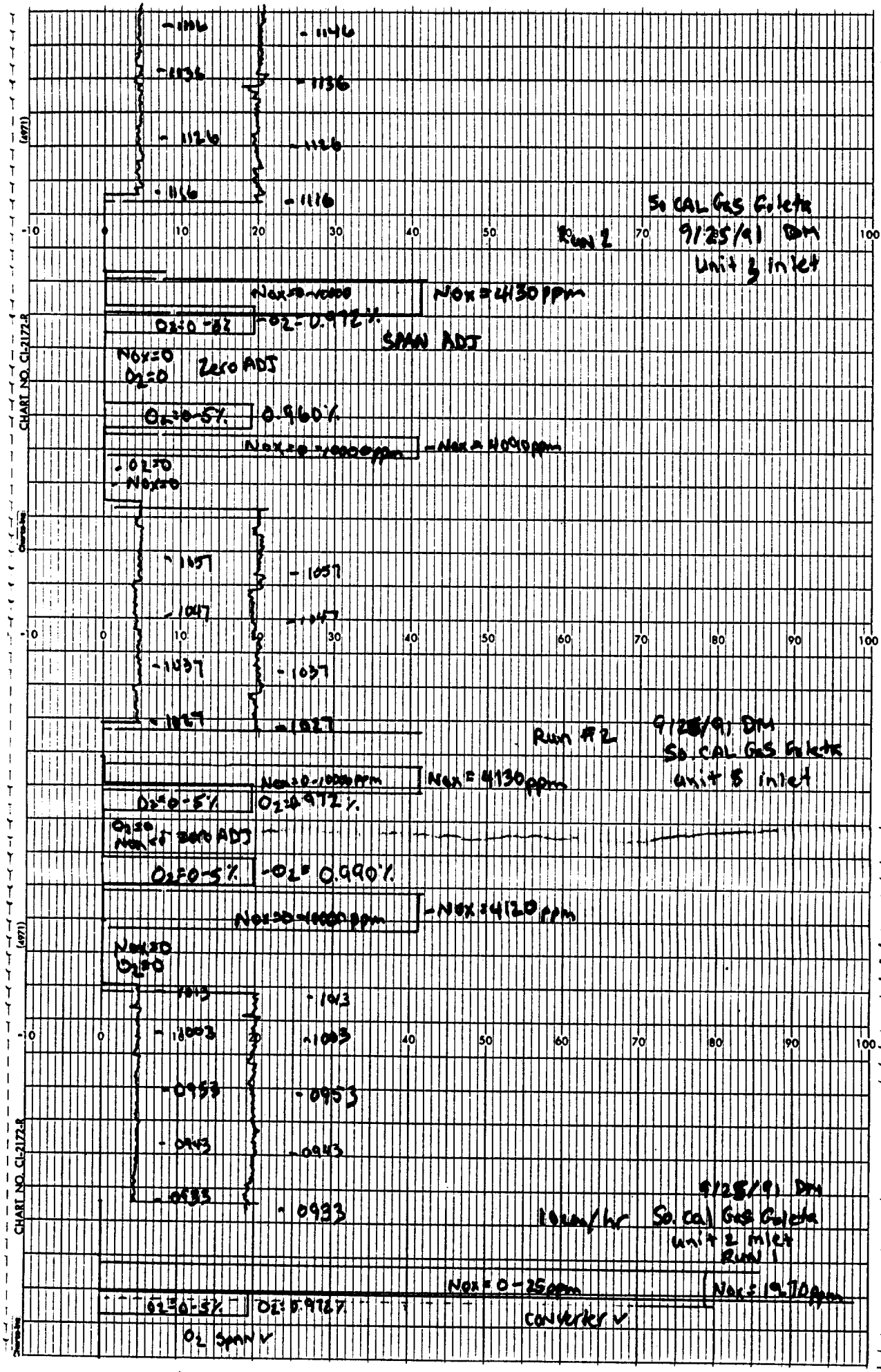


CHART 1
NOx=0 Zero ADJ
SPAN ADJ
NOx=0-10000 ppm
NOx=4100 ppm
O2=0-5%
O2=.935%
O2=0
NOx=0
-1404
-1404
-1394
-1394
-1344
-1344
-1334
-1334 *
* restart Client Not ready
-1310
-1310
-1300
-1300
50 Cal Gas Goletta
10cm/hr 9/24/91 DM unit 8 inlet
Run 1
NOx=0-10000 ppm
NOx=4130 ppm
O2=0-5%
O2=.972%
SPAN ADJ
NOx=0
O2=0 Zero ADJ
O2=0-5%
O2=.986%
CHART NO. CL-2172-R
NOx=0-10000 ppm
NOx=4110 ppm
O2=-0.02%
NOx=0
-1150
-1150
-1140
-1140
-1134
-1134
-1124
-1124
Set Pt 875 AFR
unit #8 inlet
Set Pt AFR 900
unit 8 inlet
-1112
-1112
-1102
-1102
9/24/91 DM
unit #8 inlet
Set Pt AFR 850
NOx=0-10000 ppm
NOx=4130 ppm
O2=0-5%
O2=.972%


O2=0-5%
O2=0.4127%
NOx=0-10000ppm
NOx=4130 ppm
SPAN ADJ
O2=0
NOx=0
ZERO ADJ
NOx=0-10000ppm
NOx=4150ppm
O2=0-5%
O2=9.457%
-1546
-1536
-1526
-1516
So Cal Gas Goleta
9/24/91 DM
Unit #6 Inlet
Run 3
O2=0-5%
O2=0.972
NOx=0-10000ppm
NOx=4130
SPAN ADJ
NOx=0
O2=0
ZERO ADJ
NOx=0-10000ppm
NOx=4200ppm
O2=0-5%
O2=9.40
NOx=0
O2=0
-1455
-1445
-1435
-1425
9/24/91 DM
So Cal Gas Goleta
Unit 6 Inlet
Run 2
O2=0-5%
O2=0.996
NOx=0-10000ppm
NOx=4150 ppm
O2=0
NOx=0
ZERO ADJ
SPAN ADJ
NOx=0-10000ppm
NOx=4100ppm
O2=0-5%
O2=9.95%
O2=0
NOx=0
CHART NO. CI-2172-8
(4971)


Run 1
NOx = 0 - 25 ppm
NOx = 1970 ppm
O2 = 0-5%
O2 = 0.972%
Converter ✓
O2 Span ✓
O2 = 0-5%
- Ext O2 = 0.980 %
- QA Leak ✓ = 0.09%
- Ext NOx = 4080
NOx = 0-10000 ppm
Bias ✓
NOx = 0-10000 ppm
- NOx = 4130 ppm
O2 = 0-5%
- O2 = 0.972 %
- NOx = 0
- O2 = 0
So Cal Gas Calibration
9/25/91 DM
I.C. ENGINE TEST
Initial Cals
O2 = 0-5%
O2 = .980%
QA Leak ✓ = 0.05%
Ext NOx = 4040 ppm
NOx = 4130 ppm
O2 = 0-5%
O2 = 0.972%
- O2 = 0.005%
- NOx = 0
- 1700
- 1650
- 1645
- 1635
- 1631
- 1621
Set Pt 920 AFR
Set Pt 940 AFR
Set Pt 875 AFR
O2 = 0-5%
O2 = 0.972%
NOx = 0-10000 ppm
- NOx = 4130 ppm
- O2 = 0
- NOx = 0
Span ADJ
NOx = 0-10000 ppm
- NOx = 4130 ppm
O2 = 0-5%
O2 = 0.485%
CHART NO. CI-2172-R


So CAL Gas Co Meter
9/25/91 DM
Run 2
Unit 3 inlet
NOx = 4130 ppm
O2 = 0.972%
SPAN ADJ
NOx = 0
O2 = 0
Zero ADJ
O2 = 0-5%
0.960%
NOx = 4090 ppm
O2 = 0
NOx = 0
Run #2
9/25/91 DM
So. CAL Gas Co Meter
unit 3 inlet
NOx = 4130 ppm
O2 = 0.972%
O2 = 0
NOx = 0
Zero ADJ
O2 = 0-5%
O2 = 0.990%
NOx = 4120 ppm
NOx = 0
O2 = 0
9/25/91 DM
So. Cal Gas Co Meter
unit 3 inlet
Run 1
NOx = 0-25 ppm
NOx = 19.70 ppm
O2 = 0-5%
O2 = 5.976%
converter ✓
O2 span ✓

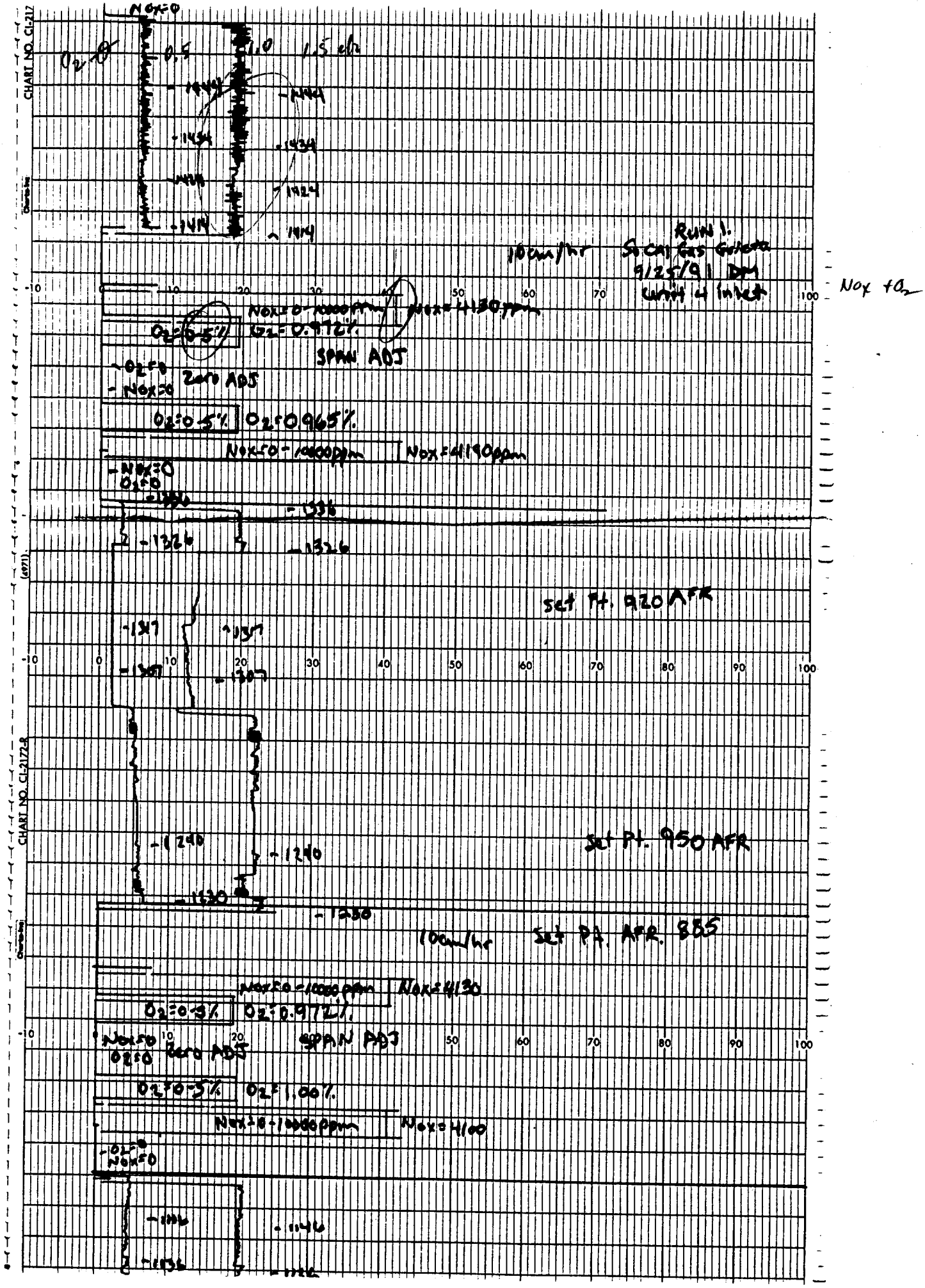
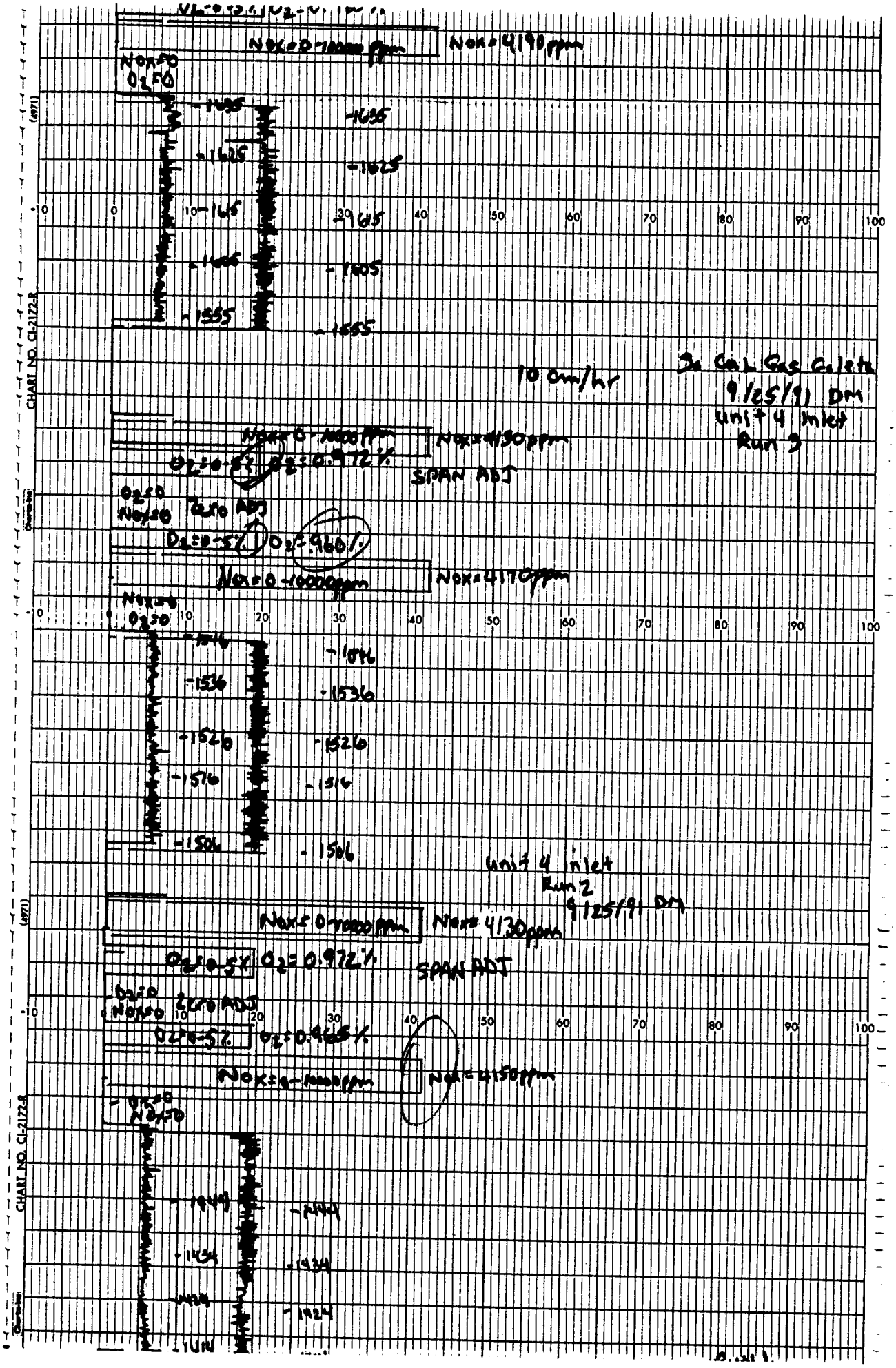


CHART NO. CI-217
NOx=0
O2 0
0.5
1.0
1.5 hr
1444
1434
1424
1414
10 cm/hr
RUN 1.
So Cal Gas Co Test
9/25/91 DPM
Cutty 4 Inlet
NOx +O2
NOx=0-10000ppm
NOx=4130ppm
O2=0-5%
O2=0.972%
SPAN ADJ
O2=0
NOx=0
Zero ADJ
O2=0-5%
O2=0.965%
NOx=0-10000ppm
NOx=4190ppm
NOx=0
O2=0
1326
Set Pt. 920 AFR
1307
Set Pt. 950 AFR
1240
1230
10 cm/hr
Set Pt. AFR. 885
NOx=0-10000ppm
NOx=4130
O2=0-5%
O2=0.972%
SPAN ADJ
NOx=0
O2=0
Zero ADJ
O2=0-5%
O2=1.00%
NOx=0-10000ppm
NOx=4100
O2=0
NOx=0
1046
1036
CHART NO. CI-2172-R


NOx=0-10000 ppm
NOx=4190 ppm
NOx=0
O2=0
-1635
-1625
-1615
-1605
-1555
10 cm/hr
3a Cal Gas Calib
9/25/91 DM
unit 4 inlet
Run 3
NOx=0-10000 ppm
NOx=4150 ppm
O2=0.972%
SPAN ADJ
O2=0
NOx=0
ZERO ADJ
O2=0-5%
O2=0.960%
NOx=0-10000 ppm
NOx=4170 ppm
-1546
-1536
-1526
-1516
-1506
unit 4 inlet
Run 2
9/25/91 DM
NOx=0-10000 ppm
NOx=4130 ppm
O2=0.972%
SPAN ADJ
O2=0
NOx=0
ZERO ADJ
O2=0-5%
O2=0.965%
NOx=0-10000 ppm
NOx=4150 ppm
O2=0
NOx=0
-1944
-1934
-1924
CHART NO. CL-2172-8

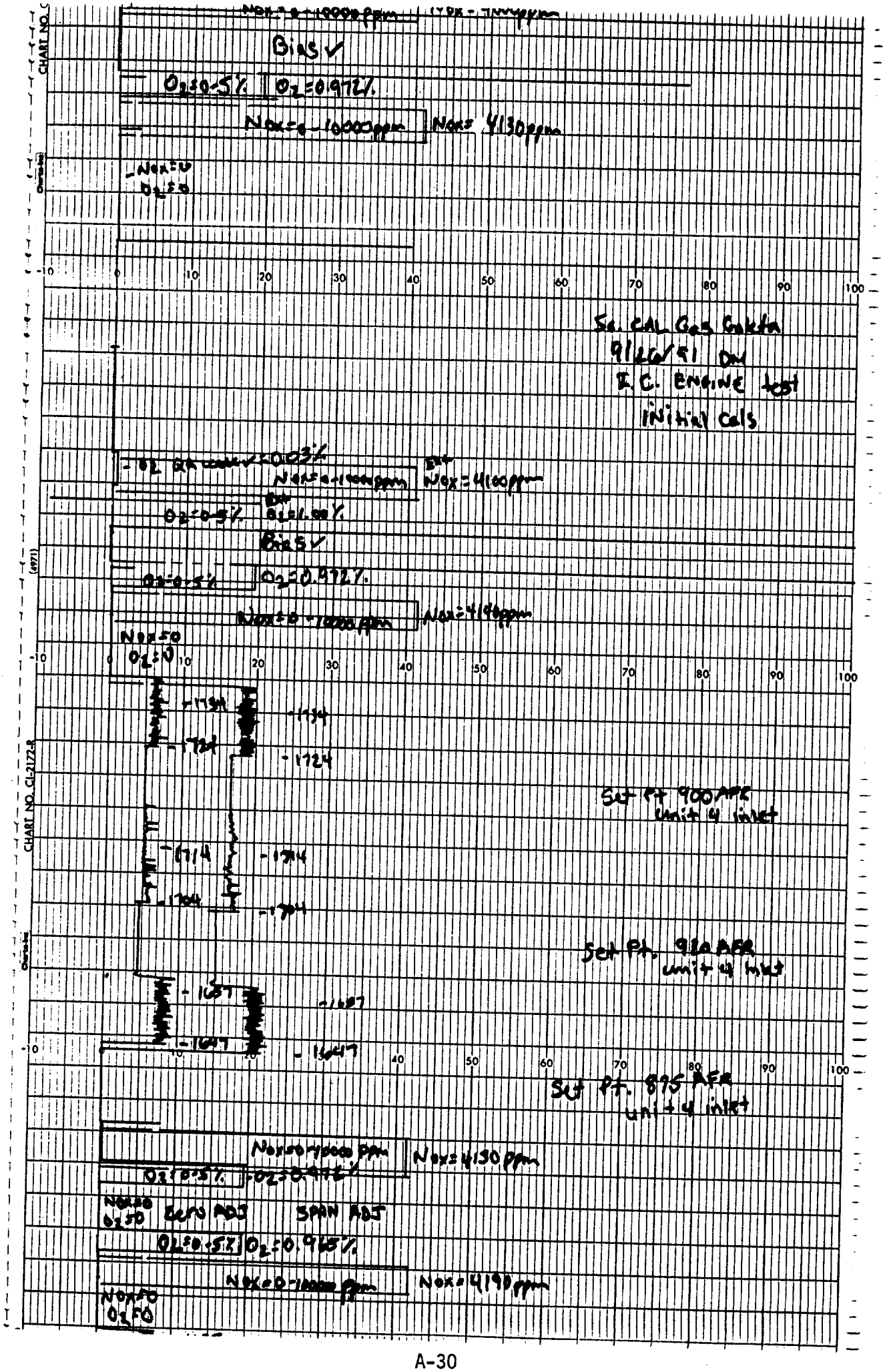
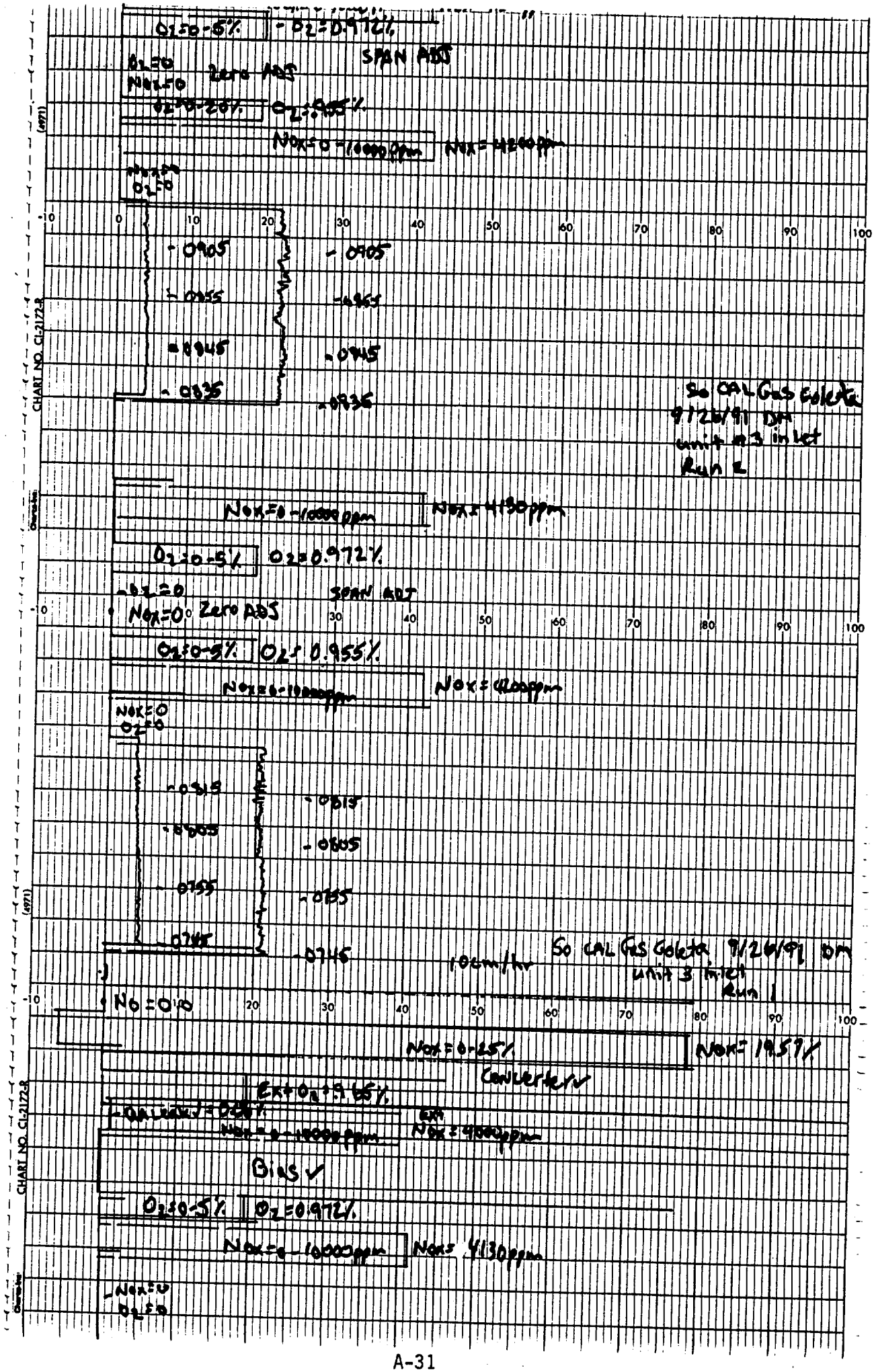
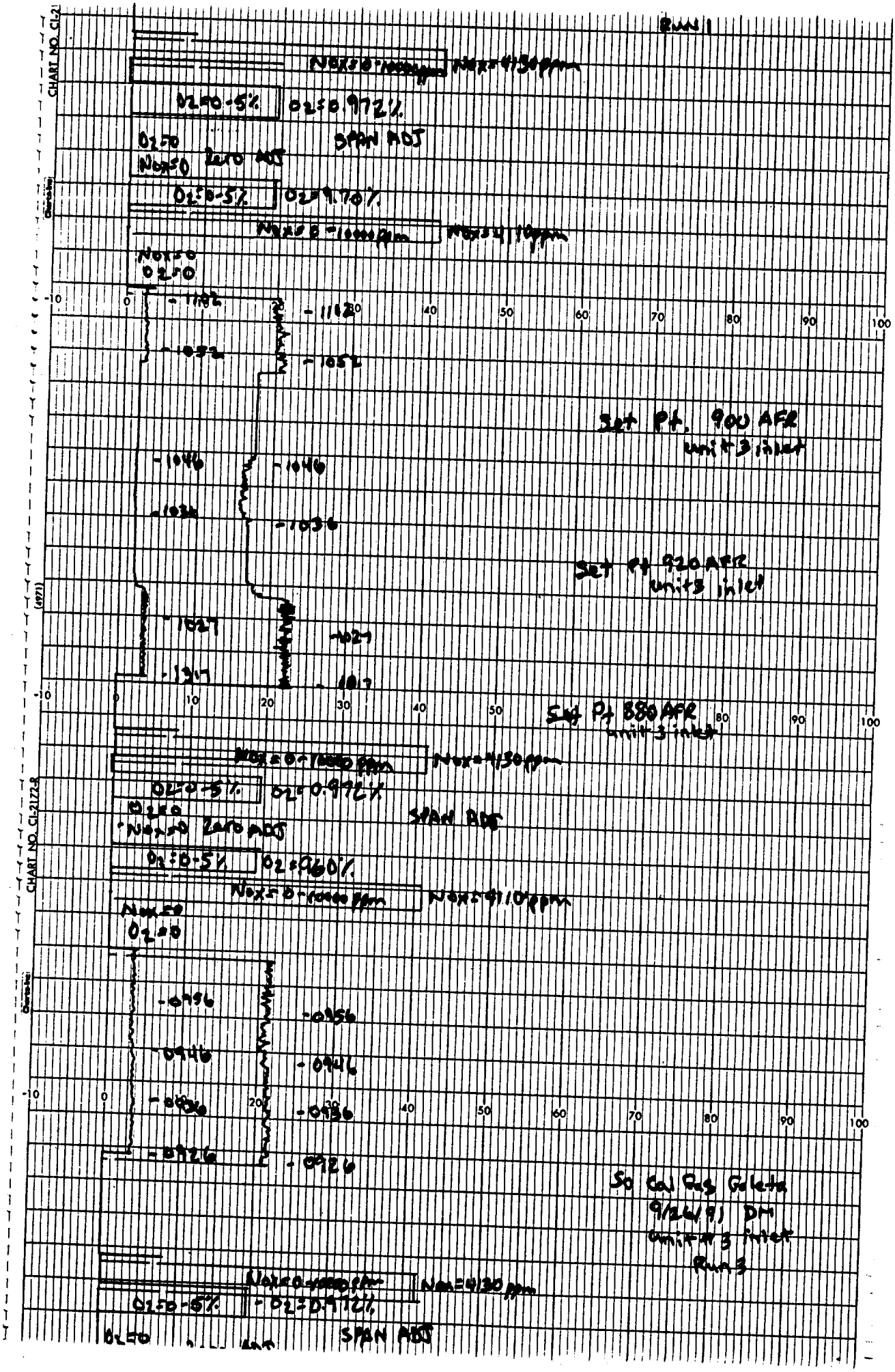
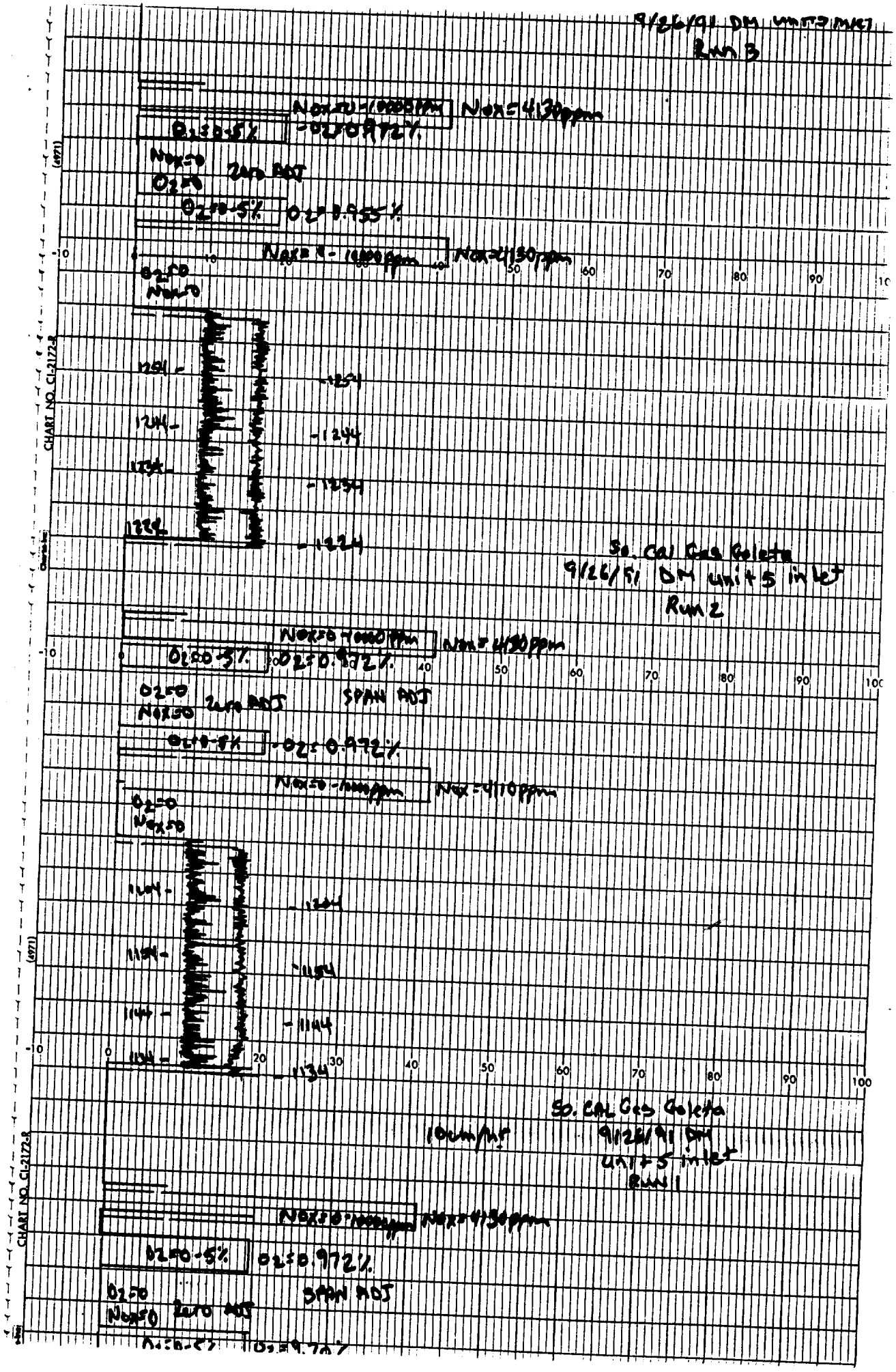
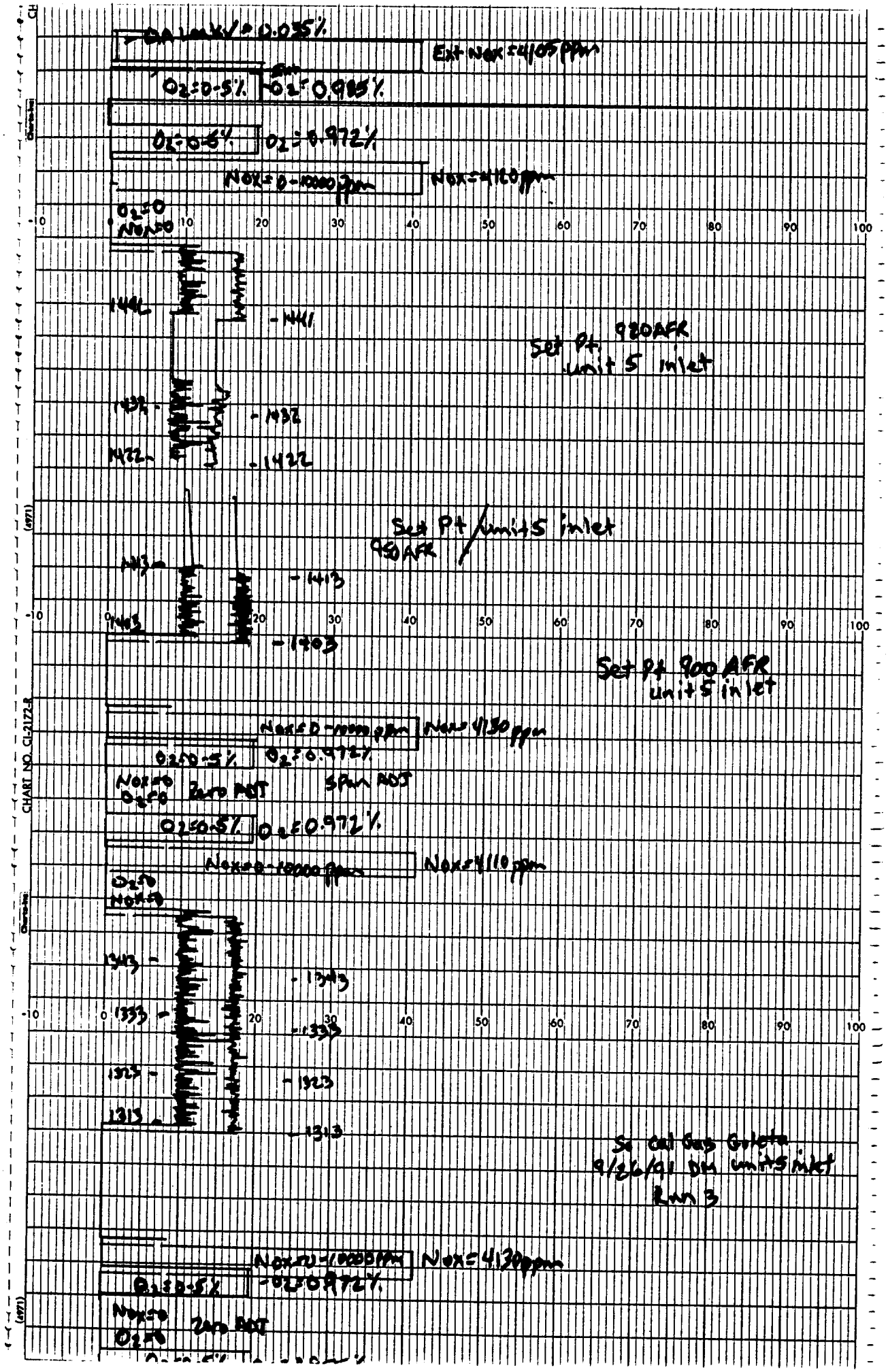


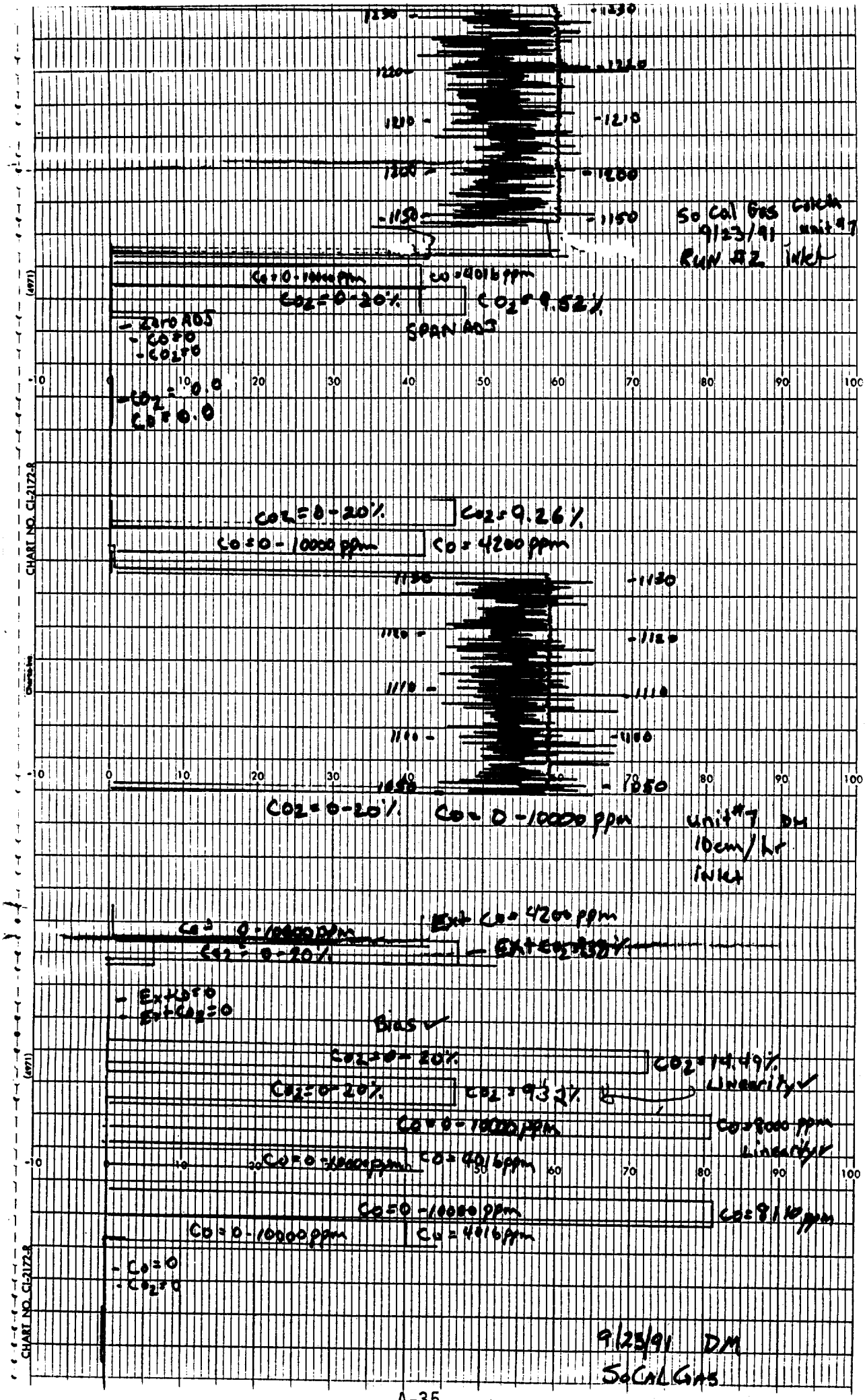
CHART NO.
BIAS ✓
O2=0-5%
O2=0.972%
NOx=0-10000ppm
NOx= 4130ppm
NOx=0
O2=0
Sa. CAL Gas Cylin
9/26/91 DM
I.C. ENGINE test
initial cals
NOx=4100ppm
NOx= 4100ppm
O2=0-5%
BIAS ✓
O2=0.972%
NOx=0-10000ppm
NOx=4190ppm
NOx=50
O2=0
CHART NO. CL21728
Set Pt 900 AFR
unit 4 inlet
Set Pt. 910 AFR
unit 4 inlet
Set Pt. 895 AFR
unit 4 inlet
NOx=0-10000 PPM
NOx=4130 ppm
O2=0-5%
O2=0.972%
NOx=0
O2=0
ZERO ADJ
SPAN ADJ
O2=0-5%
O2=0.965%
NOx=0-10000 ppm
NOx=4190 ppm
NOx=0
O2=0


O2=0-5%
O2=0.972%
SPAN ADJ
O2=0
NOx=0 Zero ADJ
O2=0-20%
O2=0.955%
NOx=0-10000ppm
NOx=4130ppm
O2=0
-0905
-0905
-0955
-0955
-0945
-0945
-0935
-0935
So CAL Gas Goleta
9/26/91 DM
unit #3 inlet
Run 2
NOx=0-10000ppm
NOx=4130ppm
O2=0-5%
O2=0.972%
O2=0
NOx=0 Zero ADJ
SPAN ADJ
O2=0-5%
O2=0.955%
NOx=0-10000ppm
NOx=4100ppm
NOx=0
O2=0
-0815
-0815
-0805
-0805
-0755
-0755
-0745
-0745
10cm/hr
So CAL Gas Goleta 9/26/91 DM
unit 3 inlet
Run 1
NOx=0
O2=0
NOx=0-25%
NOx=19.57%
Converter
Ext O2=9.65%
NOx=0-10000ppm
NOx=4000ppm
Bias ✓
O2=0-5%
O2=0.972%
NOx=0-10000ppm
NOx=4130ppm
NOx=0
O2=0


RUN 1
CHART NO. CL-2
NOx=0-1000 ppm
NOx=4130 ppm
O2=0-5%
O2=0.972%
O2=0
SPAN ADJ
NOx=0 Zero ADJ
O2=0-5%
O2=9.70%
NOx=0-1000 ppm
NOx=4110 ppm
NOx=0
O2=0
-1102
-1102
-1052
-1052
Set Pt. 900 AFR
unit 3 inlet
-1046
-1046
-1036
-1036
Set Pt 920 AFR
unit 3 inlet
-1027
-1027
-1017
-1017
Set Pt 880 AFR
unit 3 inlet
NOx=0-1000 ppm
NOx=4130 ppm
O2=0-5%
O2=0.972%
O2=0
SPAN ADJ
NOx=0 Zero ADJ
O2=0-5%
O2=9.60%
NOx=0-1000 ppm
NOx=4110 ppm
NOx=0
O2=0
-0956
-0956
-0946
-0946
-0936
-0936
-0926
-0926
So Cal Gas Goleta
9/24/91 DM
unit #3 inlet
Run 3
NOx=0-1000 ppm
NOx=4130 ppm
O2=0-5%
O2=0.972%
O2=0
SPAN ADJ


9/26/91 DM unit 5 inlet
Run 3
NOx=4130ppm
O2=0.972%
NOx=0
O2=0
zero adj
O2=0-5%
O2=0.955%
NOx=4130ppm
O2=0
NOx=0
So. Cal Gas Goleta
9/26/91 DM unit 5 inlet
Run 2
NOx=4130ppm
O2=0-5%
O2=0.972%
O2=0
NOx=0
zero adj
span adj
O2=0.972%
NOx=4110ppm
O2=0
NOx=0
So. Cal Gas Goleta
10cm/hr
9/26/91 DM
unit 5 inlet
Run 1
NOx=4130ppm
O2=0-5%
O2=0.972%
O2=0
NOx=0
zero adj
span adj
CHART NO. CL-2172-8


Ext NOx = 4105 ppm
O2 = 0-5%
O2 = 0.985%
O2 = 0-5%
O2 = 0.972%
NOx = 0-10000 ppm
NOx = 4120 ppm
O2 = 0
NOx = 0
1441
1441
1432
1432
1422
1422
Set Pt 980 AFR
unit 5 inlet
Set Pt / unit 5 inlet
980 AFR
1413
1413
1403
1403
Set Pt 900 AFR
unit 5 inlet
NOx = 0-10000 ppm
NOx = 4130 ppm
O2 = 0-5%
O2 = 0.972%
NOx = 0
O2 = 0
Zero PRT
Span ADJ
O2 = 0-5%
O2 = 0.972%
NOx = 0-10000 ppm
NOx = 4110 ppm
O2 = 0
NOx = 0
1343
1343
1333
1333
1323
1323
1313
1313
Se cal Gas Gulete
9/26/91 DM unit 5 inlet
Run 3
NOx = 0-10000 PPM
NOx = 4130 ppm
O2 = 0-5%
O2 = 0.972%
NOx = 0
O2 = 0
Zero PRT
CHART NO. CL-2122-B


So Cal Gas Calib
9/23/91 unit #7
RUN #2 INLET
CO = 0-10000 ppm
CO = 4016 ppm
CO2 = 0-20%
CO2 = 9.52%
SPAN ADJ
- ZERO ADJ
- CO = 0
- CO2 = 0
CO2 = 0-20%
CO2 = 9.26%
CO = 0-10000 ppm
CO = 4200 ppm
CO2 = 0-20%
CO = 0-10000 ppm
unit #7 DM
10cm/hr
INLET
Ext CO = 4200 ppm
CO = 0-10000 ppm
CO2 = 0-20%
- Ext CO = 0
- Ext CO2 = 0
BIAS ✓
CO2 = 0-20%
CO2 = 19.49%
CO2 = 0-20%
CO2 = 9.32%
LINEARITY ✓
CO = 0-10000 ppm
CO = 8000 ppm
LINEARITY ✓
CO = 0-10000 ppm
CO = 4016 ppm
CO = 0-10000 ppm
CO = 8110 ppm
CO = 0-10000 ppm
CO = 4016 ppm
- CO = 0
- CO2 = 0
9/23/91 DM
SoCalGas
CHART NO. CL-2172-R
(4971)

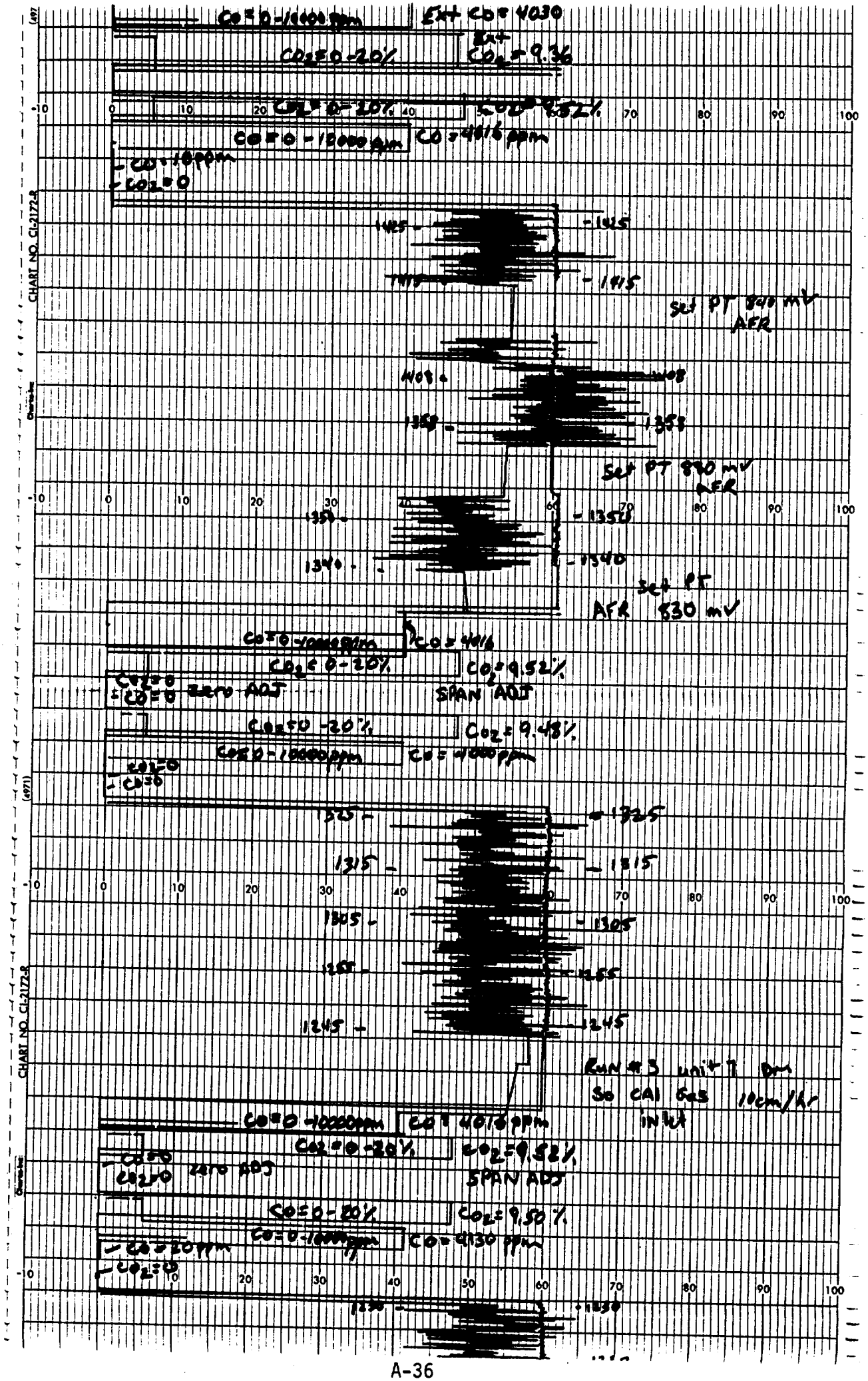
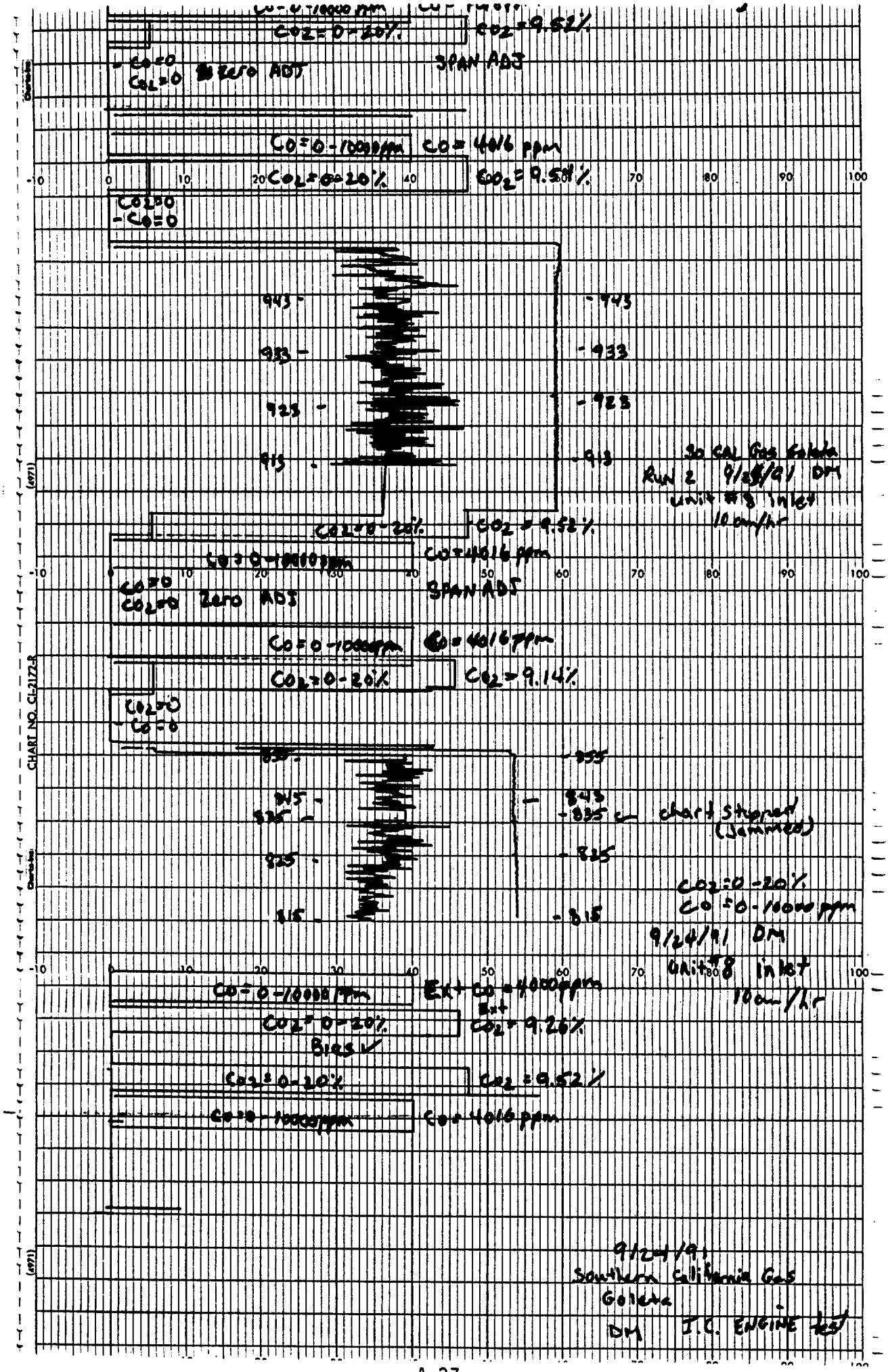
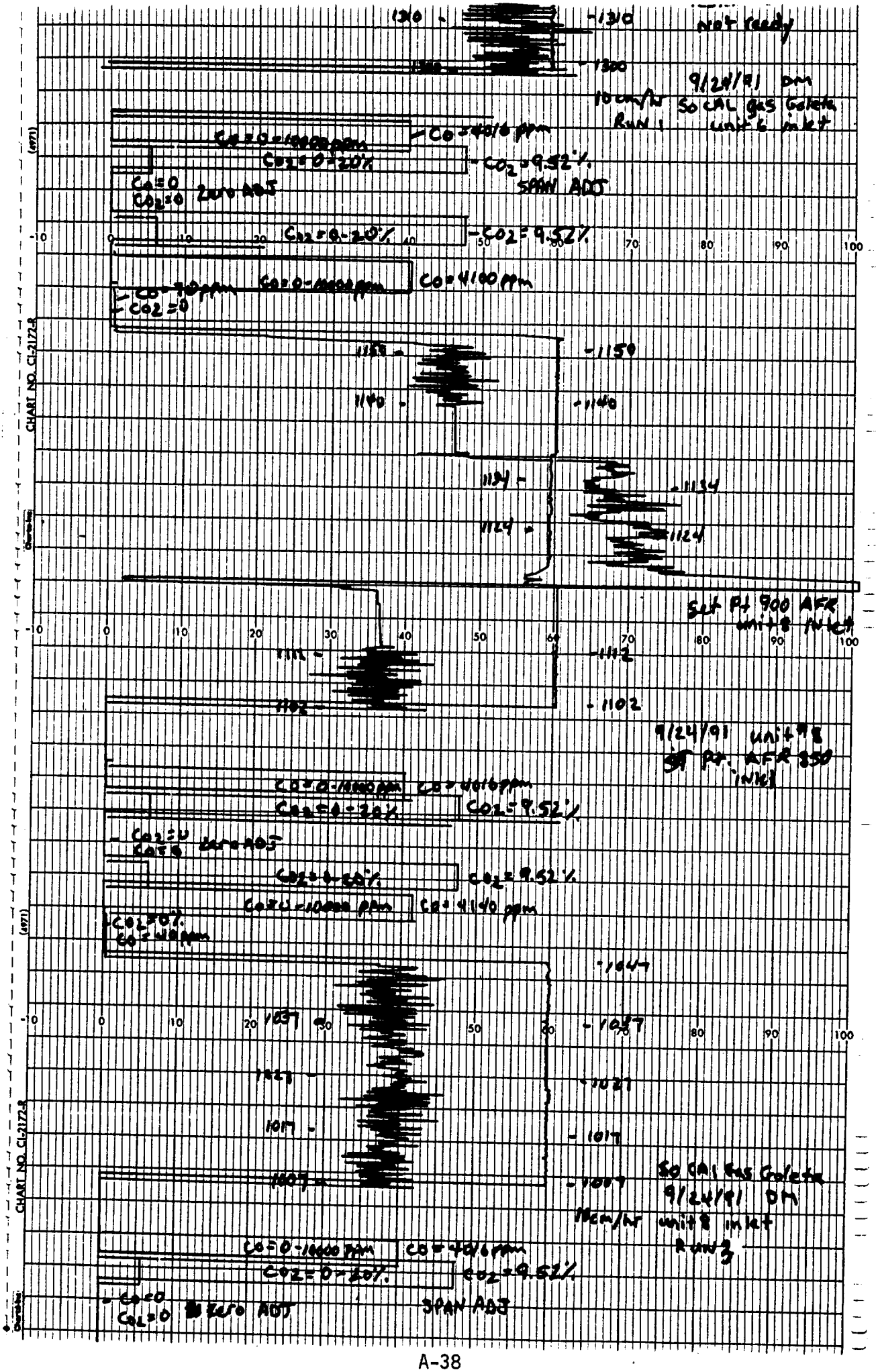


CHART NO. CI-2172-R
Set PT 840 mV AFR
Set PT 830 mV AFR
Set PT AFR 830 mV
SPAN ADJ
ZERO ADJ
RUN #3 unit 7 Dm
So CAI Gas 10cm/hr
INlet
SPAN ADJ


CO2=0-20%
CO2=9.52%
CO=0
CO2=0 Zero ADJ
SPAN ADJ
CO=0-10000 ppm
CO=4016 ppm
CO2=0-20%
CO2=9.50%
CO2=0
CO=0
943
933
923
913
943
933
923
913
So Cal Gas Goleta
Run 2 9/24/91 DM
Unit #8 inlet
10 cm/hr
CO2=0-20%
CO2=9.52%
CO=0-10000 ppm
CO=4016 ppm
CO=0
CO2=0 Zero ADJ
SPAN ADJ
CO=0-10000 ppm
CO=4016 ppm
CO2=0-20%
CO2=9.14%
CO2=0
CO=0
845
835
825
815
845
835
825
815
chart stopped (jammed)
CO2=0-20%
CO=0-10000 ppm
9/24/91 DM
Unit #8 inlet
10 cm/hr
CO=0-10000 ppm
Ext CO=4000 ppm
CO2=0-20%
Ext CO2=9.20%
Bias
CO2=0-20%
CO2=9.52%
CO=0-10000 ppm
CO=4016 ppm
9/24/91
Southern California Gas
Goleta
DM I.C. ENGINE test
CHART NO. CL-2172-R


Not ready
9/24/91 DM
10 cm/hr SO CAL gas Calcte
Run 1 unit 6 inlet
CO = 4016 ppm
CO2 = 9.52 %
SPAN ADJ
CO = 0
CO2 = 0 zero ADJ
CO2 = 0-20%
CO = 4100 ppm
Set Pt 900 AFR
unit 8 inlet
9/24/91 unit 8
Set Pt. AFR 850
inlet
CO = 4016 ppm
CO2 = 9.52 %
CO2 = 0
CO = 0 zero ADJ
CO2 = 9.52 %
CO = 4140 ppm
SO CAL Gas Calcte
9/24/91 DM
10 cm/hr unit 8 inlet
Run 3
CO = 4016 ppm
CO2 = 9.52 %
CO = 0
CO2 = 0 zero ADJ
SPAN ADJ
CHART NO. CL-2172-8

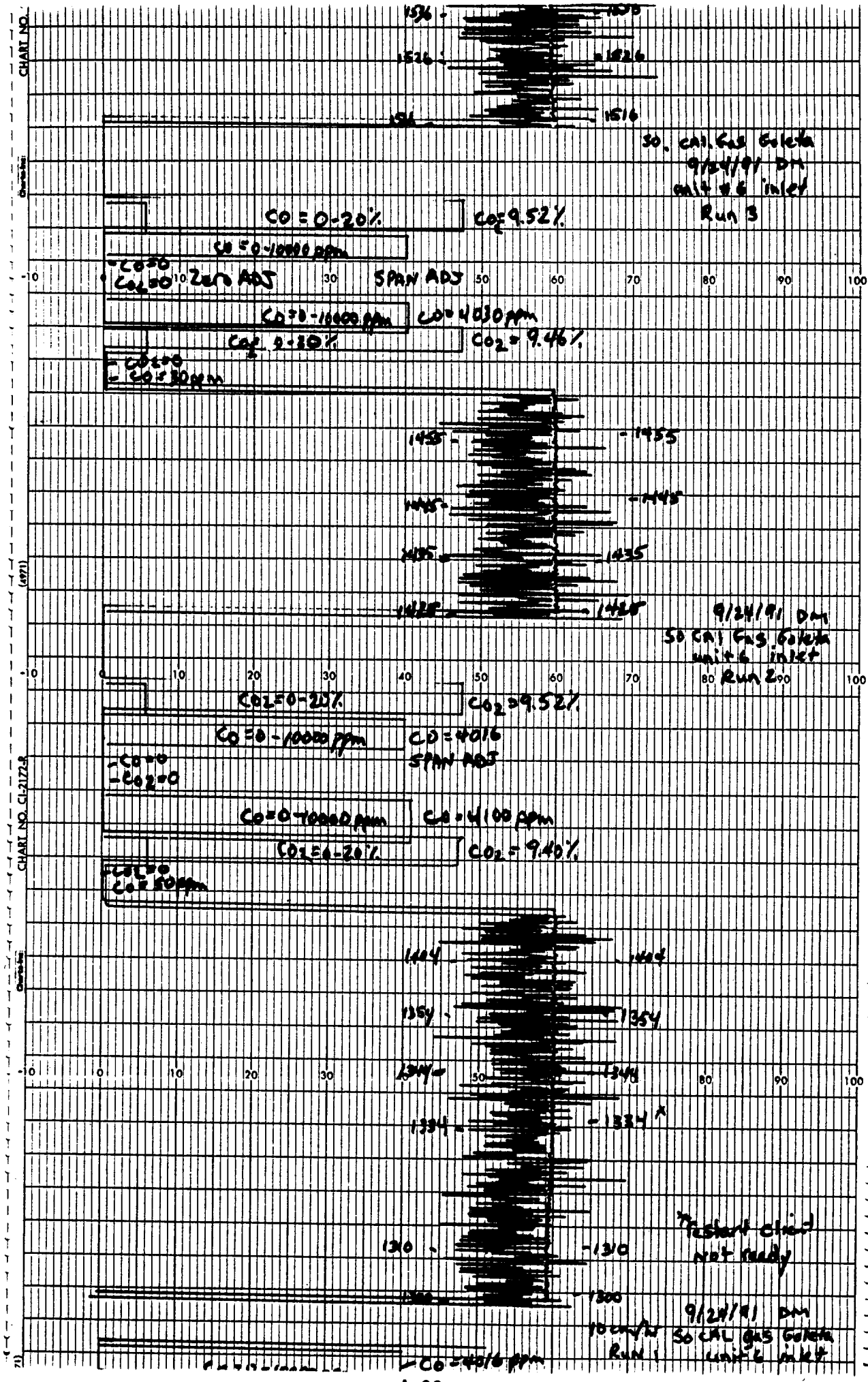
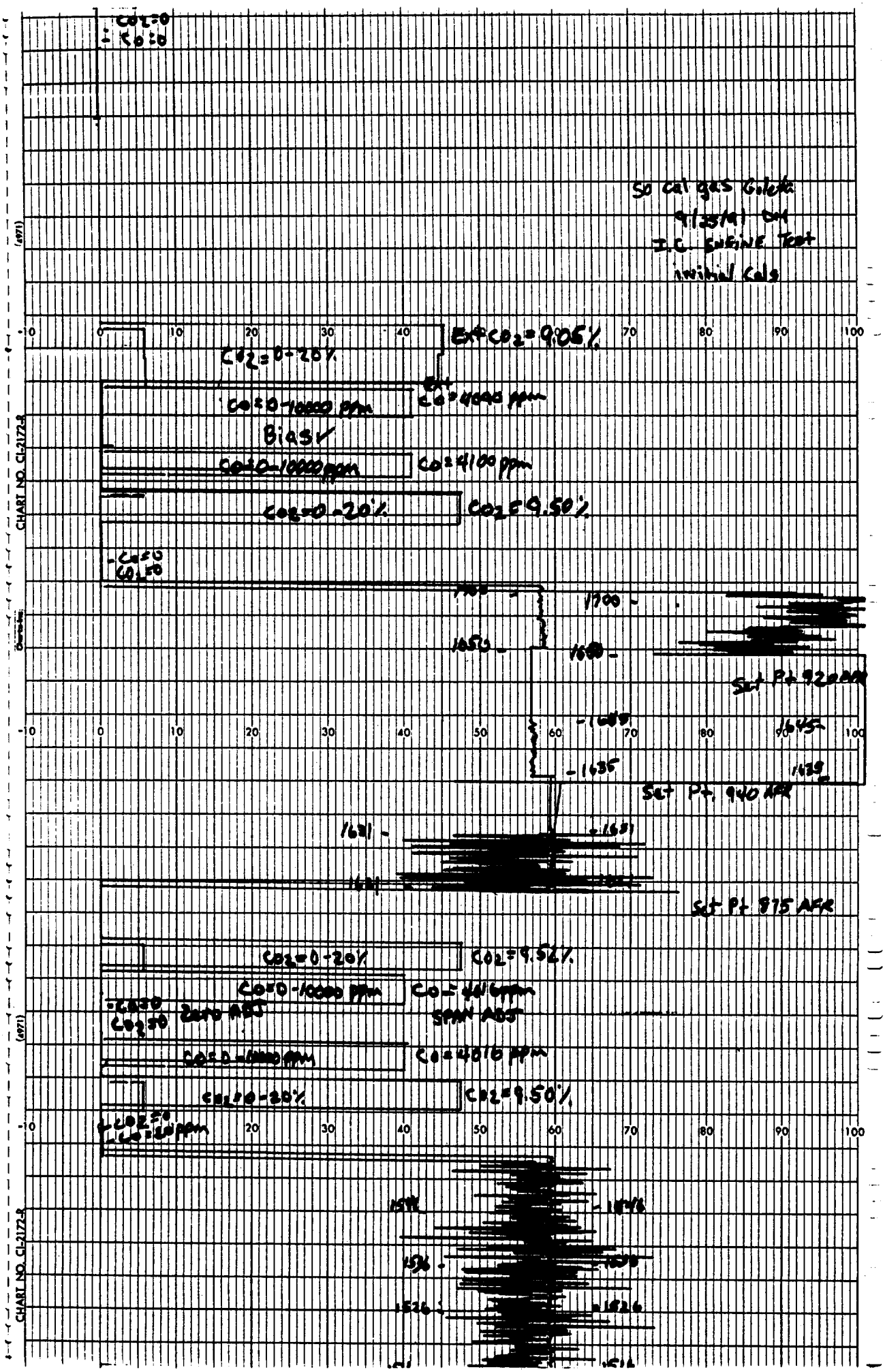


CHART NO.
1516
1516
1516
30. CAL. GAS Goleta
9/24/91 DM
unit #6 inlet
Run 3
CO = 0-20%
CO2=9.52%
CO = 0-10000 ppm
-CO=0
-CO2=0
Zero ADJ
SPAN ADJ
CO = 0-10000 ppm
CO = 4030 ppm
CO2 = 0-20%
CO2 = 9.46%
-CO2=0
-CO=30 ppm
1455
1445
1435
1425
9/24/91 DM
50 CAL Gas Goleta
unit 6 inlet
Run 2
CO2=0-20%
CO2=9.52%
CO = 0-10000 ppm
CO = 4016
SPAN ADJ
-CO=0
-CO2=0
CO=0-10000 ppm
CO = 4100 ppm
CO2=0-20%
CO2 = 9.40%
-CO=0
CO=30 ppm
1404
1354
1344
1334
1310
1300
Restart cleat
not ready
9/24/91 DM
50 CAL GAS Goleta
unit 6 inlet
Run 1
CO = 4016 ppm
CHART NO. CL-2172-8


CO2=0
CO=0
50 cal gas Cylinder
9/25/91 DM
I.C. ENGINE Test
Initial Cals
Ex CO2=9.05%
CO2=0-20%
CO=0-10000 ppm
Ex CO=4040 ppm
Bias
CO=0-10000 ppm
CO=4100 ppm
CO2=0-20%
CO2=9.50%
CO=0
CO2=0
1700
1650
1680
Set Pt 920 AFR
1645
1635
1639
Set Pt 940 AFR
1631
1631
Set Pt 975 AFR
CO2=0-20%
CO2=9.52%
CO=0-10000 ppm
CO=
SPAN ADJ
CO=0
CO2=0
ZERO ADJ
CO=0-10000 ppm
CO=4010 ppm
CO2=0-20%
CO2=9.50%
CO2=0
CO=0 ppm
1518
1518
1518
1518
1526
1526
1518
CHART NO. CL-2172-R
CHART NO. CL-2172-R

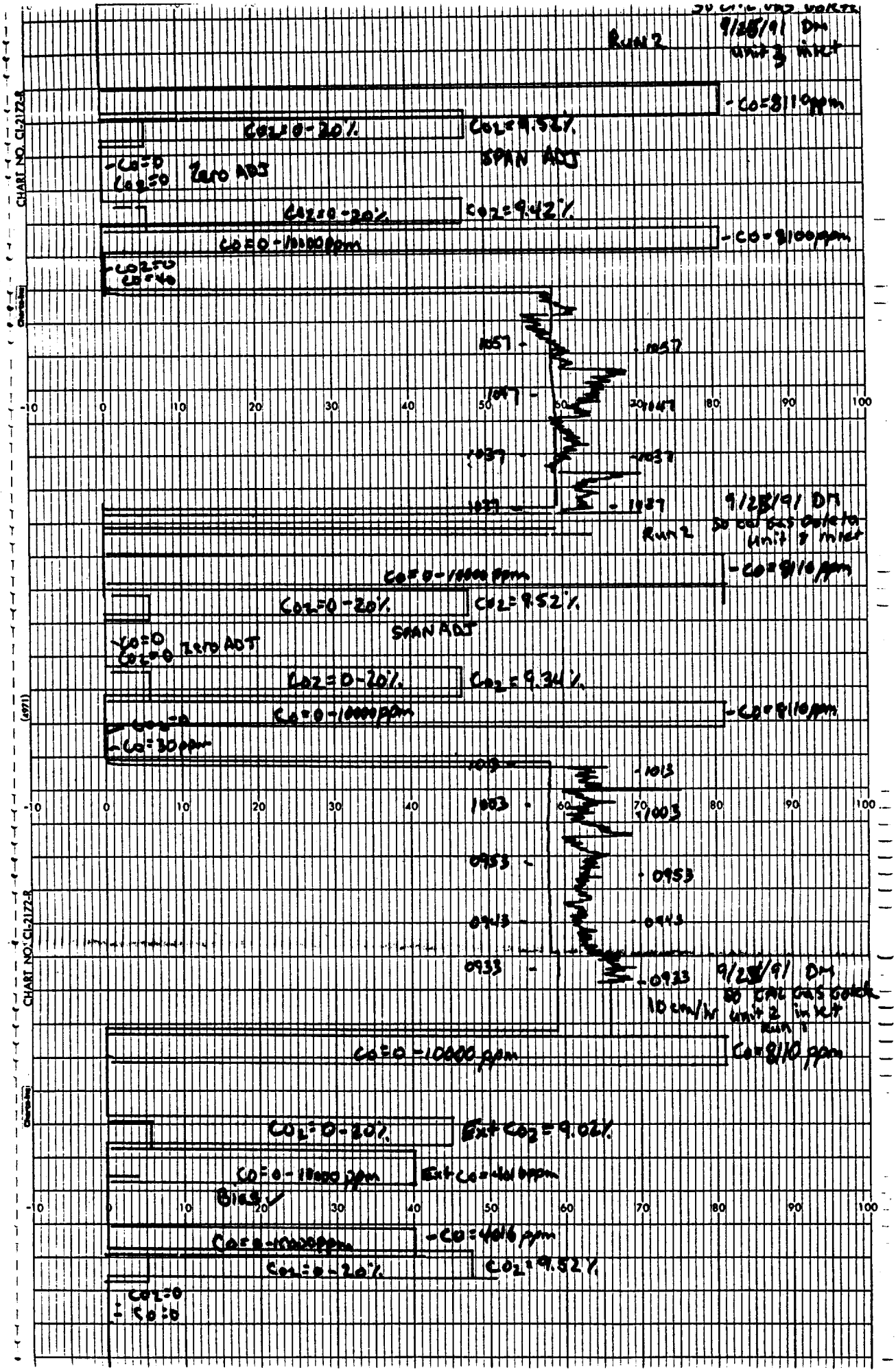
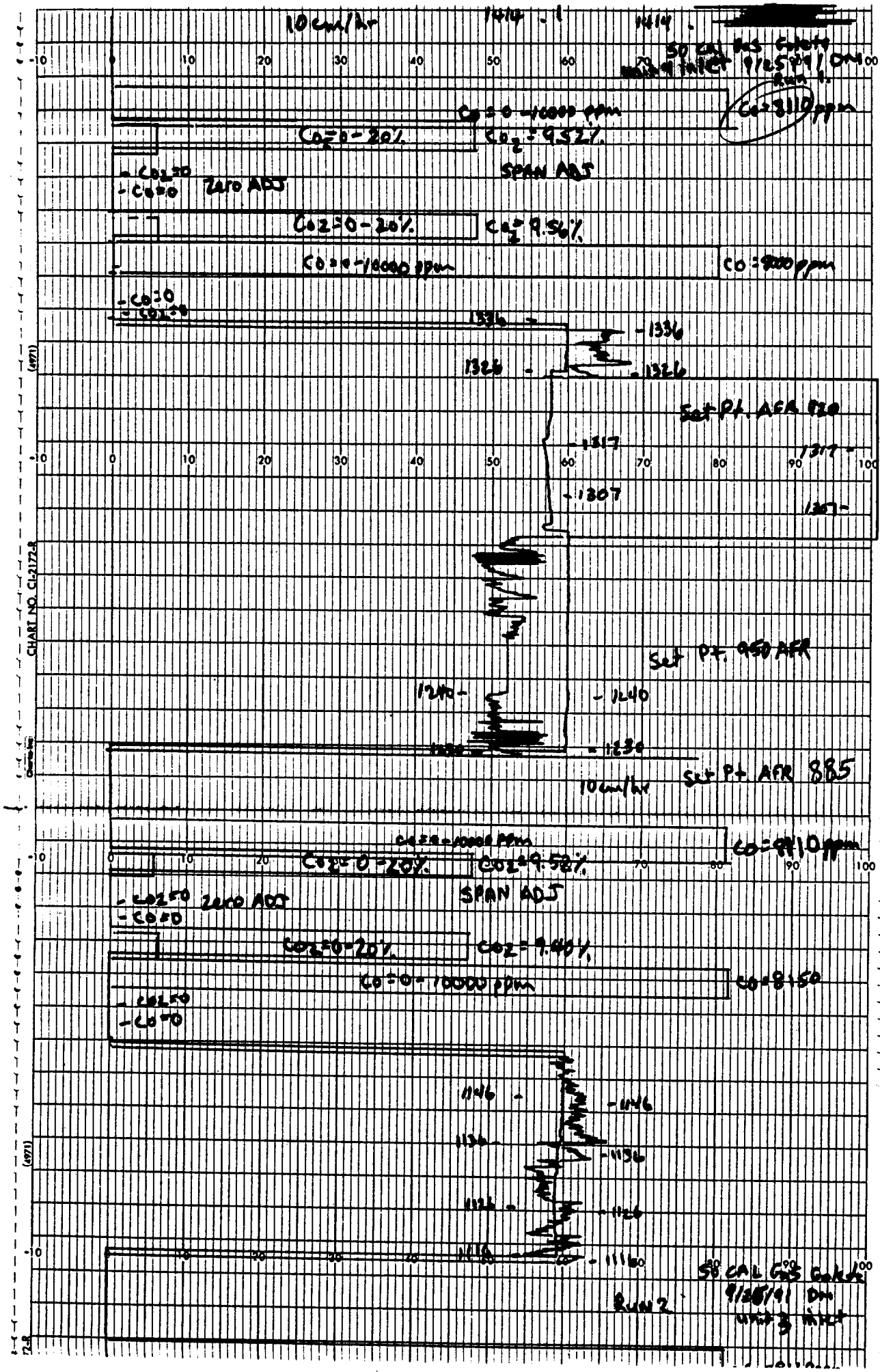


CHART NO. CL-2172-R
Run 2
9/28/91 DM
unit 3 inlet
CO=8110 ppm
CO2=0-20%
CO2=9.52%
SPAN ADJ
CO=0
CO2=0
ZERO ADJ
CO2=0-20%
CO2=9.42%
CO=0-10000 ppm
CO=8100 ppm
CO2=0
CO=40
1057
1047
1037
1027
9/28/91 DM
Run 2
unit 3 inlet
CO=0-10000 ppm
CO=8110 ppm
CO2=0-20%
CO2=9.52%
SPAN ADJ
CO=0
CO2=0
ZERO ADJ
CO2=0-20%
CO2=9.34%
CO=0-10000 ppm
CO=8110 ppm
CO2=0
CO=30 ppm
1013
1003
0953
0943
0933
9/28/91 DM
unit 2 inlet
10 cm/hr
CO=0-10000 ppm
CO=8110 ppm
CO2=0-20%
Ext CO2=9.02%
CO=0-10000 ppm
Ext CO=4016 ppm
CO=0-10000 ppm
CO=4016 ppm
CO2=0-20%
CO2=9.52%
CO2=0
CO=0


10 cm/hr
1414
1414
[redacted]
50 cal gas Cylinder
Unit 3 Inlet 9/25/91 DM
Run 1
CO = 8110 ppm
CO = 0 - 10000 ppm
CO2 = 0 - 20%
CO2 = 9.52%
SPAN ADJ
CO2 = 0
CO = 0
Zero ADJ
CO2 = 0 - 20%
CO2 = 9.56%
CO + CO2
CO = 0 - 10000 ppm
CO = 9000 ppm
CO = 0
CO2 = 0
1336
1326
Set Pt. AFR 920
1317
1307
Set Pt. 950 AFR
1240
1230
Set Pt. AFR 885
10 cm/hr
CO = 0 - 10000 ppm
CO = 9910 ppm
CO2 = 0 - 20%
CO2 = 9.52%
SPAN ADJ
CO2 = 0
CO = 0
Zero ADJ
CO2 = 0 - 20%
CO2 = 9.40%
CO = 0 - 10000 ppm
CO = 8150
CO2 = 0
CO = 0
1146
1136
1126
1116
50 CAL GAS Cylinder
9/25/91 DM
Unit 3 Inlet
RUN 2
CHART NO. CL-2172-R
(4971)

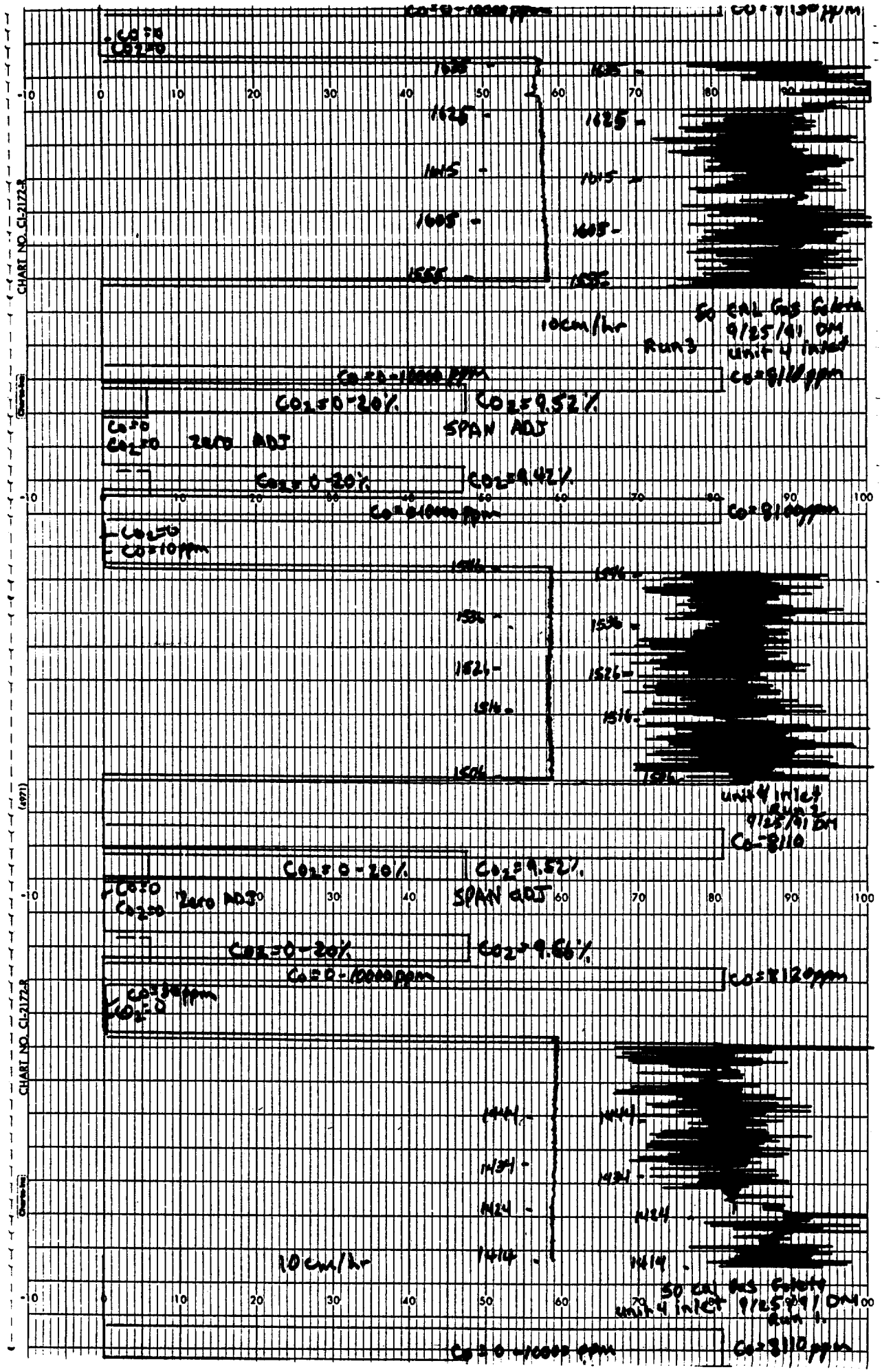
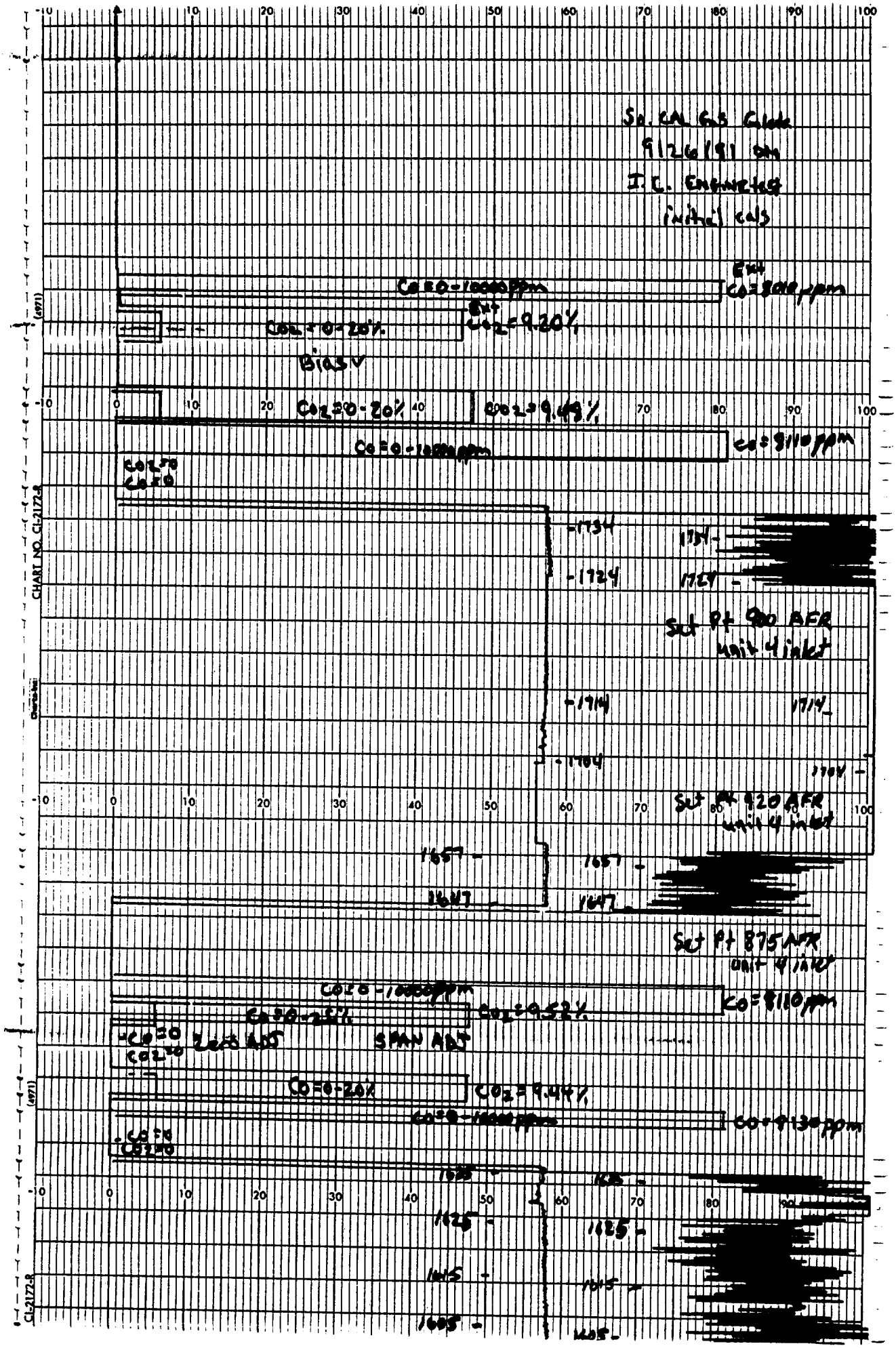
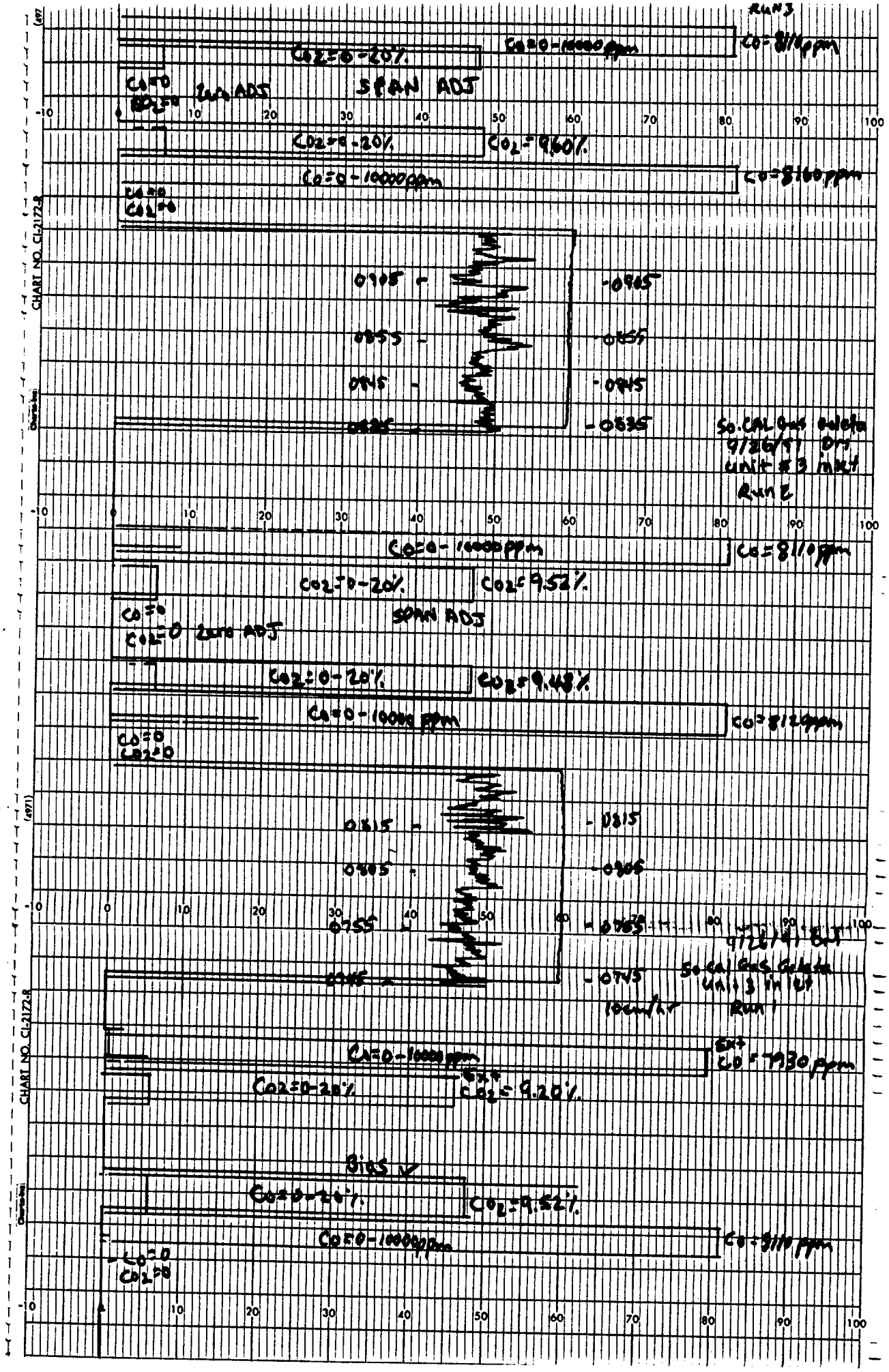
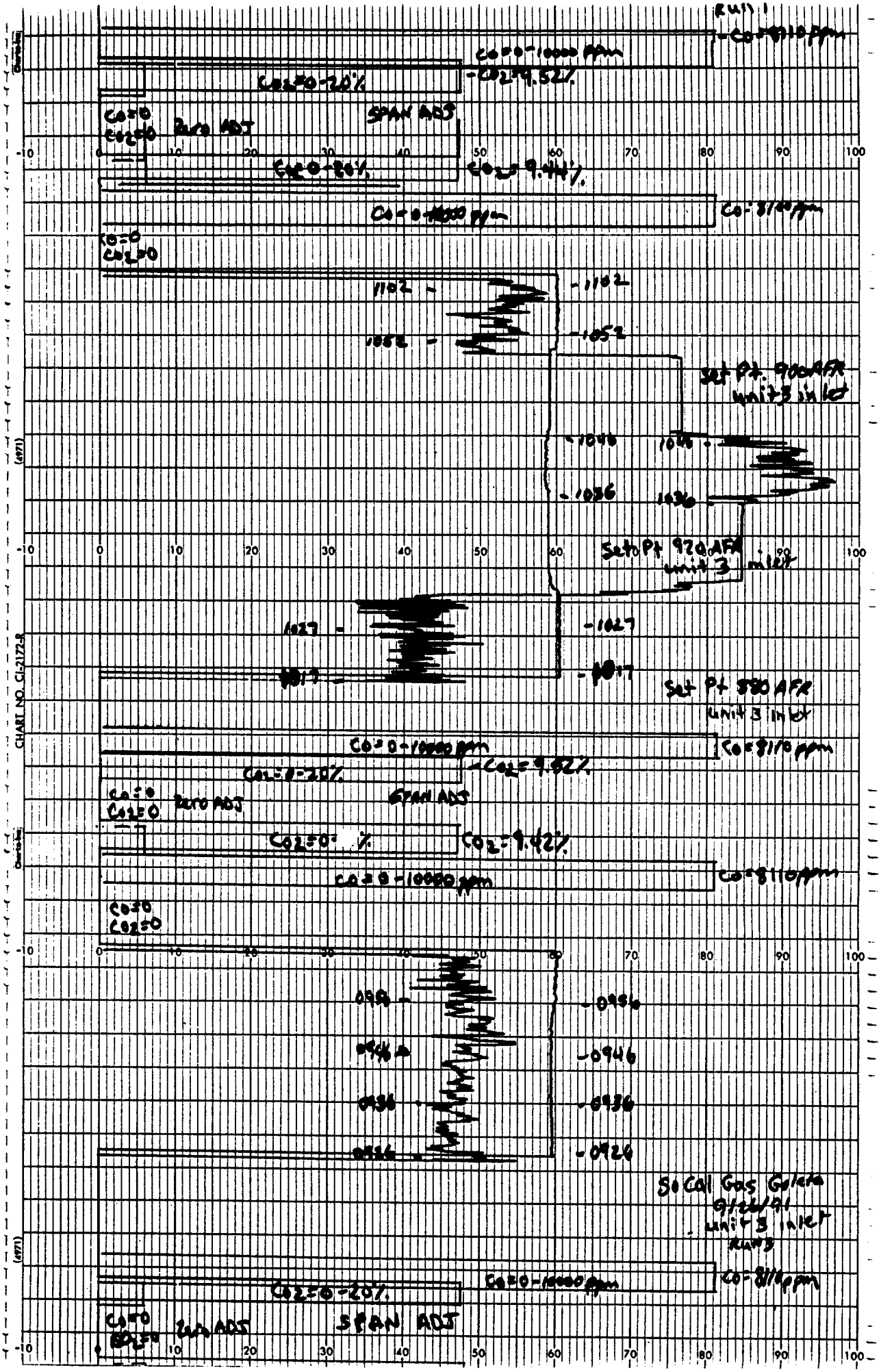
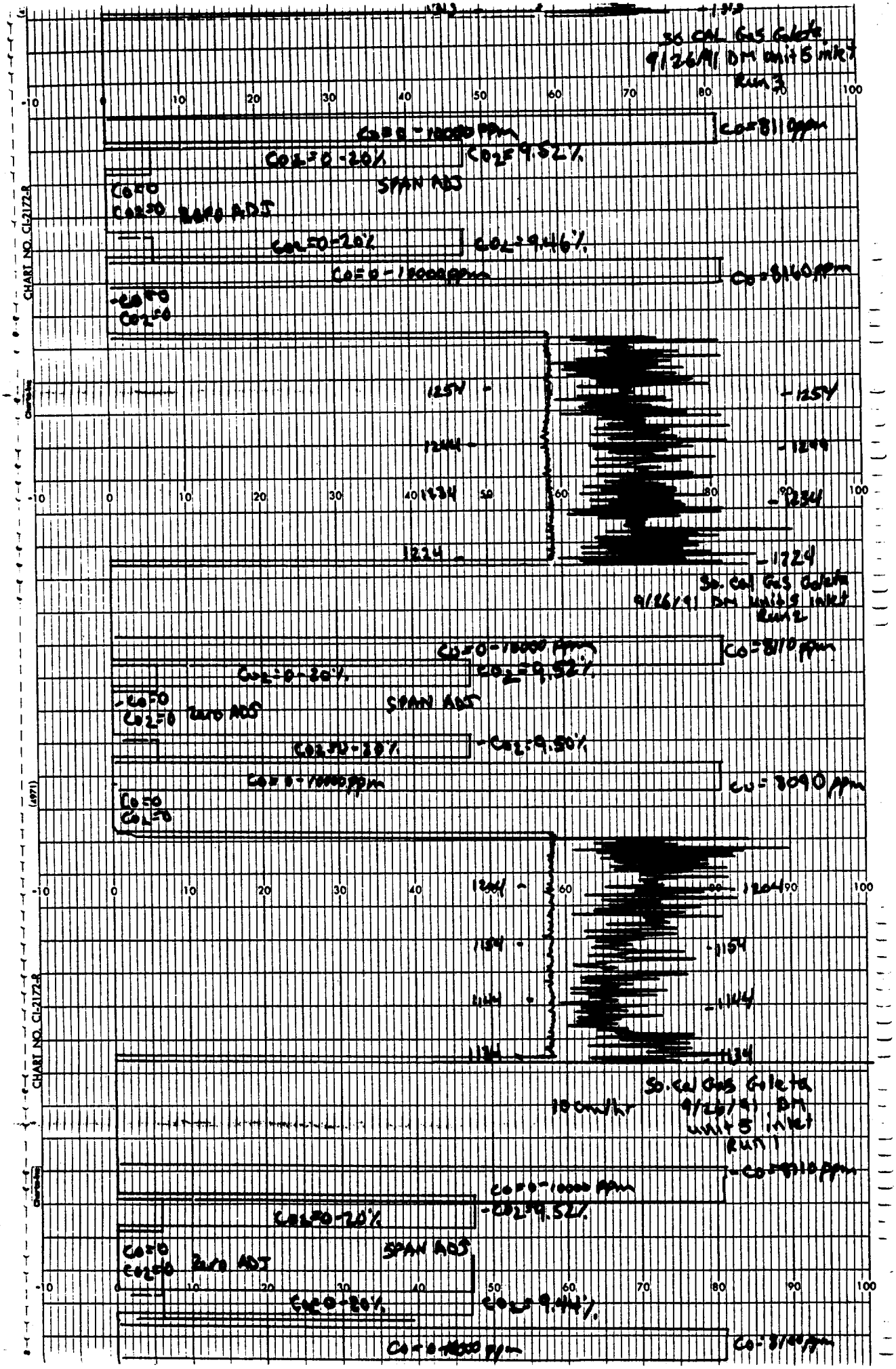


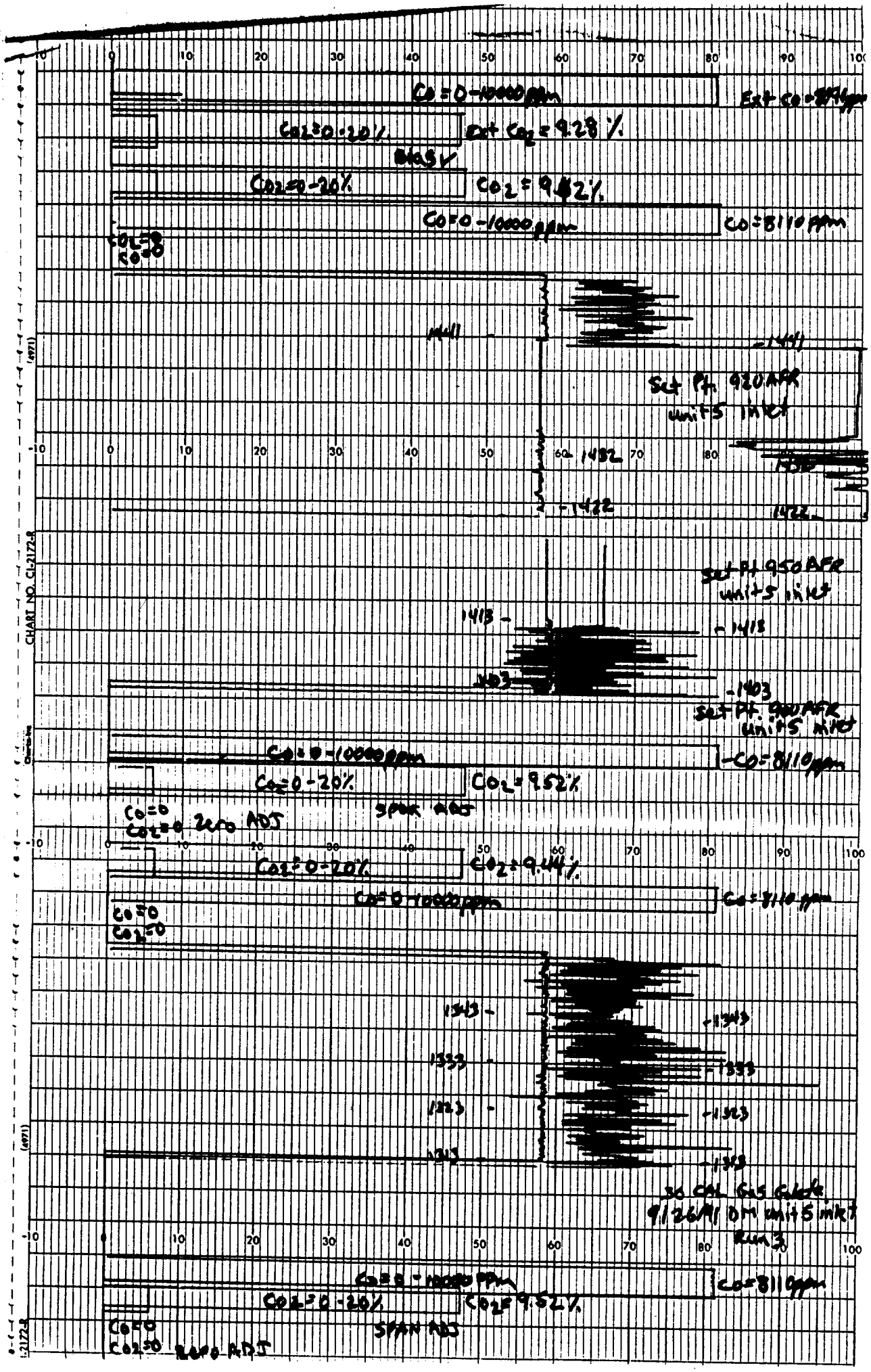
CHART NO. CL-2172-R
CO=0
CO2=0
1625
1615
1605
1595
10cm/hr
Run 3
50 cal gas cylinder
9/25/91 DM
unit 4 inlet
CO=8110 ppm
CO2=0-20%
CO2=9.52%
SPAN ADJ
ZERO ADJ
CO2=9.42%
CO=8100 ppm
CO=10 ppm
1546
1536
1526
1516
1506
unit 4 inlet
Run 3
9/25/91 DM
CO=8110
CO2=9.52%
CO2=9.66%
CO=8120 ppm
CO=30 ppm
1444
1434
1424
1414
10cm/hr
50 cal gas cylinder
unit 4 inlet 9/25/91 DM
Run 4
CO=8110 ppm


So. Cal Gas Glade
9/26/91 am
I.C. Engineers
initial cals
CO = 0-10000 ppm
CO = 3010 ppm
CO2 = 0-20%
CO2 = 9.20%
Bias V
CO2 = 0-20%
CO2 = 9.49%
CO = 0-10000 ppm
CO = 9110 ppm
CO2 = 0
CO = 0
-1734
1734
-1724
1724
Set Pt 900 AFR
unit 4 inlet
-1714
1714
-1704
1704
Set Pt 920 AFR
unit 4 inlet
1657
1647
Set Pt 875 AFR
unit 4 inlet
CO = 0-10000 ppm
CO = 8110 ppm
CO2 = 0-20%
CO2 = 9.52%
CO = 0
CO2 = 0
Zero Adj
Span Adj
CO = 0-20%
CO2 = 9.44%
CO = 0-10000 ppm
CO = 9130 ppm
CO = 0
CO2 = 0
1625
1615
1605
CHART NO. CL-2172-R


RUN 3
CO=0-10000 ppm
CO=8110 ppm
CO2=0-20%
CO=0
CO2=0 ZERO ADJ
SPAN ADJ
CO2=0-20%
CO2=9.60%
CO=0-10000 ppm
CO=8160 ppm
CO=0
CO2=0
0905
0855
0845
0835
0845
So. CAL Gas calcs
9/26/91 Dry
unit #3 inlet
Run 2
CO=0-10000 ppm
CO=8110 ppm
CO2=0-20%
CO2=9.52%
CO=0
CO2=0 ZERO ADJ
SPAN ADJ
CO2=0-20%
CO2=9.48%
CO=0-10000 ppm
CO=8120 ppm
CO=0
CO2=0
0815
0805
0755
0745
9/26/91 Dry
So. Cal Gas Calcs
Unit 3 inlet
Run 1
10cm/hr
CO=0-10000 ppm
EXT CO=7930 ppm
CO2=0-20%
EXT CO2=9.20%
BIAS ✓
CO2=0-20%
CO2=9.52%
CO=0-10000 ppm
CO=8110 ppm
CO=0
CO2=0
CHART NO. CL-2172-8
CHART NO. CL-2172-8


CO=0-10000 ppm
CO2=0-20%
CO=0
CO2=0
ZERO ADJ
SPAN ADJ
CO2=9.44%
CO=8140 ppm
1102
1052
Set Pt. 900 AFR
unit 3 inlet
1046
1036
Set Pt 920 AFR
unit 3 inlet
1027
Set Pt 880 AFR
unit 3 inlet
CO=8110 ppm
CO2=9.42%
0956
0946
0936
0926
So Cal Gas Co
9/22/91
unit 3 inlet
Run 3
CO=8110 ppm
CHART NO. CI-2172-8


So. Cal Gas Co. Cal
9/26/91 DM unit 5 inlet
Run 3
CO=0-10000 ppm
CO=811 ppm
CO2=0-20%
CO2=9.52%
SPAN ADJ
CO=0
CO2=0 ZERO ADJ
CO2=0-20%
CO2=9.46%
CO=0-10000 ppm
CO=8160 ppm
CHART NO. CI-2172-R
125%
124%
123%
122%
So. Cal Gas Co. Cal
9/26/91 DM unit 5 inlet
Run 2
CO=0-10000 ppm
CO=8110 ppm
CO2=0-20%
CO2=9.52%
SPAN ADJ
CO=0
CO2=0 ZERO ADJ
CO2=0-20%
CO2=9.50%
CO=0-10000 ppm
CO=8090 ppm
120%
115%
110%
105%
So. Cal Gas Co. Cal
10 cm/hr
9/26/91 DM
unit 5 inlet
Run 1
CO=0-10000 ppm
CO2=9.52%
CO2=0-20%
CO=0
CO2=0 ZERO ADJ
SPAN ADJ
CO2=0-20%
CO2=9.44%
CO=0-10000 ppm
CO=8140 ppm


CO = 0-10000 ppm
Ext CO = 8876 ppm
CO2 = 0-20%
Ext CO2 = 9.28 %
BIAS
CO2 = 0-20%
CO2 = 9.52%
CO = 0-10000 ppm
CO = 8110 ppm
CO2 = 0
CO = 0
1441
1441
Set Pt. 920 AFR
unit 5 inlet
1432
1432
1432
Set Pt. 950 AFR
unit 5 inlet
1413
1413
1403
1403
Set Pt. 900 AFR
unit 5 inlet
CO = 0-10000 ppm
CO = 8110 ppm
CO2 = 0-20%
CO2 = 9.52%
SPAN ADJ
CO = 0
CO2 = 0 ZERO ADJ
CO2 = 0-20%
CO2 = 9.44%
CO = 0-10000 ppm
CO = 8110 ppm
CO = 0
CO2 = 0
1343
1343
1333
1333
1323
1323
1313
1313
30 CAL GAS CHECK
9/26/91 DM unit 5 inlet
Run 3
CO = 0-10000 PPM
CO = 8110 ppm
CO2 = 0-20%
CO2 = 9.52%
SPAN ADJ
CO = 0
CO2 = 0 ZERO ADJ
CHART NO. CL-2172-8

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 IN

Date : 9/23/91

Test Run : 1

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.07	0.07	11.80	11.84	5460.00	5428.91			1730.00	1728.43
2	0.01	0.01	11.80	11.92	5380.00	5289.13			1730.00	1725.30
3	0.00	0.01	11.80	12.00	5480.00	5327.45			1735.00	1727.16
4	0.00	0.01	11.80	12.09	5460.00	5249.55			1690.00	1679.33
MEAN		0.03		11.96		5323.76				1715.05

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	-0.01	0.00	0.00		0.00
Span Check	0.97	9.26	4200.00		4160.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	0.00077	-0.00683	0.01145		0.00182
Zcf	-0.00250	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 IN

Date : 9/23/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.07	0.07	12.00	12.00	5340.00	5321.93			1930.00	1925.92
2	0.05	0.05	12.00	12.01	5400.00	5345.58			1900.00	1888.00
3	0.05	0.05	12.08	12.10	5420.00	5329.53			1920.00	1899.87
4	0.05	0.05	12.02	12.04	5230.00	5107.89			1935.00	1906.72
MEAN		0.05		12.04		5276.23				1905.13

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	20.00		0.00
Span Check	0.98	9.50	4130.00		4200.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	0.00206	-0.00053	0.00585		0.00424
Zcf	0.00000	0.00000	5.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 IN

Date : 9/23/91

Test Run : 3

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.06	0.06	12.02	12.03	5250.00	5252.62			1950.00	1947.05
2	0.06	0.06	12.00	12.02	5300.00	5307.93			1965.00	1956.12
3	0.06	0.06	11.98	12.01	5250.00	5263.11			1950.00	1935.36
4	0.06	0.06	12.02	12.06	5190.00	5208.16			1980.00	1959.25
MEAN		0.06		12.03		5257.95				1949.44

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.96	9.48	4000.00		4180.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00309	-0.00105	-0.00100		0.00303
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 IN

Date : 9/23/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.08	0.08	12.12		4900.00	4900.37			2000.00	1999.19
2	0.06	0.06	12.00		6100.00	6102.60			1910.00	1907.69
3	0.06	0.06	12.02		5250.00	5252.57			1880.00	1876.21
MEAN		0.07	12.05			5418.51				1927.70

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	10.00		0.00
Span Check	0.98	9.52	4016.00		4140.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	0.00274		-0.00083		0.00081
Zcf	0.00000		3.33333		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 IN

Date : 9/24/91

Test Run : 1

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.02	10.78	10.83	3520.00				2395.00	2387.05
2	0.01	0.02	10.74	10.90	3710.00				2360.00	2336.66
3	0.02	0.04	10.68	10.95	3700.00				2440.00	2400.05
4	0.02	0.05	10.70	11.09	3770.00				2440.00	2384.43
MEAN		0.03		10.94	3675.00					2377.05

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	-0.03	0.00	0.00		0.00
Span Check	0.94	9.14	4016.00		4240.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00051	-0.00998			0.00666
Zcf	-0.00750	0.00000			0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 IN

Date : 9/24/91

Test Run : 2

Test Condition: 650 MW

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.08		11.86	11.86	3750.00				2265.00	2262.95
2	0.08		11.84	11.83	3730.00				2290.00	2283.78
3	0.08		11.84	11.82	3750.00				2300.00	2289.61
4	0.07		11.92	11.90	3650.00				2300.00	2285.47
MEAN	0.08			11.85	3720.00					2280.45

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.54	4016.00		4160.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf		0.00053			0.00182
Zcf		0.00000			0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 IN

Date : 9/24/91

Test Run : 3

Test Condition: 650 MW

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.07	0.07	12.00		3860.00	3844.35			2290.00	2292.08
2	0.07	0.07	12.00		3970.00	3924.22			2260.00	2266.17
3	0.07	0.07	11.96		3990.00	3913.84			2260.00	2270.31
4	0.07	0.07	12.00		3910.00	3805.36			2260.00	2274.46
MEAN		0.07	11.99			3872.09				2275.75

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	40.00		0.00
Span Check	0.97	9.52	4140.00		4100.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00180		0.00523		-0.00182
Zcf	0.00000		10.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 IN

Date : 9/24/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.06	0.06	12.07		3710.00	3696.19			2350.00	2351.90
2	0.04	0.05	11.89		6810.00	6763.21			1985.00	1989.82
3	0.05	0.06	12.04		4630.00	4558.42			2200.00	2208.91
MEAN		0.06	12.00			5005.94				2183.54

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	-0.02	0.00	70.00		0.00
Span Check	0.99	9.52	4100.00		4110.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	0.01132		0.00116		-0.00161
Zcf	-0.00667		23.33333		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 IN

Date : 9/24/91

Test Run : 1

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.05	0.05	12.00	12.02	5715.00	5702.72			1860.00	1861.69
2	0.05	0.05	12.00	12.06	5760.00	5723.08			1920.00	1925.24
3	0.05	0.05	12.00	12.10	5630.00	5569.28			1910.00	1918.71
4	0.05	0.05	12.00	12.13	5670.00	5584.88			1920.00	1932.28
MEAN		0.05		12.08		5644.99				1909.48

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	50.00		0.00
Span Check	0.94	9.40	4100.00		4100.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00952	-0.00315	0.00212		-0.00182
Zcf	0.00000	0.00000	12.50000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 IN

Date : 9/24/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.06	0.06	12.00	12.01	5400.00	5398.94			1900.00	1895.98
2	0.06	0.06	11.98	12.01	5525.00	5522.00			1920.00	1907.87
3	0.06	0.06	11.98	12.03	5490.00	5484.91			1970.00	1949.35
4	0.06	0.06	11.96	12.03	5630.00	5623.35			1970.00	1941.21
MEAN		0.06		12.02		5507.30				1923.60

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	30.00		0.00
Span Check	0.94	9.46	4030.00		4200.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00823	-0.00158	-0.00100		0.00424
Zcf	0.00000	0.00000	7.50000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 IN

Date : 9/24/91

Test Run : 3

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.07	0.07	11.88	11.88	5590.00	5590.98			1900.00	
2	0.07	0.07	11.88	11.89	5630.00	5633.02			1900.00	
3	0.07	0.07	11.88	11.90	5685.00	5690.21			1895.00	
4	0.07	0.07	11.88	11.90	5700.00	5707.37			1890.00	
MEAN		0.07		11.89		5655.40			1896.25	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	20.00		0.00
Span Check	0.95	9.50	4016.00		4130.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00694	-0.00053	-0.00125		
Zcf	0.00000	0.00000	5.00000		

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 IN

Date : 9/24/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
Point #	A	B	A	B	A	B	A	B	A	B
1	0.06	0.06	11.94	11.94	5450.00	5431.07			1850.00	1852.24
2	0.05	0.05	11.44	11.45	13300.00	13162.35			1185.00	1189.32
3	0.05	0.05	11.66	11.68	9500.00	9337.25			1485.00	1494.04
MEAN		0.05		11.69		9310.22				1511.87

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.01	0.00	0.00		0.00
Span Check	0.97	9.50	4100.00		4100.00
Cal. Gas	0.97	9.52	4016.00		4130.00
Scf	-0.00171	-0.00070	0.00697		-0.00242
Zcf	0.00167	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 IN

Date : 9/25/91

Test Run : 1

Test Condition: 650 HP

Concentration : Drift Uncorrected (A) / Corrected (B)

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
1	0.23	0.23	11.66	11.69	6480.00	6479.25			1950.00	1950.59
2	0.24	0.24	11.60	11.68	6300.00	6297.49			2000.00	2001.82
3	0.24	0.24	11.60	11.74	6310.00	6305.83			1990.00	1993.02
4	0.23	0.23	11.60	11.80	6370.00	6364.35			2000.00	2004.25
MEAN		0.23		11.73		6361.73				1987.42

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	30.00		0.00
Span Check	0.99	9.34	8110.00		4120.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	0.00463	-0.00473	-0.00092		-0.00061
Zcf	0.00000	0.00000	7.50000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 IN

Date : 9/25/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
Point #	A	B	A	B	A	B	A	B	A	B
1	0.23	0.23	11.84	11.86	6320.00	6319.87			2020.00	2022.45
2	0.23	0.23	11.82	11.87	6020.00	6018.92			2000.00	2007.29
3	0.22	0.22	11.77	11.85	6300.00	6299.27			1995.00	2007.15
4	0.23	0.23	11.78	11.89	5910.00	5906.87			2040.00	2057.44
MEAN	0.23		11.86		6136.23				2023.58	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	40.00		0.00
Span Check	0.96	9.42	8100.00		4090.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00309	-0.00263	-0.00154		-0.00242
Zcf	0.00000	0.00000	10.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 IN

Date : 9/25/91

Test Run : 3

Test Condition: 650 MW

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.23	0.23	11.82	11.84	5890.00	5886.37			2000.00	2001.82
2	0.23	0.23	11.82	11.88	5995.00	5983.93			2000.00	2005.46
3	0.23	0.22	11.94	12.03	6220.00	6200.89			2040.00	2049.30
4	0.24	0.23	11.98	12.11	6100.00	6073.79			2080.00	2093.30
MEAN		0.23		11.97		6036.24				2037.47

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	1.00	9.40	8150.00		4100.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	0.00720	-0.00315	0.00123		-0.00182
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 IN

Date : 9/25/91

Test Run : 4

Test Condition: AFR

	Concentration ; Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.30	0.30	12.00	11.99	5130.00	5141.62			2200.00	2194.69
2	0.09	0.09	11.48	11.46	13800.00	13894.23			1250.00	1240.99
3	0.16	0.16	11.98	11.94	6390.00	6463.05			1980.00	1956.32
MEAN		0.18		11.80		8499.63				1797.33

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.56	8000.00		4190.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00240	0.00140	-0.00452		0.00484
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 IN

Date : 9/25/91

Test Run : 1

Test Condition: 650 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.29	0.29	11.78	11.77	8800.00	8798.96			1880.00	1878.86
2	0.29	0.29	11.80	11.78	8420.00	8416.53			1905.00	1901.55
3	0.29	0.29	11.80	11.77	8100.00	8093.72			1930.00	1924.18
4	0.29	0.29	11.82	11.78	8000.00	7990.99			1930.00	1921.86
MEAN		0.29		11.78		8325.05				1906.61

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	30.00		0.00
Span Check	0.97	9.56	8120.00		4150.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00180	0.00105	-0.00062		0.00121
Zcf	0.00000	0.00000	7.50000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 IN

Date : 9/25/91

Test Run : 2

Test Condition: 650 MW

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
1	0.30	0.30	11.74	11.76	8420.00	8421.35			1960.00	1957.63
2	0.30	0.30	11.68	11.73	8200.00	8203.84			1980.00	1972.83
3	0.29	0.29	11.72	11.80	8275.00	8281.51			1980.00	1968.09
4	0.30	0.30	11.74	11.85	8390.00	8399.37			1980.00	1963.36
MEAN		0.30		11.78		8326.52				1965.48

Concentration : Drift Uncorrected (A) / Corrected (B)

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	10.00		0.00
Span Check	0.96	9.42	8100.00		4170.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00309	-0.00263	-0.00062		0.00242
Zcf	0.00000	0.00000	2.50000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 IN

Date : 9/25/91

Test Run : 3

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.31	0.31	11.66	11.67	8830.00	8827.28			1975.00	1971.42
2	0.34	0.34	11.58	11.62	8900.00	8891.78			1990.00	1979.22
3	0.34	0.34	11.58	11.64	8690.00	8676.63			2000.00	1982.00
4	0.36	0.36	11.48	11.57	9630.00	9609.26			1945.00	1920.59
MEAN		0.34		11.62		9001.24				1963.31

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.44	8130.00		4190.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00180	-0.00210	0.00062		0.00363
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 IN

Date : 9/25/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.40		11.50	11.51	8120.00				2065.00	2064.17
2	0.26		11.40	11.42	11000.00				1685.00	1682.96
3	0.33		11.50	11.54	9750.00				1880.00	1876.21
MEAN	0.33			11.49	9623.33					1874.45

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.48	8110.00		4140.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf		-0.00140			0.00081
Zcf		0.00000			0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 IN

Date : 9/26/91

Test Run : 1

Test Condition: 648 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.23	0.23	11.95	11.96	4750.00	4749.27			2100.00	2095.56
2	0.21	0.21	11.98	12.00	4850.00	4847.76			2080.00	2066.86
3	0.20	0.20	12.00	12.03	4920.00	4916.21			2065.00	2043.35
4	0.20	0.20	11.96	12.00	4950.00	4944.67			2060.00	2029.90
MEAN		0.21		12.00		4864.48				2058.92

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.96	9.48	8120.00		4200.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00437	-0.00105	0.00031		0.00424
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 IN

Date : 9/26/91

Test Run : 2

Test Condition: 648 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.20	0.20	11.94	11.93	4790.00	4786.31			2230.00	2225.29
2	0.20	0.20	11.96	11.92	4870.00	4858.77			2220.00	2205.98
3	0.19	0.20	11.96	11.90	4955.00	4935.98			2245.00	2221.47
4	0.19	0.20	12.00	11.91	4840.00	4814.03			2230.00	2197.41
MEAN		0.20		11.91		4848.77				2212.54

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.96	9.60	8160.00		4200.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00437	0.00210	0.00154		0.00424
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 IN

Date : 9/26/91

Test Run : 3

Test Condition: 648 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.19	0.19	11.92	11.94	4610.00				2165.00	2166.31
2	0.19	0.19	11.92	11.97	4740.00				2130.00	2133.88
3	0.17	0.17	11.93	12.01	4820.00				2105.00	2111.39
4	0.17	0.17	12.00	12.11	4720.00				2130.00	2139.06
MEAN		0.18		12.01	4722.50					2137.66

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.96	9.42	8110.00		4110.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00309	-0.00263			-0.00121
Zcf	0.00000	0.00000			0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 IN

Date : 9/26/91

Test Run : 4

Test Condition: AFR

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.17	0.17	12.08	12.10	4150.00	4150.85			2230.00	2231.80
2	0.09	0.09	11.74	11.79	9130.00	9135.63			1620.00	1623.93
3	0.14	0.14	12.04	12.12	5450.00	5455.61			2055.00	2063.33
MEAN		0.13		12.00		6247.36				1973.02

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.37	9.44	8100.00		4110.00
Cal. Gas	0.37	9.52	8110.00		4130.00
Scf	-0.00069	-0.00280	-0.00041		-0.00161
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 IN

Date : 9/26/91

Test Run : 1

Test Condition: 633 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.55		11.58	11.58	6870.00	6872.12			1760.00	1761.07
2	0.55		11.60	11.61	6730.00	6736.23			1760.00	1763.20
3	0.55		11.60	11.62	7100.00	7110.96			1720.00	1725.22
4	0.54		11.63	11.65	7325.00	7340.84			1690.00	1697.19
MEAN	0.55			11.61		7015.04				1736.67

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.50	8090.00		4110.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf		-0.00053	-0.00062		-0.00121
Zcf		0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SD CAL GAS

Station : GOLETA UNIT #5 IN

Date : 9/26/91

Test Run : 2

Test Condition: 633 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.51	0.51	11.76	11.77	7110.00	7104.52			1730.00	
2	0.52	0.52	11.72	11.75	7100.00	7083.62			1715.00	
3	0.53	0.53	11.66	11.71	6890.00	6863.55			1720.00	
4	0.53	0.53	11.70	11.76	6900.00	6862.98			1710.00	
MEAN		0.52		11.75		6978.67			1718.75	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.96	9.46	8160.00		4130.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf	-0.00437	-0.00158	0.00154		
Zcf	0.00000	0.00000	0.00000		

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 IN

Date : 9/26/91

Test Run : 3

Test Condition: 633 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.54		11.66	11.67	6810.00				1750.00	1751.06
2	0.54		11.66	11.70	6920.00				1740.00	1743.17
3	0.54		11.68	11.74	6850.00				1720.00	1725.22
4	0.54		11.68	11.77	6700.00				1750.00	1757.45
MEAN	0.54			11.72	6820.00					1744.22

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.44	8110.00		4110.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf		-0.00210			-0.00121
Zcf		0.00000			0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 IN

Date : 9/26/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.52		11.80	11.82	6300.00				1800.00	1800.73
2	0.45		11.40	11.46	10000.00				1410.00	1411.71
3	0.52		11.58	11.68	6770.00				1700.00	1703.44
MEAN	0.49			11.65	7690.00					1638.62

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	0.97	9.42	8110.00		4120.00
Cal. Gas	0.97	9.52	8110.00		4130.00
Scf		-0.00350			-0.00081
Zcf		0.00000			0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/23/91

Station : GOLETA UNIT #7 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.97	9.26	4200.00		4160.00
Zero Drift	-0.01	0.00	0.00		0.00
Final, Actual Span	0.98	9.26	4200.00		4160.00
Percent Drift	0.3	-2.7	4.6		0.7

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.98	9.50	4130.00		4200.00
Zero Drift	0.00	0.00	20.00		0.00
Final, Actual Span	0.98	9.50	4110.00		4200.00
Percent Drift	0.8	-0.2	2.3		1.7

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.96	9.48	4000.00		4180.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.96	9.48	4000.00		4180.00
Percent Drift	-1.2	-0.4	-0.4		1.2

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/23/91

Station : GOLETA UNIT #7 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.98	9.52	4016.00		4140.00
Zero Drift	0.00	0.00	10.00		0.00
Final, Actual Span	0.98	9.52	4006.00		4140.00
Percent Drift	0.8	0.0	-0.2		0.2

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #8 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.94	9.14	4016.00		4240.00
Zero Drift	-0.03	0.00	0.00		0.00
Final, Actual Span	0.97	9.14	4016.00		4240.00
Percent Drift	-0.2	-4.0	0.0		2.7

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.97	9.54	4016.00		4160.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.54	4016.00		4160.00
Percent Drift	0.0	0.2	0.0		0.7

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.97	9.52	4140.00		4100.00
Zero Drift	0.00	0.00	40.00		0.00
Final, Actual Span	0.97	9.52	4100.00		4100.00
Percent Drift	-0.7	0.0	2.1		-0.7

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #8 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.99	9.52	4100.00		4110.00
Zero Drift	-0.02	0.00	70.00		0.00
Final, Actual Span	1.01	9.52	4030.00		4110.00
Percent Drift	3.4	0.0	0.3		-0.5

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

8. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #6 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.94	9.40	4100.00		4100.00
Zero Drift	0.00	0.00	50.00		0.00
Final, Actual Span	0.94	9.40	4050.00		4100.00
Percent Drift	-3.8	-1.3	0.8		-0.7

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.94	9.46	4030.00		4200.00
Zero Drift	0.00	0.00	30.00		0.00
Final, Actual Span	0.94	9.46	4000.00		4200.00
Percent Drift	-3.3	-0.6	-0.4		1.7

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.95	9.50	4016.00		4130.00
Zero Drift	0.00	0.00	20.00		0.00
Final, Actual Span	0.95	9.50	3996.00		4130.00
Percent Drift	-2.8	-0.2	-0.5		0.0

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #6 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	4016.00		4130.00
Measured Span	0.97	9.50	4100.00		4100.00
Zero Drift	0.01	0.00	0.00		0.00
Final, Actual Span	0.97	9.50	4100.00		4100.00
Percent Drift	-0.5	-0.2	2.1		-0.7

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #2 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.99	9.34	8110.00		4120.00
Zero Drift	0.00	0.00	30.00		0.00
Final, Actual Span	0.99	9.34	8080.00		4120.00
Percent Drift	1.9	-1.9	-0.4		-0.2

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.96	9.42	8100.00		4090.00
Zero Drift	0.00	0.00	40.00		0.00
Final, Actual Span	0.96	9.42	8060.00		4090.00
Percent Drift	-1.2	-1.1	-0.6		-1.0

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	1.00	9.40	8150.00		4100.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	1.00	9.40	8150.00		4100.00
Percent Drift	2.9	-1.3	0.5		-0.7

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

8. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #2 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.56	8000.00		4190.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.56	8000.00		4190.00
Percent Drift	-0.7	0.4	-1.4		1.5

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

8. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #4 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.56	8120.00		4150.00
Zero Drift	0.00	0.00	30.00		0.00
Final, Actual Span	0.97	9.56	8090.00		4150.00
Percent Drift	-0.7	0.4	-0.2		0.5

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.96	9.42	8100.00		4170.00
Zero Drift	0.00	0.00	10.00		0.00
Final, Actual Span	0.96	9.42	8090.00		4170.00
Percent Drift	-1.2	-1.1	-0.2		1.0

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.44	8130.00		4190.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.44	8130.00		4190.00
Percent Drift	-0.7	-0.8	0.2		1.5

ok

See p. A-28 + p. A-42

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #4 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.48	8110.00		4140.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.48	8110.00		4140.00
Percent Drift	0.0	-0.4	0.0		0.2

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #3 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.96	9.48	8120.00		4200.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.96	9.48	8120.00		4200.00
Percent Drift	-1.7	-0.4	0.1		1.7

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.96	9.60	8160.00		4200.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.96	9.60	8160.00		4200.00
Percent Drift	-1.7	0.8	0.6		1.7

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.96	9.42	8110.00		4110.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.96	9.42	8110.00		4110.00
Percent Drift	-1.2	-1.1	0.0		-0.5

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #3 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.44	8100.00		4110.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.44	8100.00		4110.00
Percent Drift	-0.2	-0.8	-0.1		-0.5

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #5 IN

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.50	8090.00		4110.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.50	8090.00		4110.00
Percent Drift	0.0	-0.2	-0.2		-0.5

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.96	9.46	8160.00		4130.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.96	9.46	8160.00		4130.00
Percent Drift	-1.7	-0.6	0.6		0.0

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.44	8110.00		4110.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.44	8110.00		4110.00
Percent Drift	0.0	-0.8	0.0		-0.5

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #5 IN

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	0.97	9.52	8110.00		4130.00
Measured Span	0.97	9.42	8110.00		4120.00
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	0.97	9.42	8110.00		4120.00
Percent Drift	0.0	-1.1	0.0		-0.2

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #7 IN	Temp. Std.:	60
DATE	SEPT 23,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.92	29.91	29.91
Brake Horsepower			
Fuel Flow, scfh			
Oxygen, %	0.03	0.05	0.06
Fuel Flow, acfh	6390.00	6332.00	6380.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.64	15.63	15.63
Fuel Temp, dF	68.00	73.00	78.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1044.00	1044.00	1044.00
Btu/lb, Gross Cal. Value :	21624.00	21624.00	21624.00
Hydrogen, Wt.% :	21.83	21.83	21.83
Carbon, Wt.% :	70.99	70.99	70.99
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.64	1.64	1.64
Oxygen, Wt.% :	5.54	5.54	5.54

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,460.16	8,460.16	8,460.16	8,460.16
Fuel Rate, scfh :	6695.73	6570.65	6558.93	6608.43
Heat Rate, MMBtu/hr :	6.990	6.860	6.848	6.899
Flue gas flowrate, dscfm :	987.07	969.56	968.30	974.98

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #7 IN	Temp. Std.:	60
DATE	SEPT 23,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.91	29.91	29.91
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.08	0.06	0.06
Fuel Flow, acfh	6380.00	6380.00	6380.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.63	15.63	15.63
Fuel Temp, dF	78.00	78.00	78.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1044.00	1044.00	1044.00
Btu/lb, Gross Cal. Value :	21624.00	21624.00	21624.00
Hydrogen, Wt.% :	21.83	21.83	21.83
Carbon, Wt.% :	70.99	70.99	70.99
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.64	1.64	1.64
Oxygen, Wt.% :	5.54	5.54	5.54

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,460.16	8,460.16	8,460.16	8,460.16
Fuel Rate, scfh :	6558.93	6558.93	6558.93	6558.93
Heat Rate, MMBtu/hr :	6.848	6.848	6.848	6.848
Flue gas flowrate, dscfm :	969.23	968.30	968.30	968.61

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #8 IN	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.92	29.92	29.92
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.03	0.08	0.07
Fuel Flow, acfh	6121.00	5959.00	5943.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.64	15.64	15.64
Fuel Temp, dF	64.00	70.00	80.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6462.82	6220.54	6088.95	6257.44
Heat Rate, MMBtu/hr :	6.935	6.675	6.533	6.714
Flue gas flowrate, dscfm :	982.55	947.99	927.49	952.68

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #8 IN	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.92	29.92	29.92
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.06	0.05	0.06
Fuel Flow, acfh	5943.00	5943.00	5943.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.64	15.64	15.64
Fuel Temp, dF	80.00	80.00	80.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6088.95	6088.95	6088.95	6088.95
Heat Rate, MMBtu/hr :	6.533	6.533	6.533	6.533
Flue gas flowrate, dscfm :	927.05	926.60	927.05	926.90

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #6 IN	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.90	29.88	29.85
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.05	0.06	0.07
Fuel Flow, acfh	6157.00	6225.00	6208.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.63	15.62	15.60
Fuel Temp, dF	88.00	91.00	92.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6212.21	6242.70	6208.51	6221.14
Heat Rate, MMBtu/hr :	6.666	6.698	6.662	6.675
Flue gas flowrate, dscfm :	945.36	950.45	945.70	947.17

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #6 IN	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.85	29.85	29.85
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.06	0.05	0.05
Fuel Flow, acfh	6208.00	6208.00	6208.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.60	15.60	15.60
Fuel Temp, dF	92.00	92.00	92.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6208.51	6208.51	6208.51	6208.51
Heat Rate, MMBtu/hr :	6.662	6.662	6.662	6.662
Flue gas flowrate, dscfm :	945.25	944.80	944.80	944.95

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #2 IN	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.90	29.90	29.80
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.23	0.23	0.23
Fuel Flow, acfh	6464.00	6476.00	6305.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.63	15.63	15.58
Fuel Temp, dF	62.00	70.00	75.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6846.82	6755.99	6495.64	6699.48
Heat Rate, MMBtu/hr :	7.175	7.080	6.807	7.021
Flue gas flowrate, dscfm :	1024.72	1011.12	972.16	1002.67

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #2 IN	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.80	29.80	29.80
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.30	0.09	0.16
Fuel Flow, acfh	6305.00	6305.00	6305.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.58	15.58	15.58
Fuel Temp, dF	75.00	75.00	75.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6495.64	6495.64	6495.64	6495.64
Heat Rate, MMBtu/hr :	6.807	6.807	6.807	6.807
Flue gas flowrate, dscfm :	975.46	965.62	968.88	969.99

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT ..... SO CAL GAS
SOURCE ..... GOLETA UNIT #4 IN Temp. Std.: 60
DATE ..... SEPT 25,1991 Press. Std: 29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.84	29.82	29.82
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.29	0.30	0.34
Fuel Flow, acfh	6160.00	6208.00	6139.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.60	15.59	15.59
Fuel Temp, dF	82.00	82.00	79.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6272.19	6317.09	6281.64	6290.31
Heat Rate, MMBtu/hr :	6.573	6.620	6.583	6.592
Flue gas flowrate, dscfm :	941.45	948.65	945.16	945.09

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	90 CAL GAS		
SOURCE	GOLETA UNIT #4 IN	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.82	29.82	29.82
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.40	0.26	0.33
Fuel Flow, acfh	6139.00	6139.00	6139.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.59	15.59	15.59
Fuel Temp, dF	79.00	79.00	79.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6281.64	6281.64	6281.64	6281.64
Heat Rate, MMBtu/hr :	6.583	6.583	6.583	6.583
Flue gas flowrate, dscfm :	947.93	941.50	944.70	944.71

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #3 IN	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.83	29.83	29.86
Brake Horsepower	648.00	648.00	648.00
Fuel Flow, scfh			
Oxygen, %	0.21	0.20	0.18
Fuel Flow, acfh	6160.00	6051.00	6119.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.65	15.65	15.67
Fuel Temp, dF	62.00	63.00	66.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6535.51	6407.59	6448.71	6463.94
Heat Rate, MMBtu/hr :	6.810	6.677	6.720	6.735
Flue gas flowrate, dscfm :	971.01	951.55	956.73	959.76

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT ..... SO CAL GAS
SOURCE ..... GOLETA UNIT #3 IN Temp. Std.: 60
DATE ..... SEPT 26,1991 Press. Std: 29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.86	29.86	29.86
Brake Horsepower	648.00	648.00	648.00
Fuel Flow, scfh			
Oxygen, %	0.17	0.09	0.14
Fuel Flow, acfh	6119.00	6119.00	6119.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.67	15.67	15.67
Fuel Temp, dF	66.00	66.00	66.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6448.71	6448.71	6448.71	6448.71
Heat Rate, MMBtu/hr :	6.720	6.720	6.720	6.720
Flue gas flowrate, dscfm :	956.27	952.59	954.89	954.58

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	90 CAL GAS		
SOURCE	GOLETA UNIT #5 IN	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.85	29.84	29.83
Brake Horsepower	633.00	633.00	633.00
Fuel Flow, scfh			
Oxygen, %	0.55	0.52	0.54
Fuel Flow, acfh	6505.00	6586.00	6430.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.66	15.66	15.65
Fuel Temp, dF	78.00	81.00	84.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6700.49	6744.19	6546.08	6663.59
Heat Rate, MMBtu/hr :	6.982	7.027	6.821	6.943
Flue gas flowrate, dscfm :	1012.16	1017.26	988.35	1005.92

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	90 CAL GAS		
SOURCE	GOLETA UNIT #5 IN	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.83	29.83	29.83
Brake Horsepower	633.00	633.00	633.00
Fuel Flow, scfh			
Oxygen, %	0.52	0.45	0.52
Fuel Flow, acfh	6430.00	6430.00	6430.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.65	15.65	15.65
Fuel Temp, dF	84.00	84.00	84.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6546.08	6546.08	6546.08	6546.08
Heat Rate, MMBtu/hr :	6.821	6.821	6.821	6.821
Flue gas flowrate, dscfm :	987.38	984.00	987.38	986.25

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #7 IN
DATE : SEPT 23,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.03	0.05	0.06	0.05
Qs(std), dscfm	987.07	969.56	968.30	974.98
NOx, ppm	1715.05	1905.13	1949.44	1856.54
CO, ppm	5323.76	5276.23	5257.95	5285.98
HC, ppm				
F-Factor	8460.16	8460.16	8460.16	8460.16
NOx, MW = 46.005				
NOx, lb/hr	12.32	13.44	13.73	13.16
NOx, ppm @ O2	484.85	539.10	551.90	525.29
NOx, lb/MMBtu	1.7626	1.9598	2.0064	1.9096
NOx, g/HP-hr				
CO, MW = 28.010				
CO, lb/hr	23.28	22.66	22.55	22.83
CO, ppm @ O2	1505.04	1493.03	1488.58	1495.55
CO, lb/MMBtu	3.3312	3.3046	3.2948	3.3102
CO, g/HP-hr				

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

DSCF
MMBtu lb/lb mole

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #7 IN
DATE : SEPT 23,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.08	0.06	0.06
Qs(std), dscfm	969.23	968.30	968.30
NOx, ppm	1999.19	1907.69	1876.21
CO, ppm	4900.37	6102.60	5252.57
HC, ppm			
F-Factor	8460.16	8460.16	8460.16
NOx, MW = 46.005			
NOx, lb/hr	14.10	13.44	13.22
NOx, ppm @ O2	566.53	540.08	531.17
NOx, lb/MMBtu	2.0595	1.9634	1.9310
NOx, g/HP-hr	9.84	9.38	9.23
CO, MW = 28.010			
CO, lb/hr	21.04	26.17	22.53
CO, ppm @ O2	1388.67	1727.70	1487.05
CO, lb/MMBtu	3.0736	3.8240	3.2914
CO, g/HP-hr	14.68	18.56	15.72

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #8 IN
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.03	0.08	0.07	0.06
Qs(std), dscfm	982.55	947.99	927.49	952.68
NOx, ppm	2377.05	2280.45	2275.75	2311.08
CO, ppm	3675.00	3720.00	3872.09	3755.70
HC, ppm				
F-Factor	8489.10	8489.10	8489.10	8489.10
NOx, MW = 46.005				
NOx, lb/hr	16.99	15.73	15.36	16.02
NOx, ppm @ O2	672.00	646.24	644.60	654.28
NOx, lb/MMBtu	2.4513	2.3573	2.3513	2.3866
NOx, g/HP-hr	11.86	10.98	10.72	11.18
CO, MW = 28.010				
CO, lb/hr	15.99	15.62	15.91	15.84
CO, ppm @ O2	1038.93	1054.18	1096.75	1063.29
CO, lb/MMBtu	2.3074	2.3413	2.4358	2.3615
CO, g/HP-hr	11.16	10.90	11.10	11.05

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #8 IN
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.06	0.05	0.06
Qs(std), dscfm	927.05	926.60	927.05
NOx, ppm	2351.90	1989.82	2208.91
CO, ppm	3696.19	2208.91	4558.42
HC, ppm			
F-Factor	8489.10	8489.10	8489.10
NOx, MW = 46.005			
NOx, lb/hr	15.86	13.41	14.90
NOx, ppm @ O2	665.85	563.07	625.36
NOx, lb/MMBtu	2.4288	2.0539	2.2812
NOx, g/HP-hr	11.07	9.36	10.40
CO, MW = 28.010			
CO, lb/hr	15.18	9.07	18.72
CO, ppm @ O2	1046.43	625.06	1290.53
CO, lb/MMBtu	2.3240	1.3882	2.8662
CO, g/HP-hr	10.59	6.33	13.06

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #6 IN
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.05	0.06	0.07	0.06
Qs(std), dscfm	945.36	950.45	945.70	947.17
NOx, ppm	1909.48	1923.60	1896.25	1909.78
CO, ppm	5644.99	5507.30	5655.40	5602.56
HC, ppm				
F-Factor	8489.10	8489.10	8489.10	8489.10
NOx, MW = 46.005				
NOx, lb/hr	13.13	13.30	13.05	13.16
NOx, ppm @ O2	540.33	544.59	537.10	540.68
NOx, lb/MMBtu	1.9710	1.9865	1.9592	1.9723
NOx, g/HP-hr	9.16	9.28	9.10	9.18
CO, MW = 28.010				
CO, lb/hr	23.64	23.19	23.69	23.50
CO, ppm @ O2	1597.38	1559.17	1601.87	1586.14
CO, lb/MMBtu	3.5477	3.4628	3.5576	3.5227
CO, g/HP-hr	16.49	16.18	16.53	16.40

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #6 IN
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.06	0.05	0.05
Qs(std), dscfm	945.25	944.80	944.80
NOx, ppm	1852.24	1189.32	1494.04
CO, ppm	5431.07	13162.35	9337.25
HC, ppm			
F-Factor	8489.10	8489.10	8489.10
NOx, MW = 46.005			
NOx, lb/hr	12.74	8.17	10.27
NOx, ppm @ O2	524.39	336.55	422.77
NOx, lb/MMBtu	1.3128	1.2276	1.5422
NOx, g/HP-hr	8.89	5.70	7.17
CO, MW = 28.010			
CO, lb/hr	22.74	55.08	39.07
CO, ppm @ O2	1537.59	3724.60	2642.20
CO, lb/MMBtu	3.4149	8.2721	5.8681
CO, g/HP-hr	15.87	38.44	27.27

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #2 IN
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.23	0.23	0.23	0.23
Qs(std), dscfm	1024.72	1011.12	972.16	1002.67
NOx, ppm	1987.42	2023.58	2037.47	2016.16
CO, ppm	6361.72	6136.23	6036.24	6178.06
HC, ppm				
F-Factor	8474.22	8474.22	8474.22	8474.22
NOx, MW = 46.005				
NOx, lb/hr	14.82	14.89	14.41	14.70
NOx, ppm @ O2	567.28	577.61	581.57	575.49
NOx, lb/MMBtu	2.0657	2.1033	2.1177	2.0956
NOx, g/HP-hr	10.34	10.39	10.06	10.26
CO, MW = 28.010				
CO, lb/hr	28.87	27.48	25.99	27.45
CO, ppm @ O2	1815.88	1751.51	1722.97	1763.45
CO, lb/MMBtu	4.0259	3.8832	3.8199	3.9096
CO, g/HP-hr	20.15	19.18	18.14	19.16

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #2 IN
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.30	0.09	0.16
Qs(std), dscfm	975.46	965.62	968.88
NOx, ppm	2194.69	1240.99	1956.32
CO, ppm	5141.62	13894.23	6463.05
HC, ppm			
F-Factor	8474.22	8474.22	8474.22
NOx, MW = 46.005			
NOx, lb/hr	15.57	8.72	13.79
NOx, ppm @ O2	628.58	351.84	556.52
NOx, lb/MMBtu	2.2889	1.2812	2.0265
NOx, g/HP-hr	10.37	6.08	9.62
CO, MW = 28.010			
CO, lb/hr	22.22	59.43	27.74
CO, ppm @ O2	1472.60	3939.26	1838.57
CO, lb/MMBtu	3.2648	8.7335	4.0762
CO, g/HP-hr	15.50	41.47	19.36

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #4 IN
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.29	0.30	0.34	0.31
Qs(std), dscfm	941.45	948.65	945.16	945.09
NOx, ppm	1906.61	1965.48	1963.31	1945.13
CO, ppm	8325.05	8326.52	9001.24	8550.94
HC, ppm				
F-Factor	8474.22	8474.22	8474.22	8474.22
NOx, MW = 46.005				
NOx, lb/hr	13.06	13.56	13.50	13.37
NOx, ppm @ O2	545.80	562.93	563.40	557.38
NOx, lb/MMBtu	1.9875	2.0498	2.0516	2.0296
NOx, g/HP-hr	9.11	9.47	9.42	9.33
CO, MW = 28.010				
CO, lb/hr	34.72	34.99	37.68	35.80
CO, ppm @ O2	2383.20	2384.78	2583.04	2450.34
CO, lb/MMBtu	5.2836	5.2871	5.7267	5.4325
CO, g/HP-hr	24.23	24.42	26.30	24.98

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #4 IN
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.40	0.26	0.33
Qs(std), dscfm	947.33	941.50	944.70
NOx, ppm	2064.17	1682.96	1876.21
CO, ppm	8120.00	11000.00	9750.00
HC, ppm			
F-Factor	8474.22	8474.22	8474.22
NOx, MW = 46.005			
NOx, lb/hr	14.23	11.53	12.89
NOx, ppm @ O2	594.08	481.08	538.14
NOx, lb/MMBtu	2.1633	1.7518	1.9596
NOx, g/HP-hr	9.33	8.04	9.00
CO, MW = 28.010			
CO, lb/hr	34.09	45.87	40.80
CO, ppm @ O2	2336.98	3144.38	2796.55
CO, lb/MMBtu	5.1812	6.9712	6.2001
CO, g/HP-hr	23.79	32.01	28.47

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #3 IN
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.21	0.20	0.18	0.20
Qs(std), dscfm	971.01	951.55	956.73	959.76
NOx, ppm	2058.92	2212.54	2137.66	2136.37
CO, ppm	4864.48	4848.77	4722.50	4811.92
HC, ppm				
F-Factor	8469.22	8469.22	8469.22	8469.22
NOx, MW = 46.005				
NOx, lb/hr	14.54	15.32	14.88	14.91
NOx, ppm @ O2	587.13	630.63	608.70	608.82
NOx, lb/MMBtu	2.1367	2.2950	2.2152	2.2156
NOx, g/HP-hr	10.18	10.72	10.41	10.44
CO, MW = 28.010				
CO, lb/hr	20.92	20.44	20.01	20.46
CO, ppm @ O2	1387.16	1382.02	1344.73	1371.30
CO, lb/MMBtu	3.0736	3.0622	2.9795	3.0384
CO, g/HP-hr	14.65	14.31	14.01	14.32

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #3 IN
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.17	0.09	0.14
Qs(std), dscfm	956.27	952.59	954.89
NOx, ppm	2231.80	1623.93	2063.33
CO, ppm	4150.85	9135.63	5455.61
HC, ppm			
F-Factor	8469.22	8469.22	8469.22
NOx, MW = 46.005			
NOx, lb/hr	15.53	11.25	14.33
NOx, ppm @ O2	635.20	460.41	586.40
NOx, lb/MMBtu	2.3116	1.6755	2.1340
NOx, g/HP-hr	10.87	7.88	10.03
CO, MW = 28.010			
CO, lb/hr	17.58	38.55	23.07
CO, ppm @ O2	1181.38	2590.11	1550.49
CO, lb/MMBtu	2.6176	5.7390	3.4355
CO, g/HP-hr	12.31	26.98	16.15

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #5 IN
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.55	0.52	0.54	0.54
Qs(std), dscfm	1012.16	1017.26	988.35	1005.92
NOx, ppm	1736.67	1718.75	1744.22	1733.21
CO, ppm	7015.04	6978.67	6820.00	6937.90
HC, ppm				
F-Factor	8469.22	8469.22	8469.22	8469.22
NOx, MW = 46.005				
NOx, lb/hr	12.79	12.72	12.54	12.68
NOx, ppm @ O2	503.51	497.58	505.45	502.18
NOx, lb/MMBtu	1.8324	1.8108	1.8394	1.8275
NOx, g/HP-hr	9.16	9.11	8.99	9.09
CO, MW = 28.010				
CO, lb/hr	31.45	31.44	29.86	30.92
CO, ppm @ O2	2033.84	2020.32	1976.33	2010.16
CO, lb/MMBtu	4.5064	4.4765	4.3790	4.4540
CO, g/HP-hr	22.54	22.53	21.39	22.15

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #5 IN
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.52	0.45	0.52
Qs(std), dscfm	987.38	984.00	987.38
NOx, ppm	1800.73	1411.71	1703.44
CO, ppm	6300.00	10000.00	6770.00
HC, ppm			
F-Factor	8469.22	8469.22	8469.22
NOx, MW = 46.005			
NOx, lb/hr	12.93	10.11	12.24
NOx, ppm @ O2	521.31	407.29	493.15
NOx, lb/MMBtu	1.3972	1.4822	1.7947
NOx, g/HP-hr	9.27	7.24	8.77
CO, MW = 28.010			
CO, lb/hr	27.55	43.58	29.61
CO, ppm @ O2	1823.85	2885.09	1959.91
CO, lb/MMBtu	4.0411	6.3926	4.3426
CO, g/HP-hr	19.74	31.23	21.22

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

PAPE01

TO:

SUE POWERS
PAPE & STEINER ENVIRONMENTAL
5801 NORRIS RD.
BAKERSFIELD, CA 93308

DATE: 08/27/90

CUSTOMER ORDER NUMBER: SP-2750-90REL-2

PAGE 1

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC28460	Sulfur Dioxide Nitrogen	10.67 ± 0.21 ppm Balance	VOLUMETRIC
CC66841	Nitric Oxide Nitrogen,O2-Free Nitrogen Dioxide	4130 ± 41 ppm Balance < 20 ppm	SRM 2631

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: Jim Gay

Approved: J.T.Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

STEI01

TO:

SUE POWERS
STEINER ENVIRONMENTAL, INC.
4930 BOYLAN ST.
BAKERSFIELD, CA 93308

DATE: 04/12/91

CUSTOMER ORDER NUMBER: 2750-90 Rel. 20

PAGE 1

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC719	Nitric Oxide Nitrogen,O2-Free NO_x	8200 ± 82 ppm Balance 8200 ppm	SRM 2631
CC12270	Nitric Oxide Nitrogen,O2-Free NO_x	8230 ± 82 ppm Balance 8230 ppm	SRM 2631

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: Steve Kozy
S.B. Kozy

Approved: [signature]
J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS

TO: STEIØ1
Sue Powers
Steiner Environmental
4930 Boylan St.
Bakersfield, CA 93308

DATE: 06 January 1991

CUSTOMER ORDER NUMBER: B1. SP2750-90 Rel. 11

CYLINDER NUMBER CC83831

COMPONENT	CONCENTRATION(v/v)
Nitrogen Dioxide	20.5 ± 0.4 ppm
Nitrogen*	Balance

*Oxygen-free.

CYLINDER NUMBER _____

COMPONENT	CONCENTRATION(v/v)

CYLINDER NUMBER CC83831

COMPONENT	CONCENTRATION(v/v)

CYLINDER NUMBER _____

COMPONENT	CONCENTRATION(v/v)

(The above analysis is traceable to the National Institute of Standards & Technology,)
(SRM 2629, Cylinder Number FF13903.)

ANALYST Steve Kozy
S.B. Kozy

APPROVED
J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

Scott Specialty Gases

a division of Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48084 (313) 589-2950

Customer :
PAPE & STEINER
3001 MORRIS RD
BAKERSFIELD CA 93308

Our Project # : 12083
Your P.O. # : SP 2546-90
Expiration Date : 12-12-91
Cylinder Number ALM-012106
Cylinder Pressure 2000 psig

**** CERTIFICATE OF ANALYSIS - EPA PROTOCOL GASES ****
PERFORMED ACCORDING TO SECTION 3.0.4
Certified Per Traceability Protocol # 1
Procedure # G1
File # P06258
Certified Accuracy ± 2 % NBS Traceable

COMPONENT	CERTIFIED CONC.	REFERENCE STD: SRM # (CRM #)	REFERENCE STD: CYLINDER NUMBER	REFERENCE STD: CONC.	GAS ANALYZER: MAKE/MODEL/SERIAL #	GAS ANALYZER: LAST CALIBRATION DATE	ANALYTICAL PRINCIPLE
CARBON MONOXIDE	4016 PPM	2638	AAL-9049	4705 PPM	MORGAN/DPE-1[illegible]/5609[illegible]	6-13-90	CHEMILUMINESCENCE
		GMIS*	AAL-20199	5004 PPM			

BALANCE GAS : NITROGEN

CERTIFIED EPA PROTOCOL

FIRST ANALYSIS — DATE : 6-5-90

ZERO GAS (mV)	TEST GAS (mV)	RESULTS PPM	INTERNAL STANDARD (GMISm)	REFERENCE GAS (mV)	REFERENCE GAS PPM
0.00	76.00	4027	4705 PPM	86.00	4717
0.00	76.00	4027		86.00	4717
0.00	76.00	4027		86.00	4717

CALCULATED RESULTS: 4016, 4016, 4016

AVERAGE : 4016 PPM

SECOND ANALYSIS — DATE : 6-12-90

ZERO GAS (mV)	TEST GAS (mV)	RESULTS PPM	INTERNAL STANDARD (GMISm)	REFERENCE GAS (mV)	RESULTS PPM
0.00	76.00	4027	4705 PPM	86.00	4717
0.00	76.00	4027		86.00	4717
0.00	76.00	4027		86.00	4717

CALCULATED RESULTS: 4016, 4016, 4016

AVERAGE : 4016 PPM

CALIBRATION CURVE — 2 nd DEGREE

SRM # (CRM #)	CONC. PPM	SPLIT PT (%)	DVM (mV)	FITTED VALUE	PERCENT ERROR
	5004	100	90.00	5004	.00
	4705	94	86.00	4717	0.26
	2408	48	50.20	2418	0.42
	2008	40	42.80	2003	-0.28
	0.0000	0	0.00	0.0000	0.00
		0		0.00	0.00
		0		0.00	0.00
GMIS	2008	LOW	42.80	2003	-0.28
2638	4705 CRM		86.00	4717	0.26

* GMIS - GAS MANUFACTURER'S INTERNAL STANDARD

Analyst : [signature]

Approved By : [signature]

The only liability of this Company for gas which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

A-122

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

...T ANALYSIS REPORT
...ase forward to user
...or calibration gases.

REPORT OF ANALYSIS

TO: PAPEØ1
Pape & Steiner
5801 Norris Rd.
Bakersfield, CA 93308

DATE: 13 July 1990

CUSTOMER ORDER NUMBER: B1-SP-2750-90 Rel. 1

CYLINDER NUMBER CC91374

COMPONENT	CONCENTRATION(v/v)
Carbon Monoxide	8110 ± 81 ppm
Nitrogen	Balance

Cylinder Pressure: 2000 psig

Replicate	07/06/90	8100 ppm	07/13/90	8170 ppm
Analysis		8100 ppm		8160 ppm
Data On		8000 ppm		8140 ppm
CO: Mean		8060 ppm		8160 ppm

Expiration Date: CO 1/13/92

(The above analysis was performed in accordance with Section 3.0.4 of the revised EPA trace-)
(ability protocol No. 1 dated June 9, 1987. The analysis is traceable to the National)
(Institute of Standards & Technology by direct intercomparison with GMIS, Cylinder number)
(FF17326 at 9850 ppm Carbon Monoxide in Nitrogen. The analysis was performed using a Carle)
(Model 8000 gas chromatograph with catalytic methanation/flame ionization detection. The)
(last multipoint calibration was performed 5/15/90.)

ANALYST J.W. Gay

APPROVED J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

STEI01

TO:

Jim Steiner
Steiner Environmental
4930 Boylan Street
Bakersfield, CA 93308

DATE: 08/07/91

CUSTOMER ORDER NUMBER: SP-2750-90REL33 Reanalysis

PAGE 1

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
ALM0006164	Carbon Monoxide	198.8 ± 2.0 ppm	SRM 2636
	Oxygen	3.98 ± 0.04 %	SRM 2658a
	Carbon Dioxide	8.03 ± 0.08 %	SRM 1674b
	Nitrogen	Balance	@1200 PSIG
CC12011	Carbon Monoxide	81.0 ± 0.8 ppm	SRM 1679c
	Carbon Dioxide	15.14 ± 0.15 %	SRM 1675b
	Oxygen	7.52 ± 0.08 %	SRM 2658a
	Nitrogen	Balance	@900 PSIG
CC7262	Carbon Monoxide	391 ± 4 ppm	SRM 1680b
	Carbon Dioxide	9.52 ± 0.10 %	SRM 1675b
	Oxygen	0.972 ± 0.010 %	SRM 2657
	Nitrogen	Balance	@900 PSIG

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance, NIST Report No. MMAP 232.09/202491.

Analyst: M.S. Calhoun

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

PAPE01

TO:

SUE POWERS
STEINER ENVIRONMENTAL
4930 BOYLAN ST.
BAKERSFIELD, CA 93308

DATE: 12/19/90

CUSTOMER ORDER NUMBER: SP2750-90 R-14

PAGE 1

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC83869	Carbon Monoxide	37.7 ± 0.4 ppm	SRM 2614a
	Carbon Dioxide	14.49 ± 0.14 %	SRM 1675b
	Oxygen	3.80 ± 0.04 %	SRM 2658a
	Nitrogen	Balance	
CC12011	Carbon Dioxide	15.10 ± 0.15 %	SRM 1675b
	Oxygen	7.53 ± 0.08 %	SRM 2658a
	Carbon Monoxide	79.4 ± 0.8 ppm	SRM 1679c
	Nitrogen	Balance	

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: J.W. Gay

Approved: J.T.Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

APPENDIX B

STEINER ENVIRONMENTAL RAW DATA (OUTLET)

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas- Goleta
Date 9-23-91 Run No. Preliminary + 1
Test Location Unit # 7 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		0.0	0.0	0.0			0.0	ZERO SPAN Values
		1.011	9.34	4130			129.9	MID
		3.80	15.21	8130			205.1	HIGH
		0.02	0.0	0.0			0.0	Interference ✓
		1.02	9.28	4120			129.9	MID Linearity ✓
		3.84	14.99	8290			204.5	HIGH
		0.0	0.0	0.0			0.0	ZERO
		1.05	9.10	4080			127.50	External Bias ✓
		0.03						QA ✓ Leak ✓ OK
1050		0.07	11.90	4300			197.50	Run 1
00		0.07	11.85	4300			197.50	
10		0.08	11.85	4100			201.25	30514
20		0.08	11.85	4150			203.75	FG All
1130		1.04	9.25	4120			127.50	SPAN
		0.005	0.0	20.0			0.50	ZERO

Miscellaneous Information

CALIBRATION GASES
NO_x CC98762, CC98703
~~SO_2~~ Conv. gas AAL-2062
CO ALM1538, CC56425
$CO/CO_2/O_2$ CC42679, CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	37.91	37.50
NO_2	17.00	17.50

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-23-91 Run No. 2, 3
Test Location Unit # 7 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			205.1	SPAN GAS VALUES
1150		0.06	12.00	3800			202.5	RUN 2
00		0.06	11.99	4300			205.0	
10		0.06	12.00	4050			206.25	
20		0.06	11.99	4250			208.75	
1230		1.02	9.30	4140			202.0	SPAN
		0.02	0.0	40.0			0.0	ZERO
1245		0.02	11.95	4250			210.00	RUN 3
55		0.02	11.88	4300			215.00	
05		0.02	11.90	4400			223.75	
15		0.02	11.92	4100			232.50	
1325		1.005	9.23	4180			206.25	SPAN
		0.0	0.0	0.0			0.0	ZERO
1341		0.03	12.08	3750			215.00	AFR SET Pt. 830
1358		0.03	12.00	5300			222.00	AFR SET Pt. 880
1415		0.03	12.04	4150			225.00	AFR SET Pt. 840
1425		0.0	0.02	0.0			0.0	ZERO
		1.01	9.35	4080			204.0	SPAN
		1.03	9.18	4025			197.0	External Response
		0.01						QA ✓ LERK ✓

Miscellaneous Information

CALIBRATION GASES
NO_x CC98703
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-24-91 Run No. 1
Test Location Unit # 8 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		0.0	0.0	0.0			0.0	ZERO SPAN
		3.80	9.34	4130			40.50	MID GAS
		1.011	15.21	8130			82.70	HIGH Values
							82.60	HIGH LIN.
							40.60	MID Check
							0.0	ZERO
		1.05	9.20	4100			40.00	External Response
		0.04						QA ✓ LERK ✓
0815		0.01	11.80	1200			28.00	RUN 1
25		0.01	11.78	1450			23.80	
35		0.01	11.70	1500			22.50	
45		0.01	11.68	1650			23.00	30515 F.G. ALL
0855		1.00	9.32	4090			41.50	SPAN
		0.0	0.12	-30.0			1.00	ZERO
0913		0.01	12.00	1900			22.30	RUN 2
23		0.01	12.00	1850			22.50	
33		0.01	12.00	1850			22.90	
43		0.01	12.08	1750			25.00	
0953		1.00	9.30	4130			40.40	SPAN
		0.0	0.0	60.0			-0.20	ZERO

Miscellaneous Information

CALIBRATION GASES

NO_x CC12840, CC7380
~~SO_2~~ Conv. gas AAL2062
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	37.91	38.2
NO_2	17.00	

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern Cal. Gas - Goleta
Date 9-24-91 Run No. 3
Test Location Unit #8 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		1.011	9.34	4130			40.50	SPAN GAS Values
1007		0.01	12.05	1850			26.80	RUN 3
17		0.01	12.05	1950			26.80	
27		0.02	12.06	1900			26.00	
37		0.02	12.10	1850			24.80	
1047		1.00	9.30	4110			40.10	SPAN
		0.0	0.0	-10.0			0.20	ZERO
1102		0.02	12.15	1550			24.00	AFR SET Pt. 850
1124		0.02	11.80	5700			22.80	AFR SET Pt. 900
1140		0.02	12.00	2650			23.20	AFR SET Pt. 875
1150		1.00	9.22	4100			40.70	SPAN
		0.0	0.0	0.0			0.30	ZERO

Miscellaneous Information

CALIBRATION GASES
NO_x CC12840, CC7380
~~SO_2~~ Conv. gas
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: _____ Dry Bulb: _____
Barometric Press: _____

RESPONSE TIME
Upscale: _____ Downscale: _____
Upscale: _____ Downscale: _____
Upscale: _____ Downscale: _____

PROCESS DATA
Fuel Flow: _____
Steam Flow: _____
Rating: _____

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency: _____

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern Cal. Gas - Goleta
Date 9-24-91 Run No. 1
Test Location Unit # 6 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			82.70	SPAN GAS Values
1334		0.01	12.00	3250			82.00	RUN 1
44		0.01	12.03	3200			81.00	
54		0.02	12.05	3200			80.00	
04		0.02	12.03	3150			79.00	
1414		1.01	9.40	4100			83.80	SPAN
		0.0	0.0	-10.0			1.30	ZERO
1425		0.03	12.12	3250			67.50	RUN 2
35		0.03	12.10	3200			70.00	
45		0.03	12.10	3200			68.00	
55		0.03	12.05	3100			68.00	
1505		1.02	9.29	4110			82.50	SPAN
		0.0	-0.06	0.0			0.20	ZERO

Miscellaneous Information

CALIBRATION GASES

NO_x CC7380
SO_2
CO CC58425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Steinert Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern Cal. Gas - Goleta
Date 9-24-91 Run No. 3
Test Location Unit # 6 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		1.011	9.34	4130			82.70	SPAN Gas Values
1516		0.02	12.00	3200			61.00	RUN 3
26		0.02	12.00	3300			61.00	
36		0.02	12.00	3200			57.00	
46		0.02	12.00	3300			59.00	
1556		1.00	9.30	4100			82.00	SPAN
		0.0	0.12	0.0			0.0	ZERO
1621		0.02	12.10	3000			52.00	AFR SET PT 875
1635		0.02	11.60	10,500			16.00	AFR SET PT 940
1650		0.02	11.80	6500			35.00	AFR SET PT 920
1700		0.01	0.03	0.0			0.30	ZERO
		1.04	9.32	4120			83.00	SPAN
		1.05	9.35	4105			81.60	External Response
		0.01						QA ✓ LERK ✓

Miscellaneous Information

CALIBRATION GASES

NO_x CC7380
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas- Goleta
Date 9-25-91 Run No. 1
Test Location Unit # 2 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			40.50	SPAN Gas Value
		1.05	9.20	4100			40.30	External Response
		0.02						QA ✓ LEAK ✓
							129.90	SPAN GAS Value
0933		0.03	11.80	3600			112.25	RUN 1
43		0.03	11.80	3290			111.25	
53		0.03	11.80	3375			111.25	
03		0.03	11.80	3400			111.50	30516 F.G. All
1013		1.00	9.20	4100			127.80	SPAN
		0.0	0.0	0.0			-0.75	ZERO
1027		0.02	12.10	3650			121.25	RUN 2
37		0.02	12.15	3200			115.00	
47		0.02	12.05	2700			116.00	
57		0.02	12.10	2725			113.75	
1107		1.005	9.40	4120			127.50	SPAN
		0.0	0.0	0.0			0.50	ZERO

Miscellaneous Information

CALIBRATION GASES
NO_x CC12840, CC98762
~~SO_2~~ Conv. GAS AAL 2062
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	37.91	37.8
NO_2	17.00	17.2

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-25-91 Run No. 3
Test Location Unit # 2 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			129.90	SPAN Gas Values
1116		0.02	12.15	2950			127.50	Run 3
26		0.02	12.08	2650			128.00	
36		0.02	12.08	3600			131.75	
46		0.02	12.08	3390			132.50	
1156		1.15	9.40	4140			129.50	SPAN
		0.0	0.0	0.0			-0.50	ZERO
1230		0.02	12.19	900			96.25	AFR SET PT 885
1307		0.03	11.45	13200			42.00	AFR SET PT 950
1326		0.03	11.89	4400			117.50	AFR SET PT 920
1336		1.01	9.29	4200			130.00	SPAN
		0.0	0.02	0.0			-0.50	ZERO

Miscellaneous Information

CALIBRATION GASES

NO_x CC98762
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Steinc Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-25-91 Run No. 1
Test Location Unit # 4 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			129.90	SPAN GAS VALUES
1414		0.03	12.02	6050			60.00	RUN 1
24		0.03	12.05	5000			62.50	
34		0.03	12.10	4900			61.25	
44		0.04	12.10	4500			62.50	
1454		1.00	9.30	4120			127.50	SPAN
		0.0	0.0	0.0			0.0	ZERO
1506		0.04	11.95	5200			63.75	RUN 2
16		0.04	11.95	4900			67.50	
26		0.05	11.95	5200			68.75	
36		0.05	12.00	5300			69.50	
1546		1.005	9.30	4120			129.50	SPAN
		0.01	-0.04	0.0			-0.40	ZERO

Miscellaneous Information

CALIBRATION GASES

NO_x CC98762
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Steiner Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-25-91 Run No. 3
Test Location Unit #4 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			129.90	SPAN GAS Values
1555		0.02	11.85	5800			70.00	RUN 3
05		0.03	11.80	5500			67.50	
15		0.04	11.80	5200			68.75	
25		0.05	11.70	6300			66.25	
1635		1.02	9.25	4130			129.90	SPAN
		0.01	0.09	10.0			0.50	ZERO
1647		0.04	11.90	3800			56.25	AFR SET PT. 875
1704		0.06	11.55	9400			60.00	AFR SET PT. 920
1724		0.06	11.70	6500			65.00	AFR SET PT. 900
1734		0.01	0.0	0.0			0.0	ZERO
		1.02	9.28	4120			128.00	SPAN
		1.05	9.15	4080			127.25	External Response
		0.04						QA ✓ Leak ✓

Miscellaneous Information

CALIBRATION GASES

NO_x CC98762
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-26-91 Run No. 1
Test Location Unit # 3 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	NO_x ppm	Comments
		1.011	9.34	4130		19.34	11.33	SPAN Gas Value
							19.55	HIGH LIN.
							11.33	MID Check
							0.0	ZERO
		1.05	9.10	4150			11.28	External Response
		0.02						QA ✓ LEAK ✓
0745		0.02	12.00	650			12.75	RUN 1
55		0.02	12.00	800			12.00	
05		0.02	12.00	1150			16.88	30517
15		0.02	12.00	1100			16.00	F.G. All
0825		1.005	9.22	4100			11.25	SPAN
		0.0	0.0	0.0			0.0	ZERO
0835		0.02	12.03	850			15.50	RUN 2
45		0.02	12.05	1250			15.63	
55		0.02	12.02	1100			15.75	
05		0.02	12.07	1350			18.50	
0915		1.003	9.30	4135			11.65	SPAN
		0.0	0.10	10.0			0.25	ZERO

Miscellaneous Information

CALIBRATION GASES

NO_x CC12800, CC101291
~~SO_2~~ Conv. gas AAL 2062
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: _____ Dry Bulb: _____
Barometric Press: _____

RESPONSE TIME

Upscale: _____ Downscale: _____
Upscale: _____ Downscale: _____
Upscale: _____ Downscale: _____

PROCESS DATA

Fuel Flow: _____
Steam Flow: _____
Rating: _____

CONVERTER GAS

	Cal Gas Values	Actual Values
NO	37.91	37.20
NO_2	17.00	17.20

Conv. Efficiency: _____

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-26-91 Run No. 3
Test Location Unit # 3 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	Dry Uncorrected O_2 %	CO_2 %	CO ppm	SO_2 ppm	NO ppm	NO_x ppm	Comments
		1.011	9.34	4130			11.33	SPAN GAS Values
0926		0.01	12.12	900			16.75	RUN 3
36		0.01	12.12	1125			18.25	
46		0.01	12.10	1400			21.25	
56		0.01	12.15	1050			19.63	
1006		1.01	9.30	4100			11.33	SPAN
		0.0	0.02	0.0			0.0	ZERO
1017		0.02	12.24	600			11.50	AFR SET PT. 880
1036		0.02	11.80	7100			46.50	AFR SET PT. 920
1052		0.02	12.20	2250			26.00	AFR SET PT. 900
1102		1.02	9.36	4100			11.45	SPAN
		0.00	0.00	0.00			-0.03	ZERO

Miscellaneous Information

CALIBRATION GASES

NO_x CC12800
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern California Gas - Goleta
Date 9-26-91 Run No. 1
Test Location Unit # 5 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			11.33	SPAN GAS Values
1134		0.03	12.20	600.0			4.25	RUN 1
44		0.03	12.20	700.0			4.00	
54		0.03	12.20	950.0			3.50	
04		0.03	12.21	1300.0			4.13	
1214		1.01	9.39	4110			11.25	SPAN
		0.0	0.04	0.0			0.0	ZERO
1224		0.02	12.22	995.0			3.25	RUN 2
34		0.03	12.20	1100.0			3.00	
44		0.04	12.20	850.0			3.00	
54		0.05	12.20	900.0			2.88	
1304		1.02	9.30	4100			11.29	SPAN
		0.0	0.0	0.0			0.0	ZERO

Miscellaneous Information

CALIBRATION GASES
NO_x - CC12800
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME
Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

PROCESS DATA
Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:

Stein Environmental, Inc.

CONTINUOUS MONITOR DATA SHEET

Plant Southern Cal. Gas- Goleta
Date 9-26-91 Run No. 3
Test Location Unit #5 Outlet
Operator CR
Fuel Type Nat. Gas Trailer No. 2

APCD Witness/Number
Client Rep
Generator Type
Burner Type
O_2 Controller Type

Time	Sample Point	O_2 % (Dry Uncorrected)	CO_2 % (Dry Uncorrected)	CO ppm (Dry Uncorrected)	SO_2 ppm (Dry Uncorrected)	NO ppm (Dry Uncorrected)	NO_x ppm (Dry Uncorrected)	Comments
		1.011	9.34	4130			11.33	SPAN GAS Values
1313		0.04	12.15	800.0			3.50	RUN 3
23		0.05	12.15	750.0			2.75	
33		0.05	12.18	850.0			2.88	
43		0.06	12.18	750.0			2.50	
1353		1.03	9.20	4120			11.25	SPAN
		0.0	0.0	-10.00			-0.05	ZERO
1403		0.02	12.22	600.0			3.50	AFR SET PT. 900
1422		0.04	11.05	5500.0			4.50	AFR SET PT. 950
1441		0.05	12.20	975.0			3.13	AFR SET PT. 920
1451		0.03	0.0	40.00			-0.25	ZERO
		1.05	9.30	4120			11.13	SPAN
		1.065	9.20	4095			11.00	External Response
		0.02						QA ✓ LERK ✓

Miscellaneous Information

CALIBRATION GASES

NO_x CC12800
SO_2
CO CC56425
~~CO~~/CO_2/O_2 CC28641

Wet Bulb: Dry Bulb:
Barometric Press:

RESPONSE TIME

Upscale: Downscale:
Upscale: Downscale:
Upscale: Downscale:

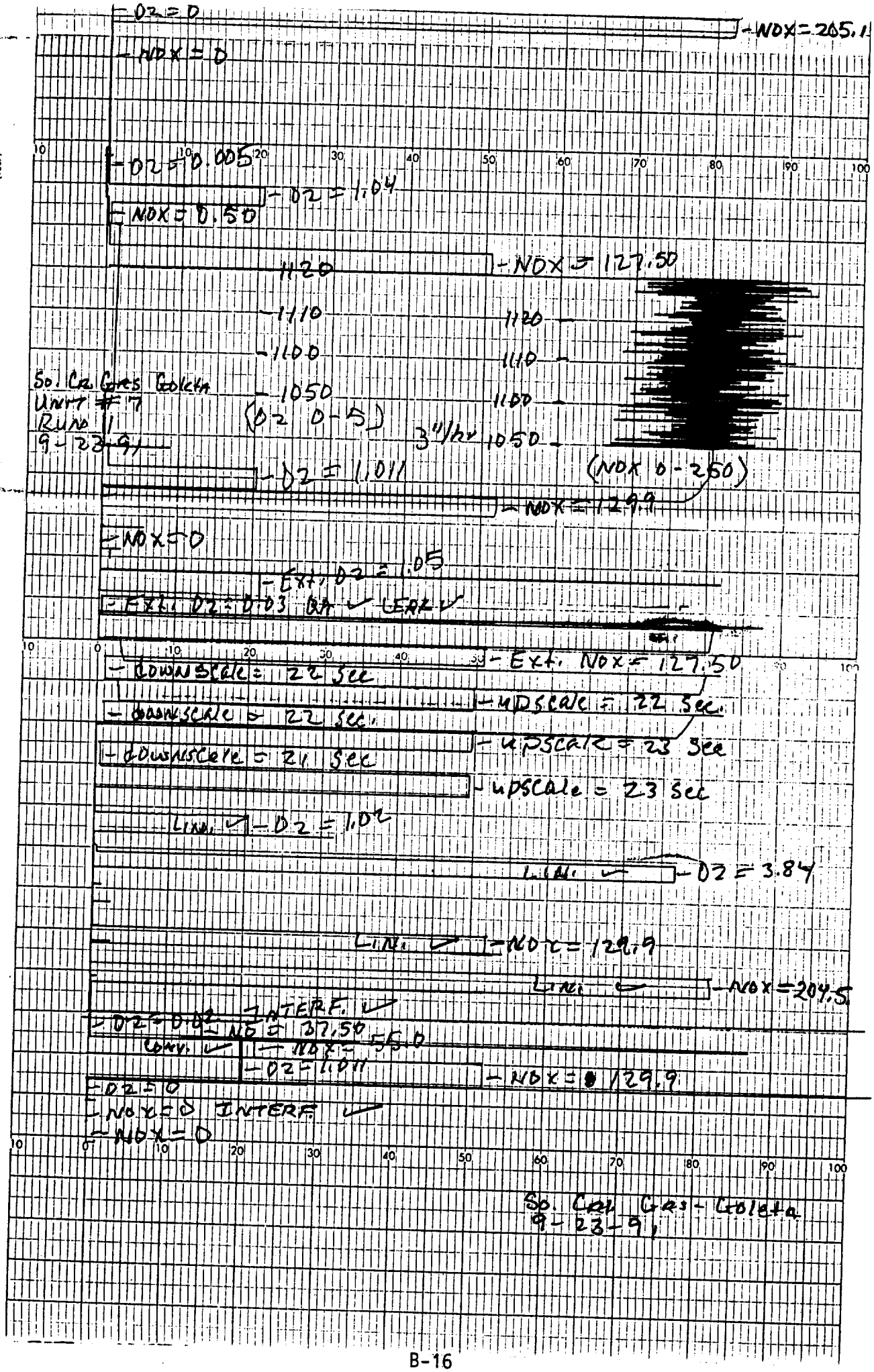
PROCESS DATA

Fuel Flow:
Steam Flow:
Rating:

CONVERTER GAS

	Cal Gas Values	Actual Values
NO		
NO_2		

Conv. Efficiency:


O2 = 0
NOX = 205.1
NOX = 0
O2 = 0.005
O2 = 1.04
NOX = 0.50
1120
NOX = 127.50
1110
1120
1100
1110
1050
1100
So. Cal. Gas Goleta
Unit #7
Run 1
9-23-91
(O2 0-5)
3"/hr
1050
(NOX 0-250)
O2 = 1.011
NOX = 129.9
NOX = 0
Ext. O2 = 1.05
Ext. O2 = 0.03 BA ✓ GERL ✓
Ext. NOX = 127.50
DOWNSCALE = 22 sec
UPSCALE = 22 sec.
DOWNSCALE = 22 sec.
UPSCALE = 23 sec
DOWNSCALE = 21 sec
UPSCALE = 23 sec
LINE. ✓ O2 = 1.02
LINE. ✓ O2 = 3.84
LINE. ✓ NOX = 129.9
LINE. ✓ NOX = 204.5
O2 = 0.02 INTERF. ✓
NO = 37.50
CONV. ✓ NOX = 55.0
O2 = 1.011
NOX = 129.9
O2 = 0
NOX = 0 INTERF. ✓
NOX = 0
So. Cal. Gas - Goleta
9-23-91

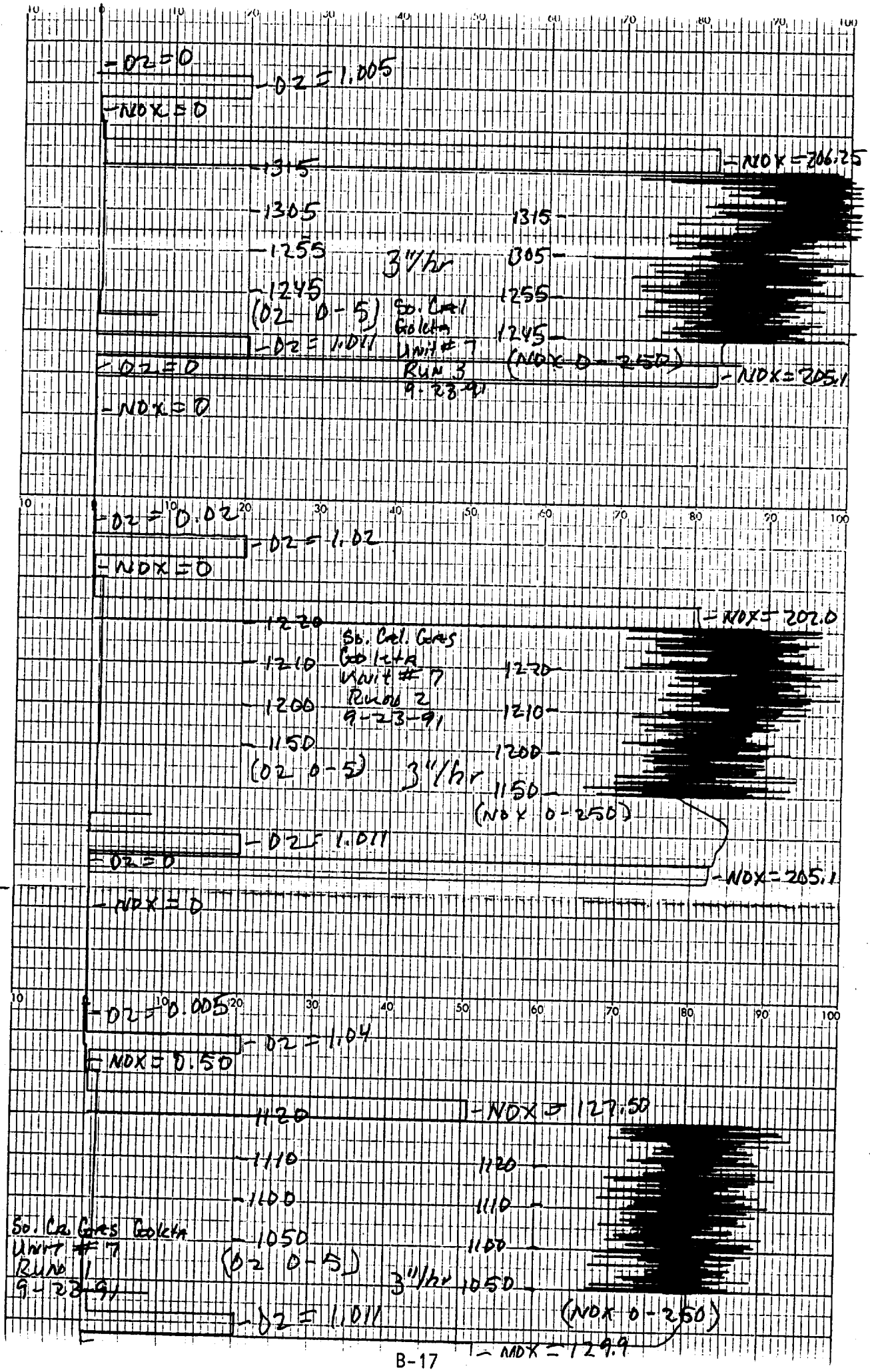
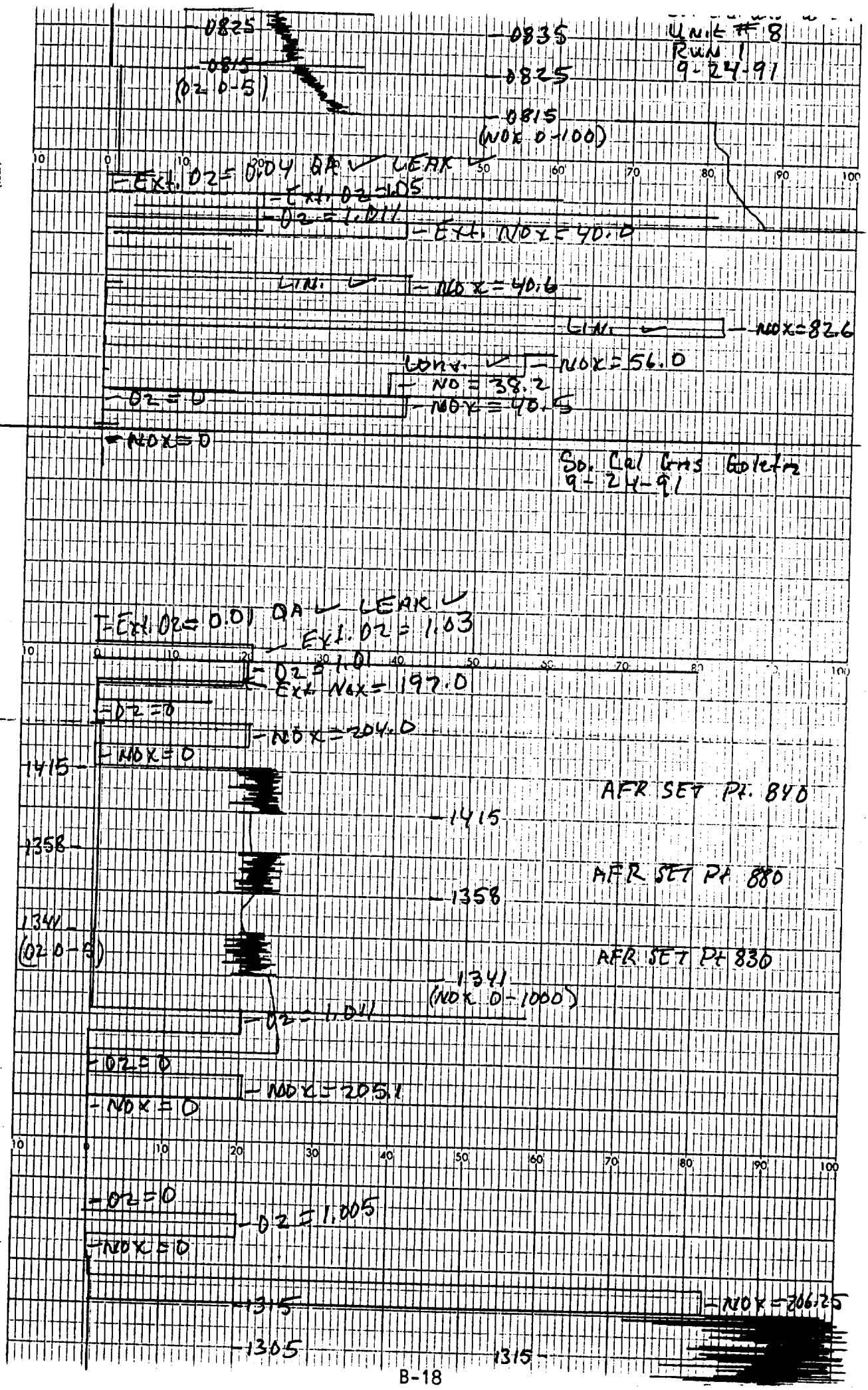
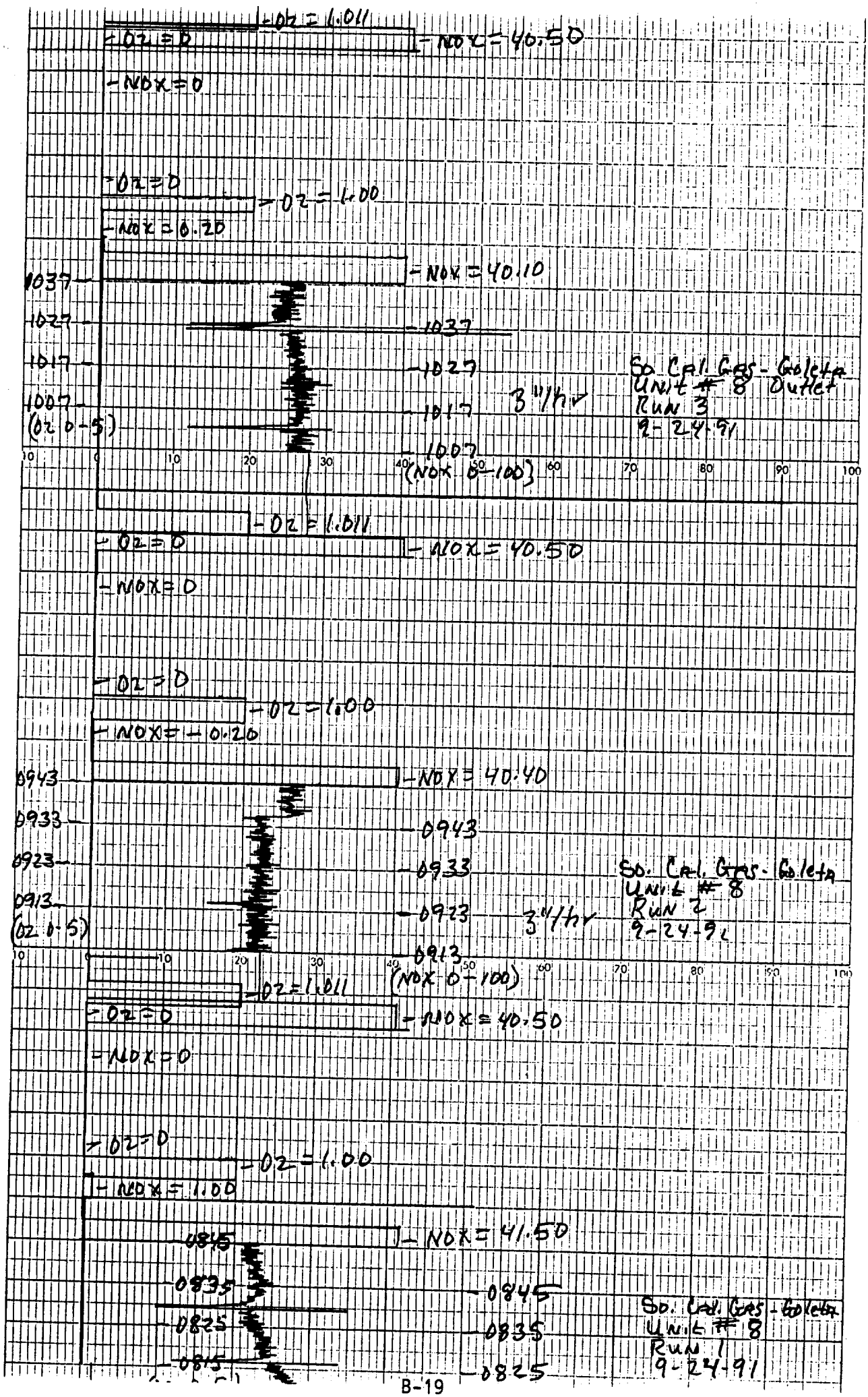
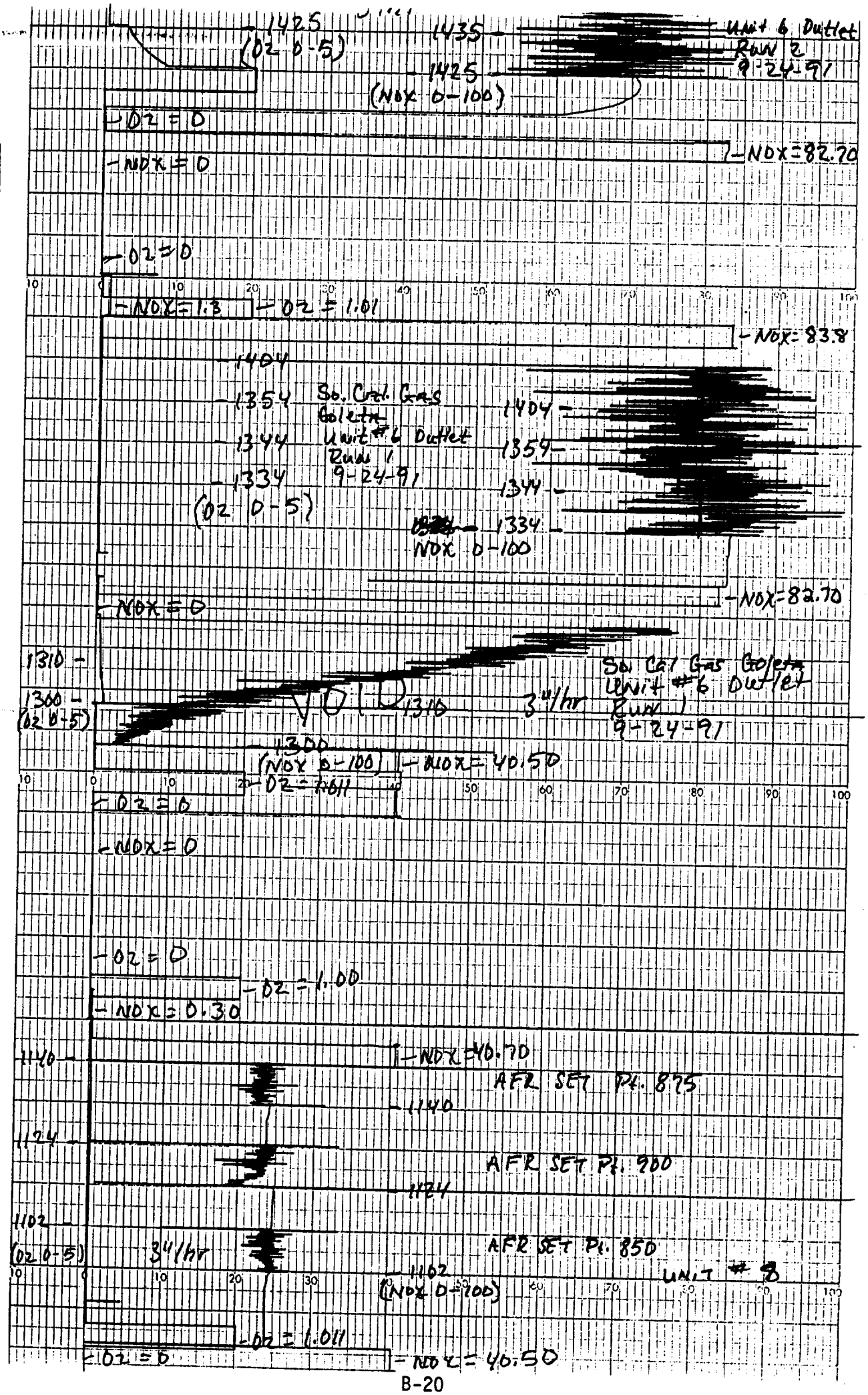
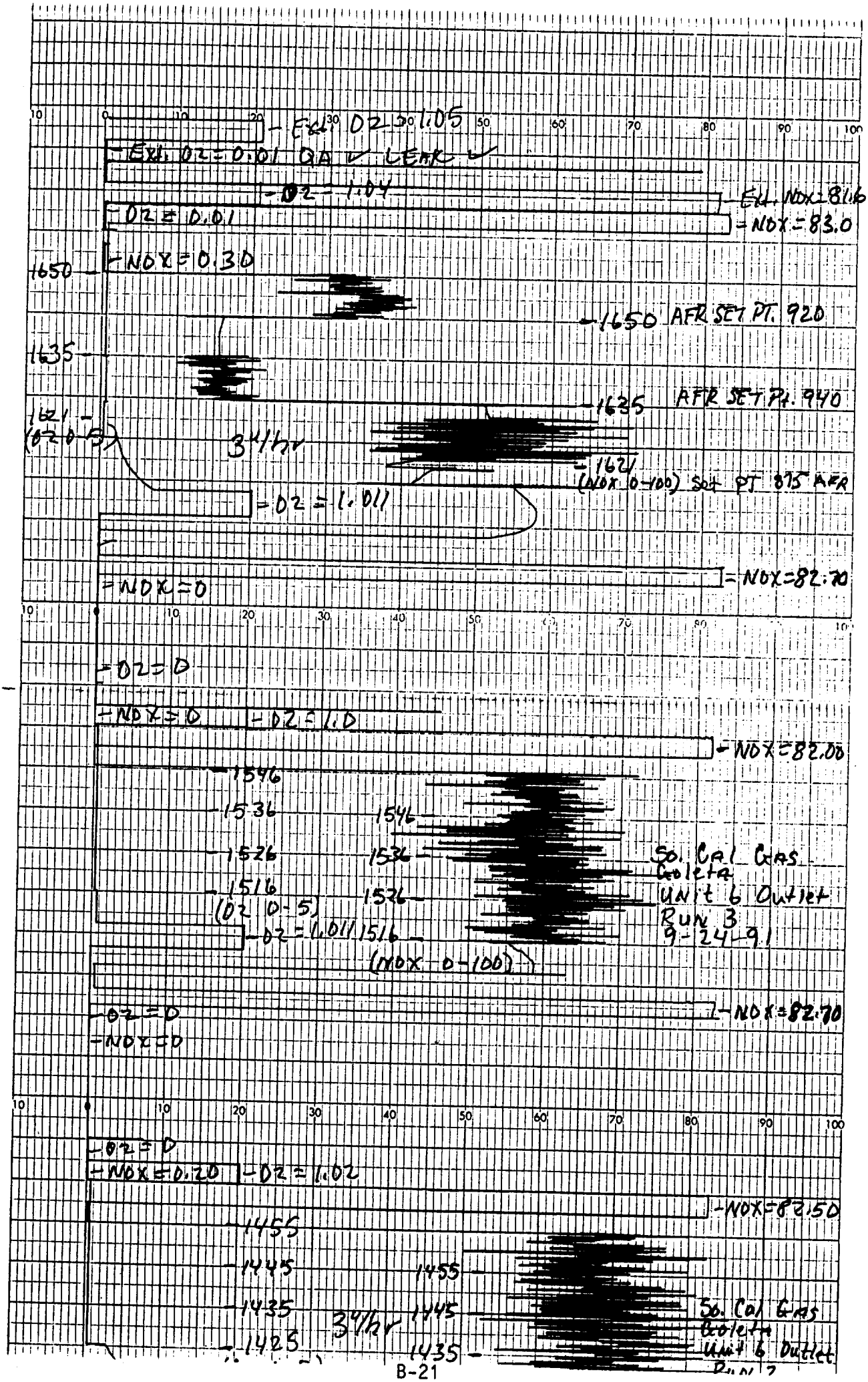


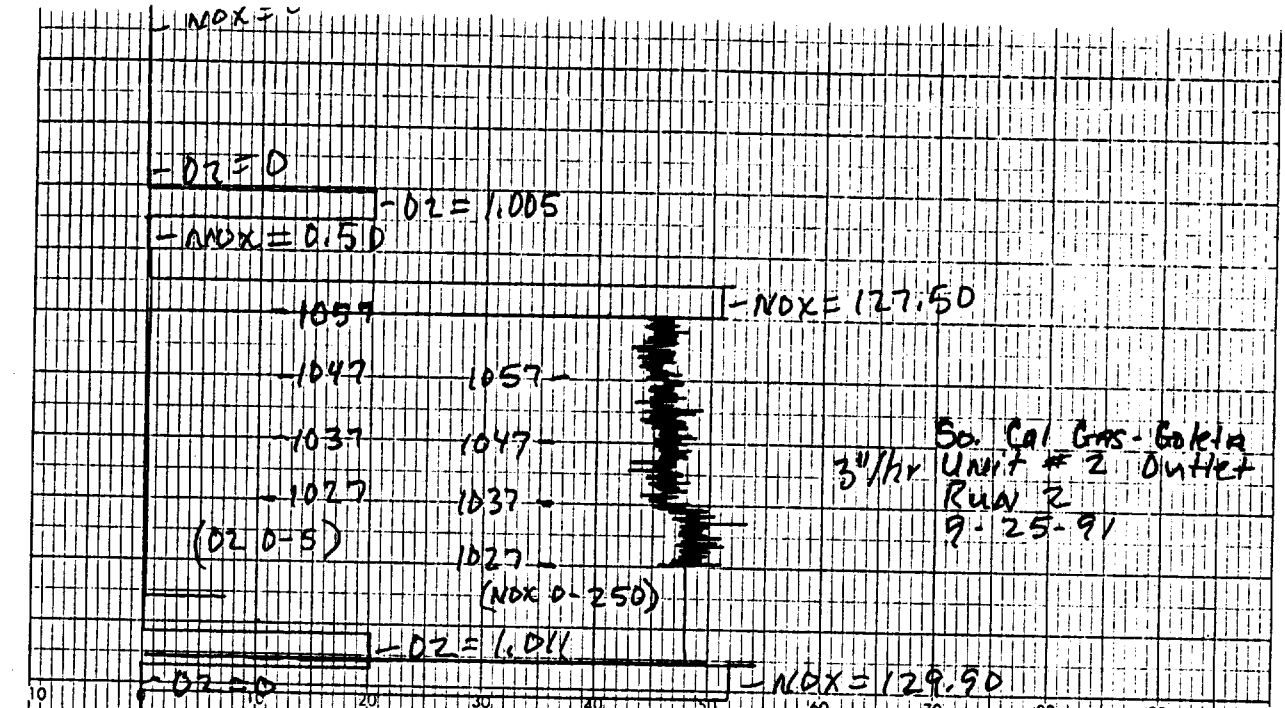
CHART NO. 414044
Charts-Inc
O2 = 0
O2 = 1.005
NOX = 0
NOX = 206.25
1315
1305
1255
1245
3"/hr
(O2 0-5)
So. Cal Gas Goleta Unit #7 Run 3 9-23-91
O2 = 1.011
(NOX 0-250)
NOX = 205.1
O2 = 0.02
O2 = 1.02
NOX = 202.0
1220
1210
1200
1150
Run 2 9-23-91
O2 = 1.011
O2 = 0.005
O2 = 1.04
NOX = 0.50
NOX = 127.50
1120
1110
1100
1050
So. Cal Gas Goleta Unit #7 Run 1 9-23-91
O2 = 1.011
NOX = 129.9

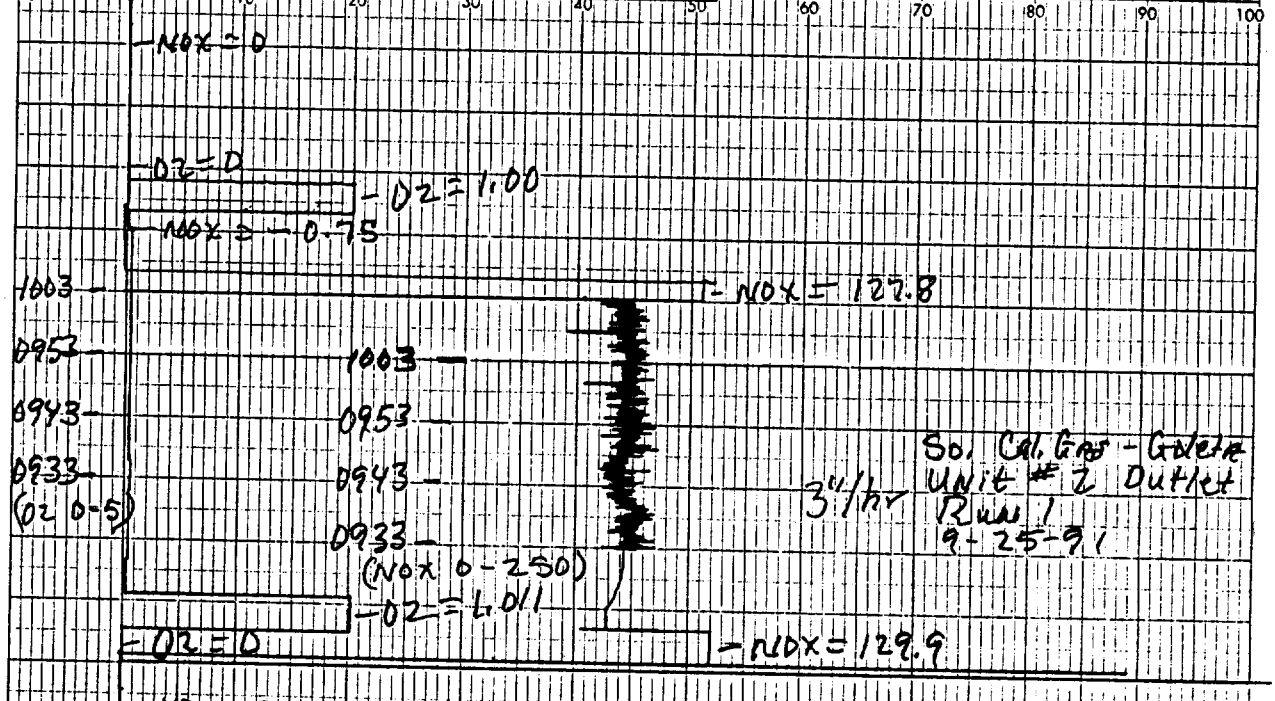

UNIT # 8
RUN 1
9-24-91
0825
0815
(O2 0-5)
0835
0825
0815
(NOx 0-100)
Ext. O2 = 0.004 QA ✓ LEAK ✓
Ext. O2 = 1.05
O2 = 1.011
Ext. NOx = 40.0
LIN. ✓
NOx = 40.6
LIN. ✓
NOx = 82.6
Conv. ✓
NOx = 56.0
NO = 38.2
O2 = 0
NOx = 40.5
NOx = 0
So. Cal Gas Goleta
9-24-91
Ext. O2 = 0.01 QA ✓ LEAK ✓
Ext. O2 = 1.03
O2 = 1.01
Ext. NOx = 197.0
O2 = 0
NOx = 204.0
NOx = 0
1415
AFR SET Pt. 840
1415
1358
AFR SET Pt 880
1358
1341
(O2 0-5)
AFR SET Pt 830
1341
(NOx 0-1000)
O2 = 1.011
O2 = 0
NOx = 205.1
NOx = 0
O2 = 0
O2 = 1.005
NOx = 0
1315
NOx = 206.25
1305
1315

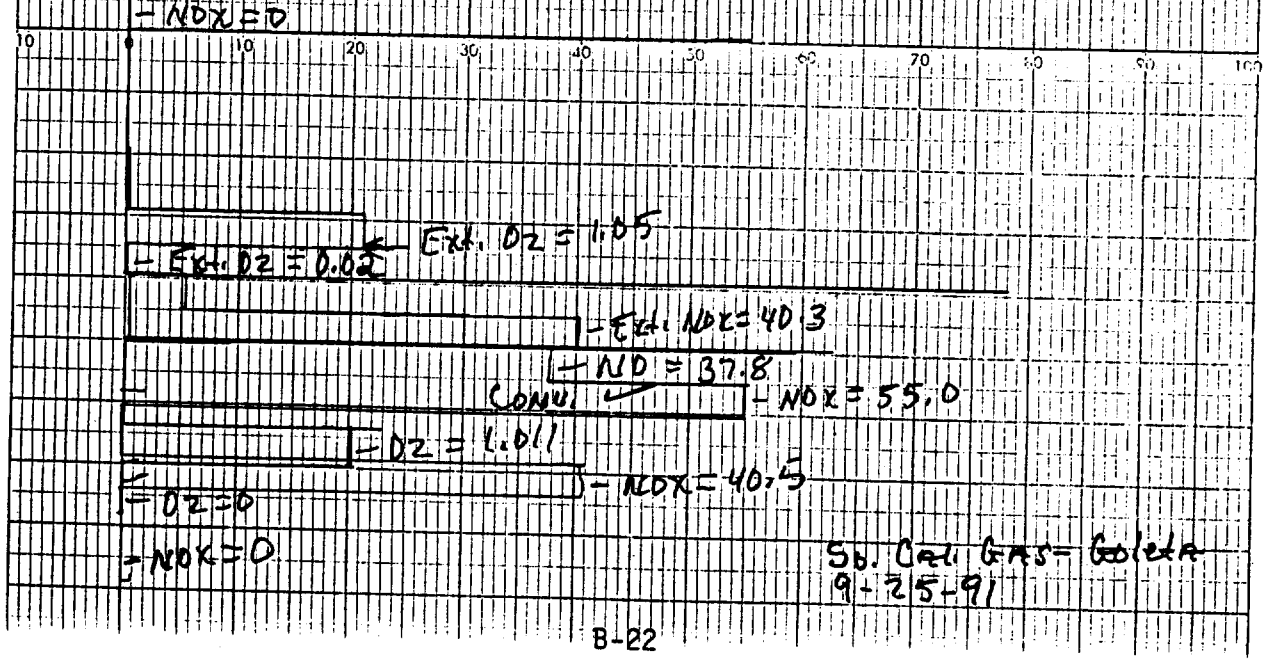

-O2 = 1.011
-O2 = 0
-NOX = 40.50
-NOX = 0
-O2 = 0
-O2 = 1.00
-NOX = 0.20
-NOX = 40.10
1037
1027
1017
1007
(O2 0-5)
-1037
-1027
-1017
-1007
(NOX 0-100)
3"/hr
So. Cal. Gas - Goleta
Unit # 8 Outlet
Run 3
9-24-91
-O2 = 1.011
-O2 = 0
-NOX = 40.50
-NOX = 0
-O2 = 0
-O2 = 1.00
-NOX = -0.20
-NOX = 40.40
0943
0933
0923
0913
(O2 0-5)
-0943
-0933
-0923
-0913
(NOX 0-100)
3"/hr
So. Cal. Gas - Goleta
Unit # 8
Run 2
9-24-91
-O2 = 1.011
-O2 = 0
-NOX = 40.50
-NOX = 0
-O2 = 0
-O2 = 1.00
-NOX = 1.00
-NOX = 41.50
0845
0835
0825
0815
-0845
-0835
-0825
So. Cal. Gas - Goleta
Unit # 8
Run 1
9-24-91

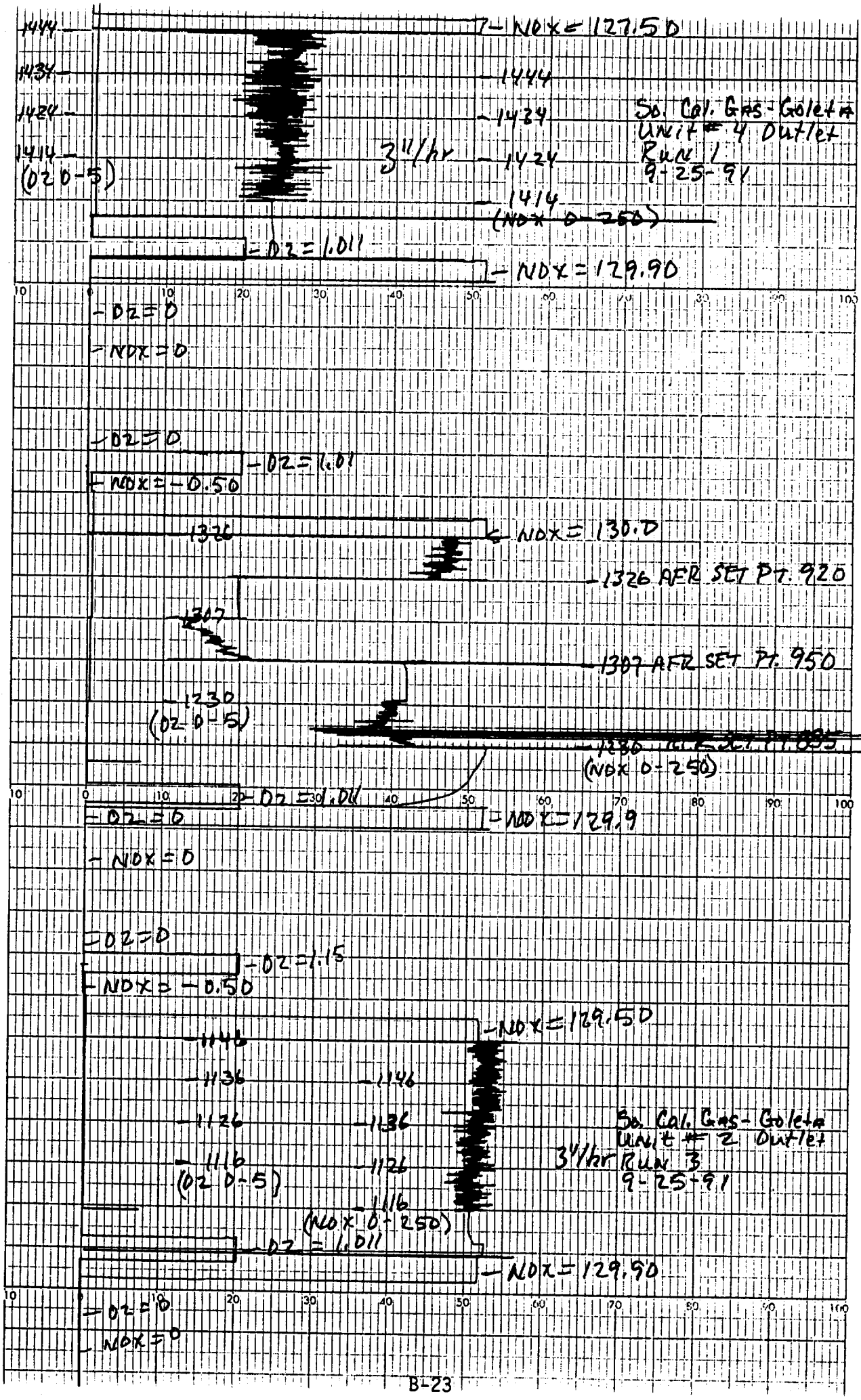

1425
(O2 0-5)
1435
Unit 6 Outlet
Run 2
9-24-91
1425
(NOX 0-100)
O2 = 0
NOX = 82.70
NOX = 0
O2 = 0
NOX = 1.3
O2 = 1.01
NOX = 83.8
1404
1354
So. Cal. Gas
Goleta
Unit #6 Outlet
Run 1
9-24-91
1344
1334
(O2 0-5)
1404
1354
1344
1334
NOX 0-100
NOX = 82.70
NOX = 0
1310
1300
(O2 0-5)
1310
3%/hr
So. Cal Gas Goleta
Unit #6 Outlet
Run 1
9-24-91
1300
(NOX 0-100)
NOX = 40.50
O2 = 1.011
O2 = 0
NOX = 0
O2 = 0
O2 = 1.00
NOX = 0.30
1140
NOX = 40.70
AFR SET Pt. 875
1140
1124
AFR SET Pt. 900
1124
1102
(O2 0-5)
3%/hr
AFR SET Pt. 850
UNIT # 8
1102
(NOX 0-100)
O2 = 1.011
O2 = 0
NOX = 40.50

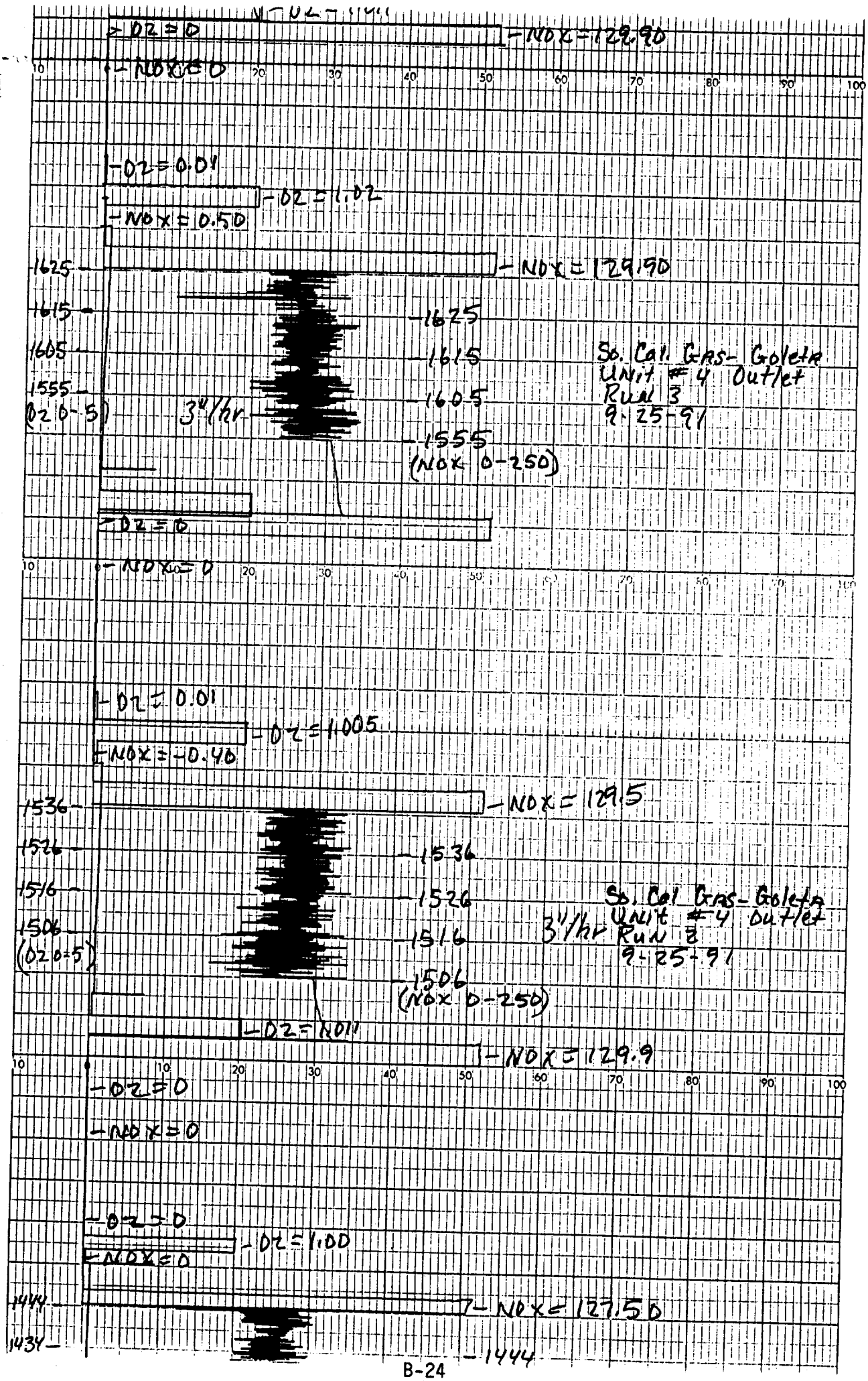

Ext. O2 = 1.05
Ext. O2 = 0.01 QA ✓ LEAK ✓
O2 = 1.04
Ext. NOx = 81.6
O2 = 0.01
NOx = 83.0
1650
NOx = 0.30
1650 AFR SET PT. 920
1635
1635 AFR SET PT. 940
1621
(O2 0-5)
34/hr
1621
(NOx 0-100) Set PT 875 AFR
O2 = 1.011
NOx = 82.70
NOx = 0
O2 = 0
NOx = 0
O2 = 1.0
NOx = 82.00
1546
1536
1526
1516
(O2 0-5)
1546
1536
1526
1516
So. Cal Gas
Goleta
Unit 6 Outlet
Run 3
9-24-91
O2 = 1.011
(NOx 0-100)
NOx = 82.70
O2 = 0
NOx = 0
O2 = 0
NOx = 0.20
O2 = 1.02
NOx = 82.50
1455
1445
1435
1425
34/hr
1455
1445
1435
So. Cal Gas
Goleta
Unit 6 Outlet
Run 2

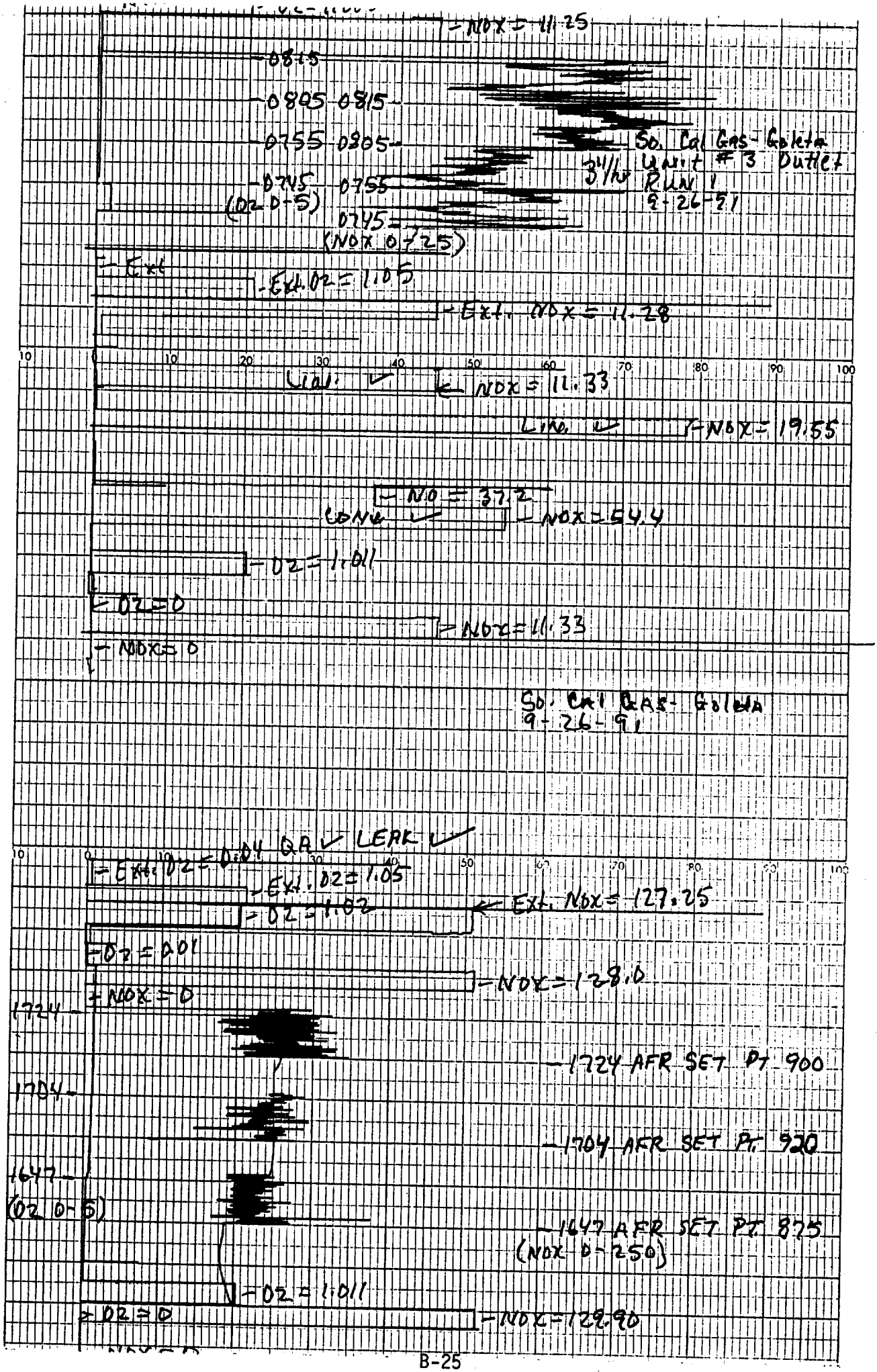

NOX = 0
O2 = 0
O2 = 1.005
NOX = 0.50
1057
NOX = 127.50
1047
1057
1037
1047
1027
1037
(O2 0-5)
1027
(NOX 0-250)
O2 = 1.011
NOX = 129.90
O2 = 0
NOX = 0
10
20
30
40
50
60
70
80
90
100
So. Cal Gas - Goleta
3"/hr Unit # 2 Outlet
Run 2
9-25-91

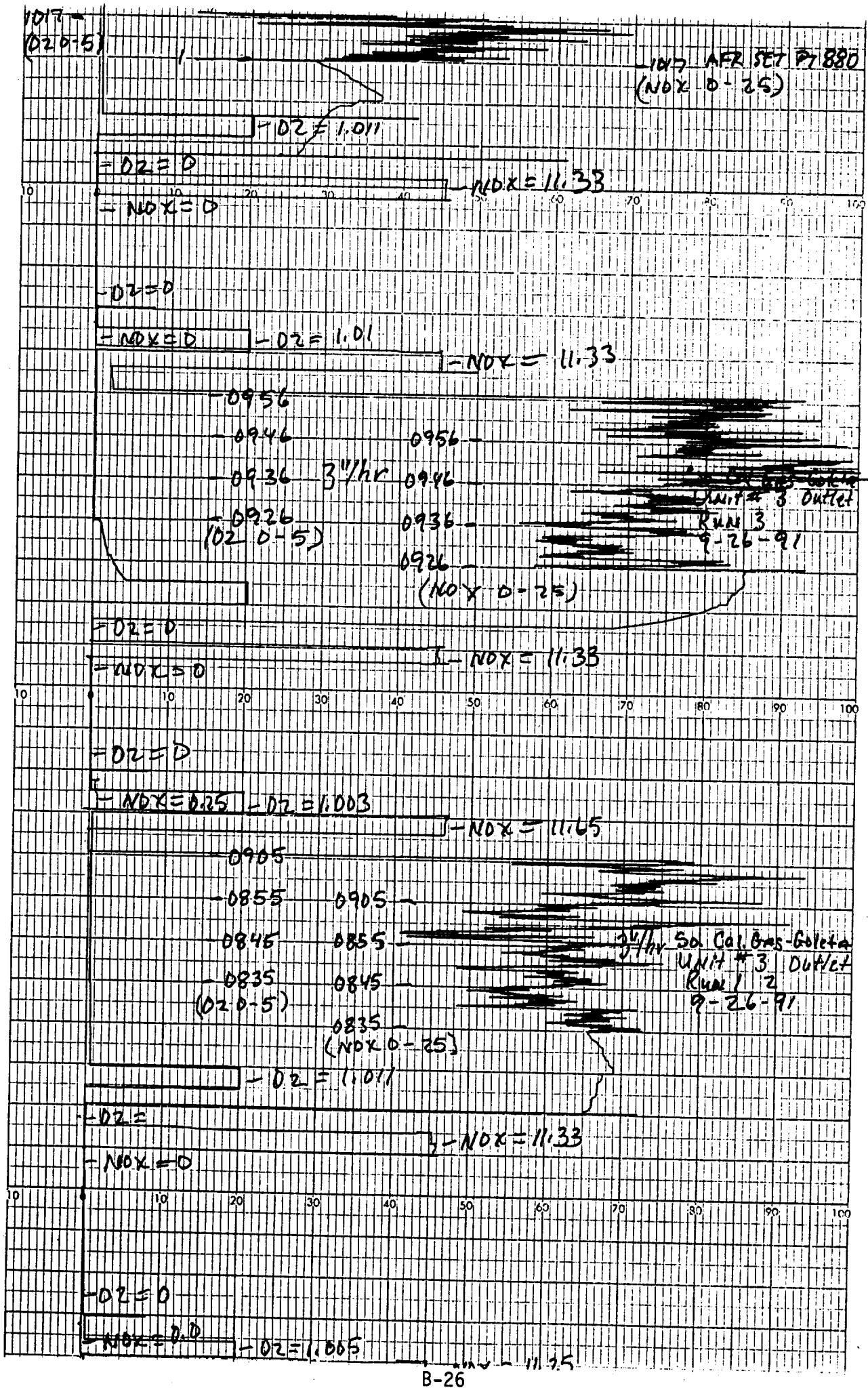

O2 = 0
O2 = 1.00
NOX = -0.75
1003
NOX = 127.8
0953
1003
0943
0953
0933
0943
(O2 0-5)
0933
(NOX 0-250)
O2 = 1.011
O2 = 0
NOX = 129.9
NOX = 0
10
20
30
40
50
60
70
80
90
100
So. Cal Gas - Goleta
Unit # 2 Outlet
3"/hr Run 1
9-25-91

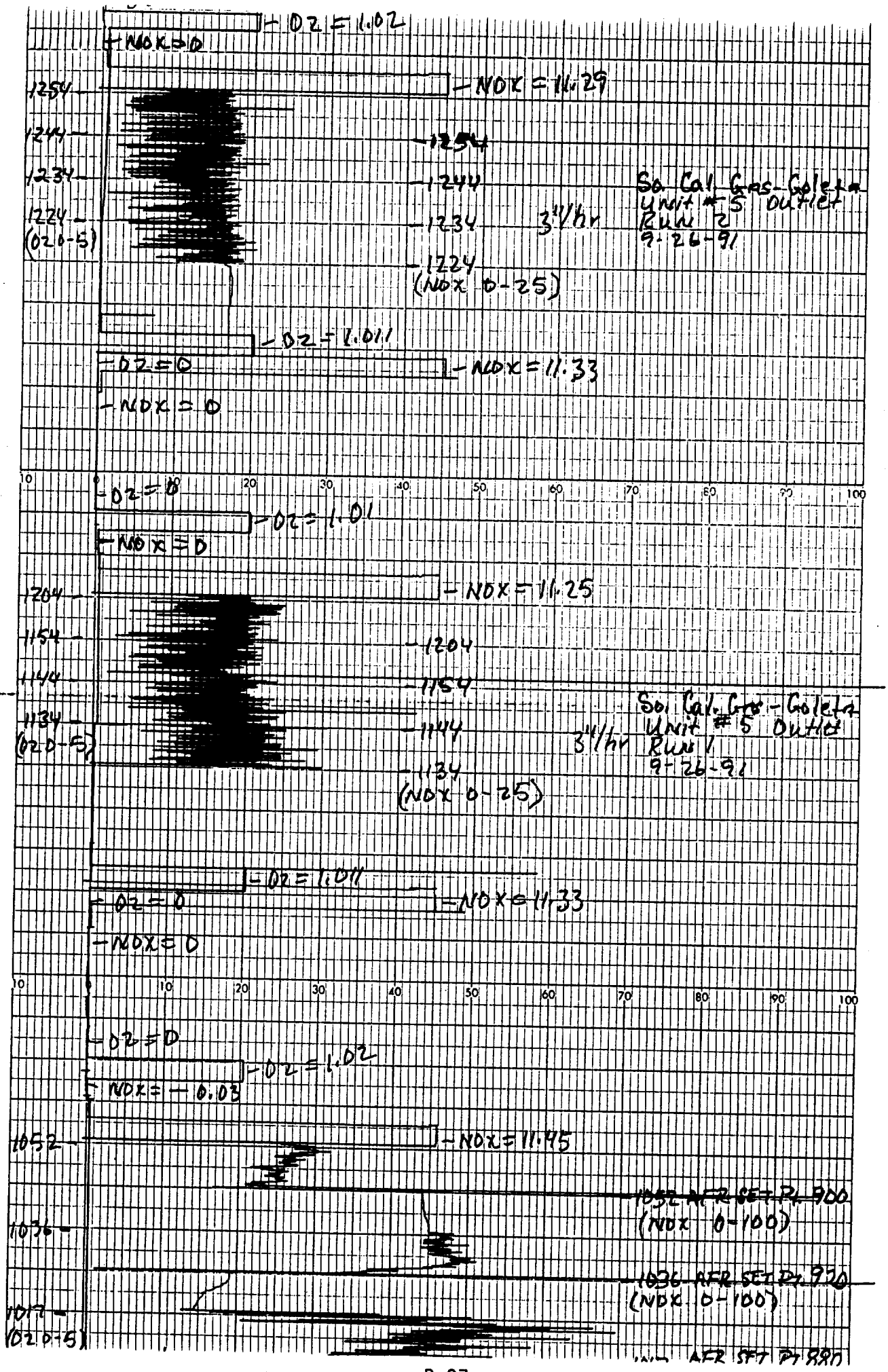

Ext. O2 = 1.05
Ext. O2 = 0.02
Ext. NOX = 40.3
NO = 37.8
CONU.
NOX = 55.0
O2 = 1.011
NOX = 40.5
O2 = 0
NOX = 0
So. Cal Gas - Goleta
9-25-91

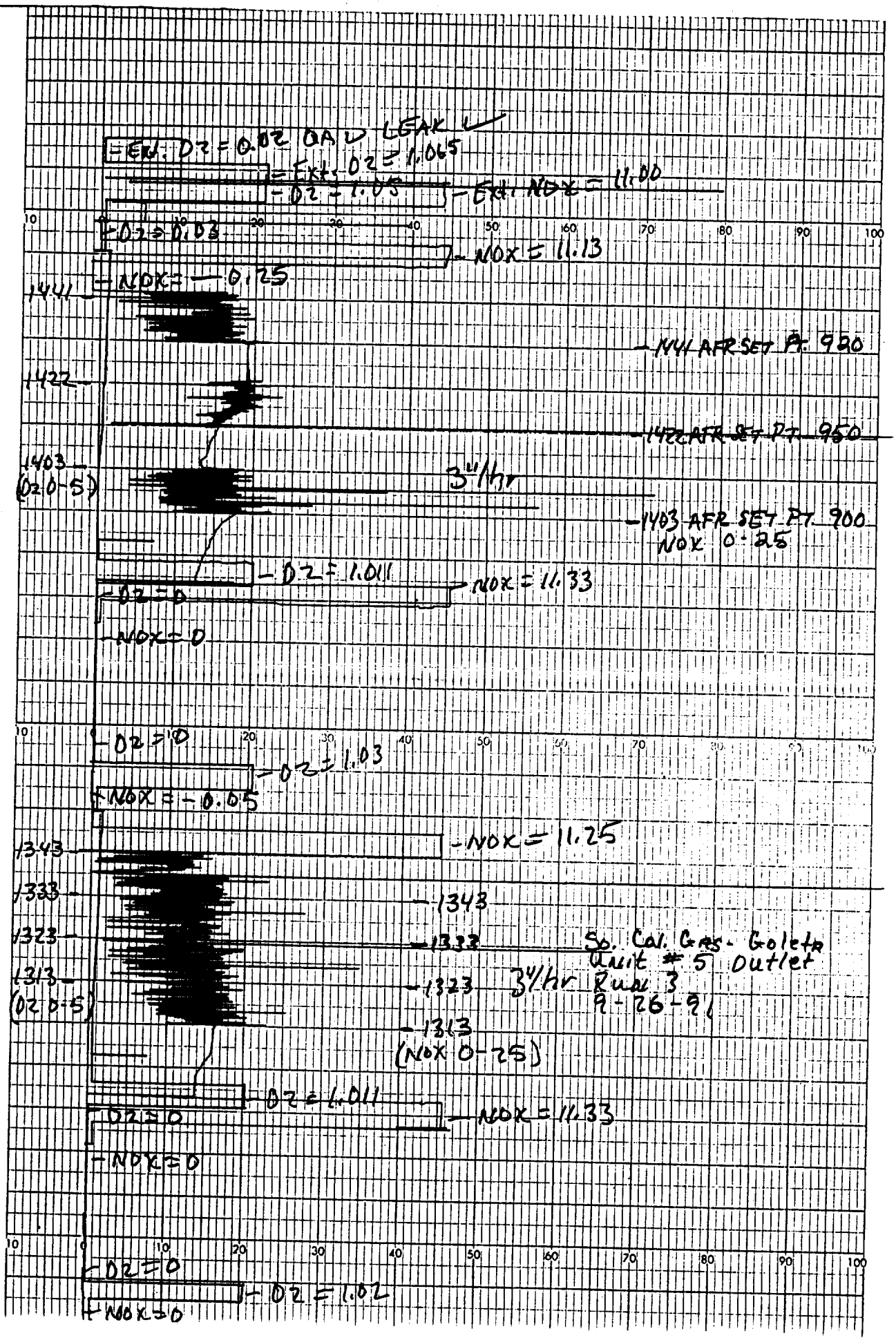

So. Cal. Gas - Goleta
Unit # 4 Outlet
Run 1
9-25-91
3%/hr
1444
1434
1424
1414
(O2 0-5)
(NOx 0-250)
NOx = 127.50
O2 = 1.01
NOx = 129.90
O2 = 0
NOx = 0
O2 = 1.01
NOx = -0.50
1326
NOx = 130.0
1326 AFR SET PT. 920
1307
1307 AFR SET PT. 950
1230
(O2 0-5)
(NOx 0-250)
O2 = 1.01
NOx = 129.9
O2 = 1.15
NOx = -0.50
1146
1136
1126
1116
(O2 0-5)
(NOx 0-250)
NOx = 129.50
So. Cal. Gas - Goleta
Unit # 2 Outlet
3%/hr Run 3
9-25-91
O2 = 1.011
NOx = 129.90
O2 = 0
NOx = 0

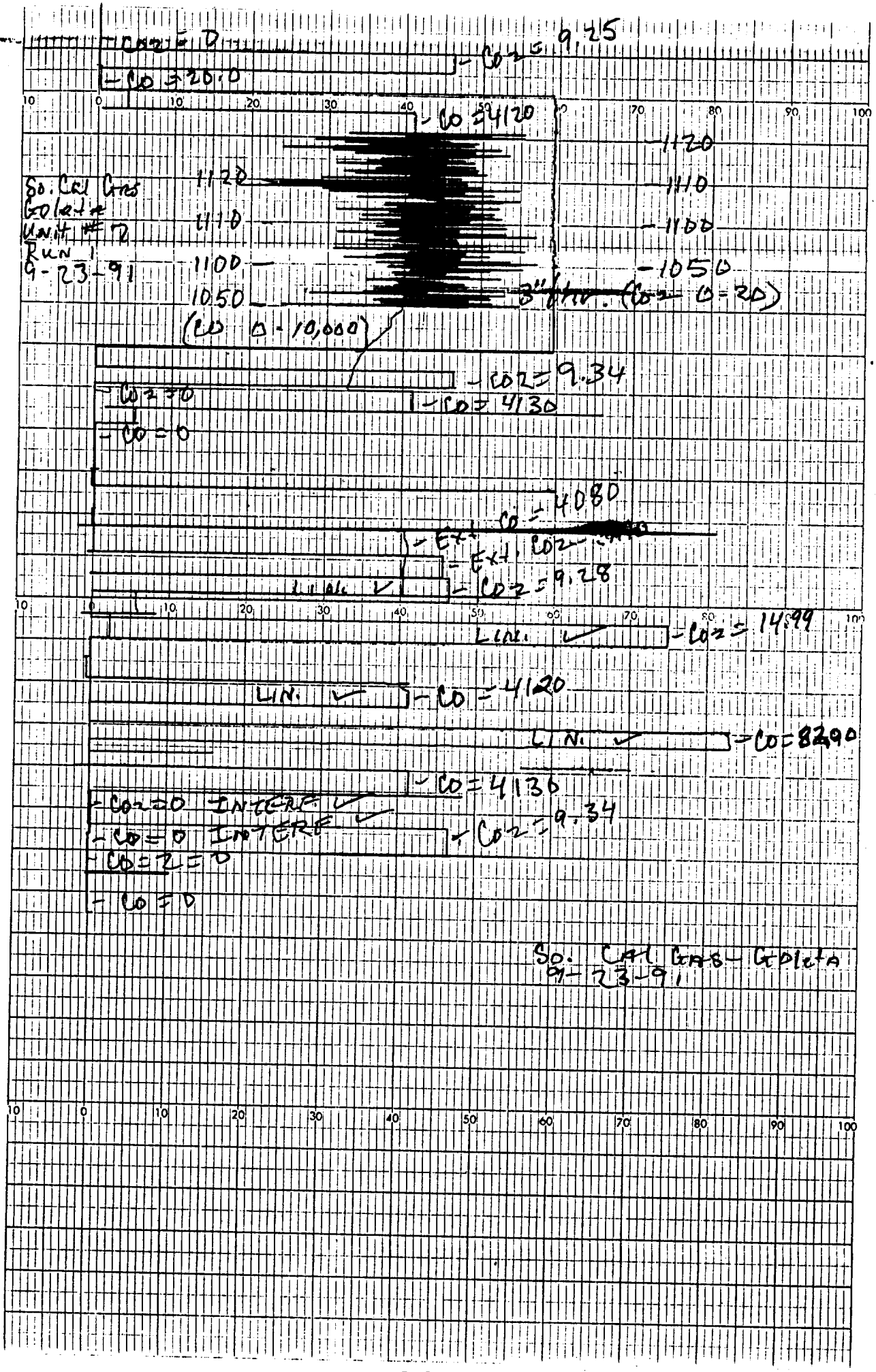

O2 = 0
NOX = 129.90
NOX = 0
O2 = 0.01
O2 = 1.02
NOX = 0.50
NOX = 129.90
1625
1615
1605
1555
(O2 0-5)
3"/hr
1625
1615
1605
1555
(NOX 0-250)
So. Cal. Gas- Goleta
Unit #4 Outlet
Run 3
9-25-91
O2 = 0
NOX = 0
O2 = 0.01
O2 = 1.005
NOX = -0.40
NOX = 129.5
1536
1526
1516
1506
(O2 0-5)
1536
1526
1516
1506
(NOX 0-250)
So. Cal Gas- Goleta
Unit #4 Outlet
3"/hr Run 8
9-25-91
O2 = 1.011
NOX = 129.9
O2 = 0
NOX = 0
O2 = 0
O2 = 1.00
NOX = 0
NOX = 127.50
1444
1434
1444
CHART NO. 41044
(1527)
Charts-Inc


NOX = 11.25
0815
0805 0815
0755 0805
So. Cal Gas - Goleta
Unit # 3 Outlet
3"/hr
RUN 1
9-26-91
0745 0755
(O2 0-5)
0745
(NOX 0-25)
Ext
Ext. O2 = 1.05
Ext. NOX = 11.28
10 20 30 40 50 60 70 80 90 100
Lin. ✓
NOX = 11.33
Lin. ✓
NOX = 19.55
NO = 37.2
Lin. ✓
NOX = 54.4
O2 = 1.011
O2 = 0
NOX = 11.33
NOX = 0
So. Cal Gas - Goleta
9-26-91
Ext. O2 = 0.04 QA ✓ LEAK ✓
Ext. O2 = 1.05
O2 = 1.02
Ext. NOX = 127.25
O2 = 0.01
NOX = 128.0
NOX = 0
1724
1724 AFR SET PT 900
1704
1704 AFR SET PT 920
1647
(O2 0-5)
1647 AFR SET PT 875
(NOX 0-250)
O2 = 1.011
O2 = 0
NOX = 129.90


1017 (O2 0-5)
1017 AFR SET P7880 (NOX 0-25)
O2 = 1.011
O2 = 0
NOX = 11.33
NOX = 0
O2 = 0
NOX = 0
O2 = 1.01
NOX = 11.33
0956
0946
0936
0926
(O2 0-5)
3"/hr
0956
0946
0936
0926
(NOX 0-25)
Unit # 3 Outlet
Run 3
9-26-91
O2 = 0
NOX = 0
NOX = 11.33
O2 = 0
NOX = 0.25
O2 = 1.003
NOX = 11.65
0905
0855
0845
0835
(O2 0-5)
0905
0855
0845
0835
(NOX 0-25)
3"/hr
So. Cal. Gas-Goleta
Unit # 3 Outlet
Run 1 2
9-26-91
O2 = 1.011
O2 =
NOX = 11.33
NOX = 0
O2 = 0
NOX = 0.0
O2 = 1.005
NOX = 11.25


O2 = 1.02
NOX = 0
NOX = 11.29
1254
1244
1234
1224
(020-5)
1254
1244
1234
1224
(NOX 0-25)
So. Cal. Gas - Goleta
Unit #5 Outlet
Run 2
9-26-91
3"/hr
O2 = 1.011
O2 = 0
NOX = 11.33
NOX = 0
10
20
30
40
50
60
70
80
90
100
O2 = 0
O2 = 1.01
NOX = 0
NOX = 11.25
1204
1154
1144
1134
(020-5)
1204
1154
1144
1134
(NOX 0-25)
So. Cal. Gas - Goleta
Unit #5 Outlet
Run 1
9-26-91
3"/hr
O2 = 1.011
O2 = 0
NOX = 11.33
NOX = 0
10
20
30
40
50
60
70
80
90
100
O2 = 0
O2 = 1.02
NOX = -0.03
1052
NOX = 11.45
1052 AFR SET PT 900
(NOX 0-100)
1036
1036 AFR SET PT 950
(NOX 0-100)
1017
(020-5)
AFR SET PT 880
CHART NO. 41044
Charts-Inc
(1537)
CHART NO. 41044


EXT. O2 = 0.02 GAS LEAK
EXT. O2 = 1.065
O2 = 1.05
EXT. NOX = 11.00
O2 = 0.03
NOX = 11.13
NOX = -0.25
1441
1441 AFR SET PT. 920
1422
1422 AFR SET PT. 950
1403
(O2 0-5)
3"/hr
1403 AFR SET PT. 900
NOX 0-25
O2 = 1.011
NOX = 11.33
O2 = 0
NOX = 0
O2 = 1.03
NOX = -0.05
NOX = 11.25
1343
1333
1323
1313
(O2 0-5)
1343
1333
1323
1313
(NOX 0-25)
So. Cal. Gas - Goleta
Unit # 5 Outlet
3"/hr Run 3
9-26-91
O2 = 1.011
NOX = 11.33
O2 = 0
NOX = 0
O2 = 0
O2 = 1.02
NOX = 0
CHART NO. 41404
Charts-Inc
(1527)


CO2 = 0
CO2 = 9.25
CO = 20.0
CO = 4120
1120
1110
1100
1050
So. Cal Gas
Goleta
Unit #2
Run 1
9-23-91
3" Div. (CO2 = 0-20)
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO = 4080
Ext. CO2
Ext. CO2 = 9.28
Lin. ✓
CO2 = 14.99
Lin. ✓
CO = 4120
Lin. ✓
CO = 8290
CO = 4130
CO2 = 0 Interf. ✓
CO = 0 Interf. ✓
CO2 = 9.34
CO = 2 = 0
CO = 0
So. Cal Gas - Goleta
9-23-91
CHART NO. 414044
Charts-Inc
(1527)

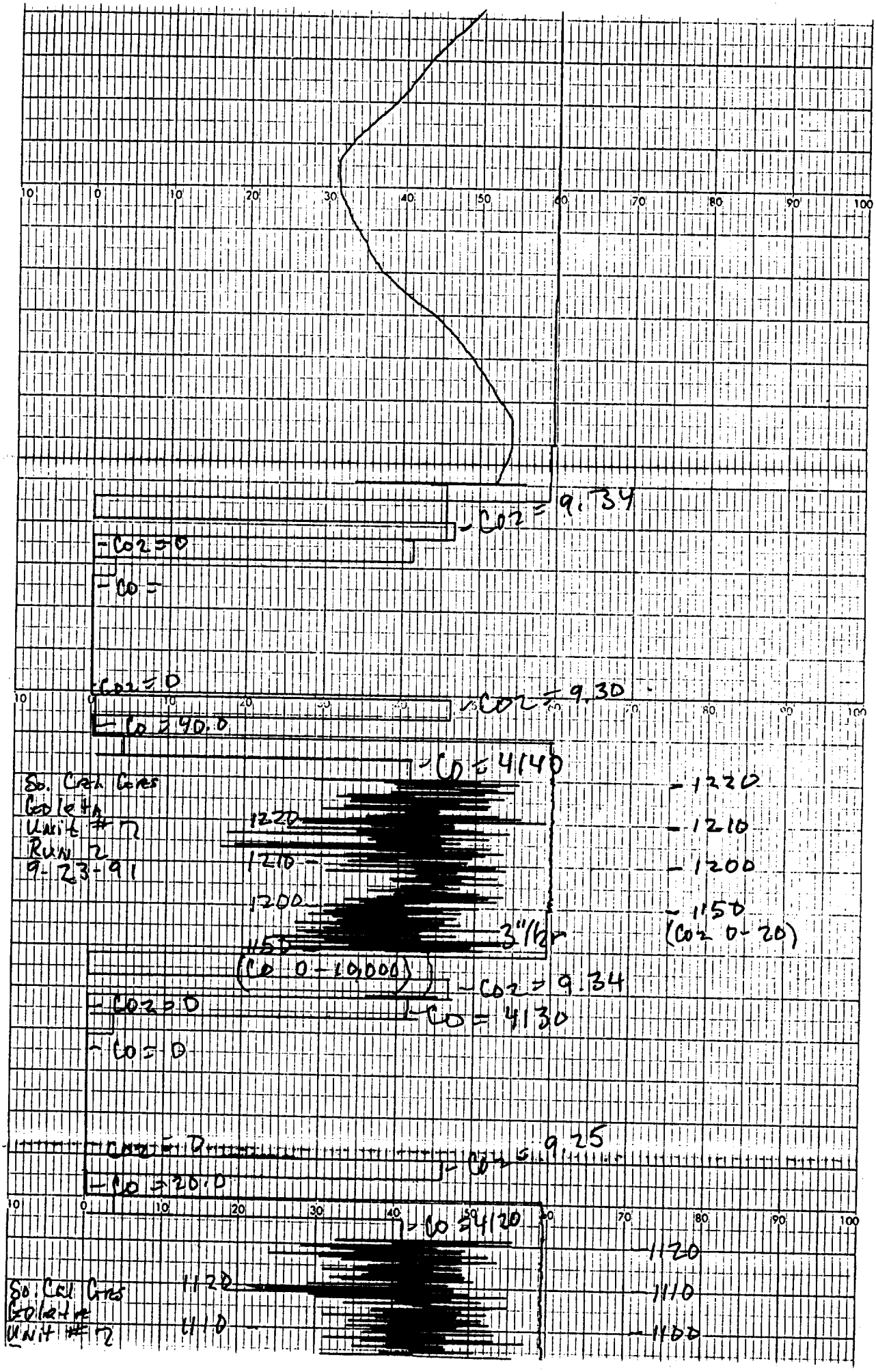
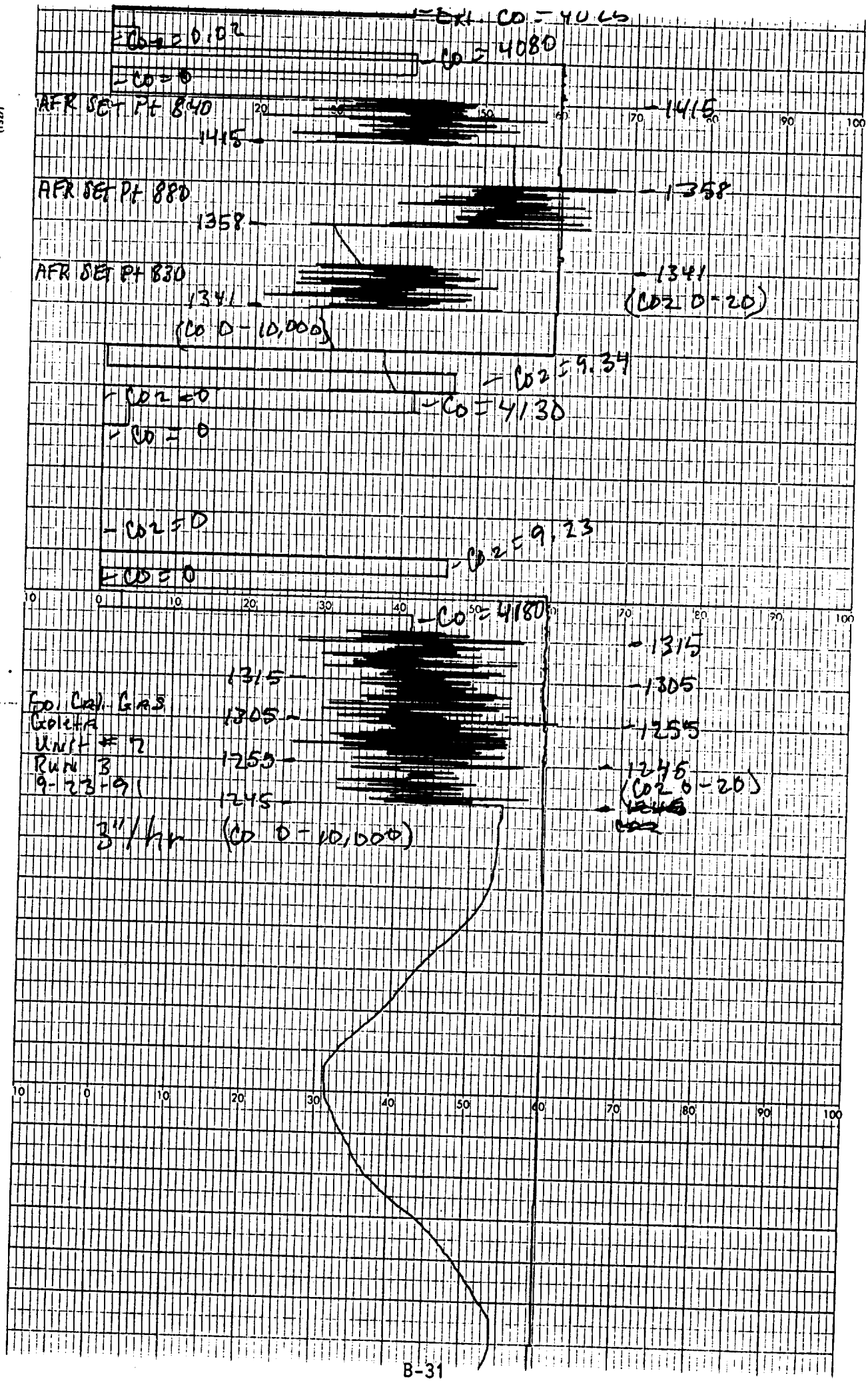
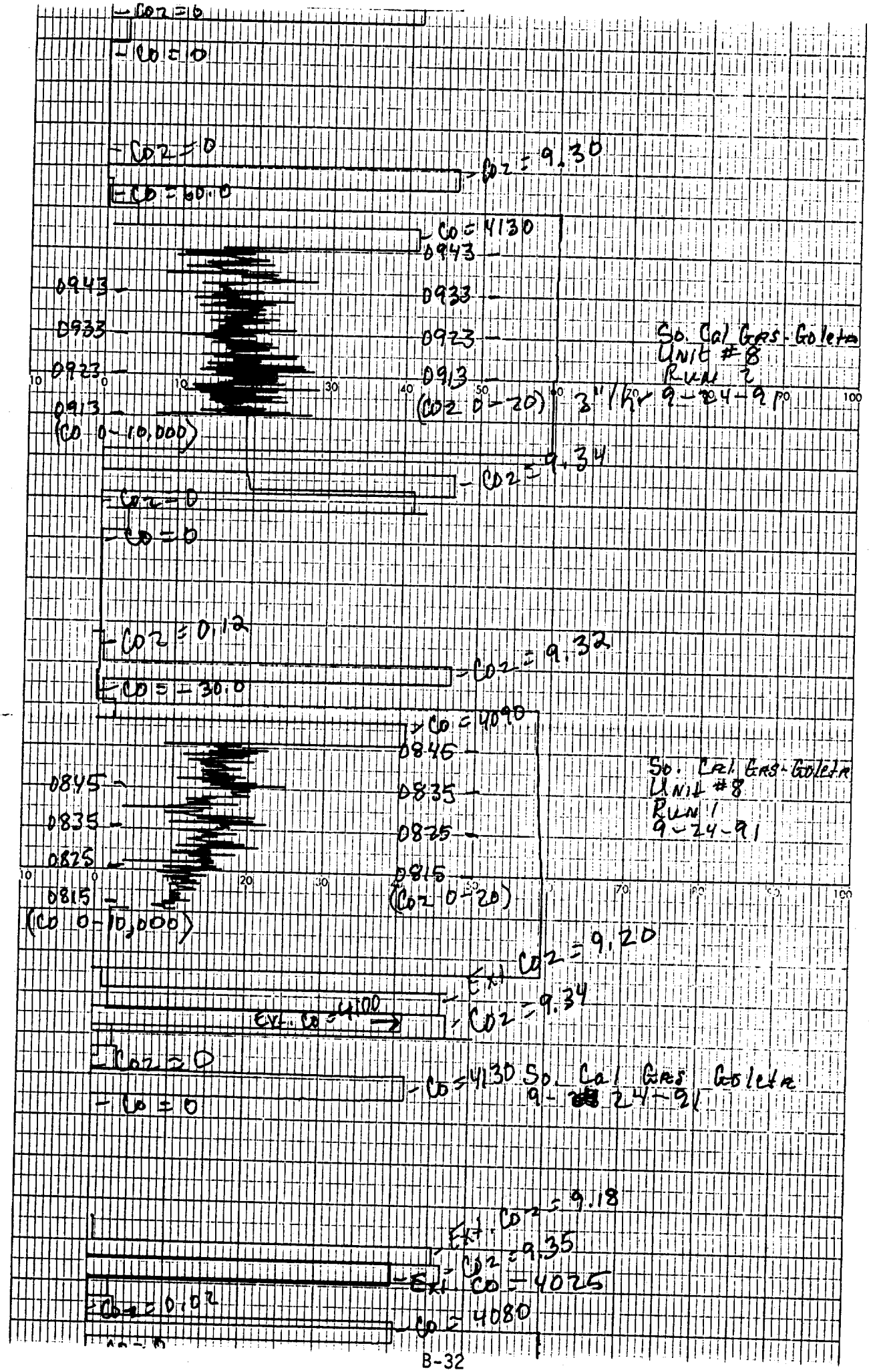
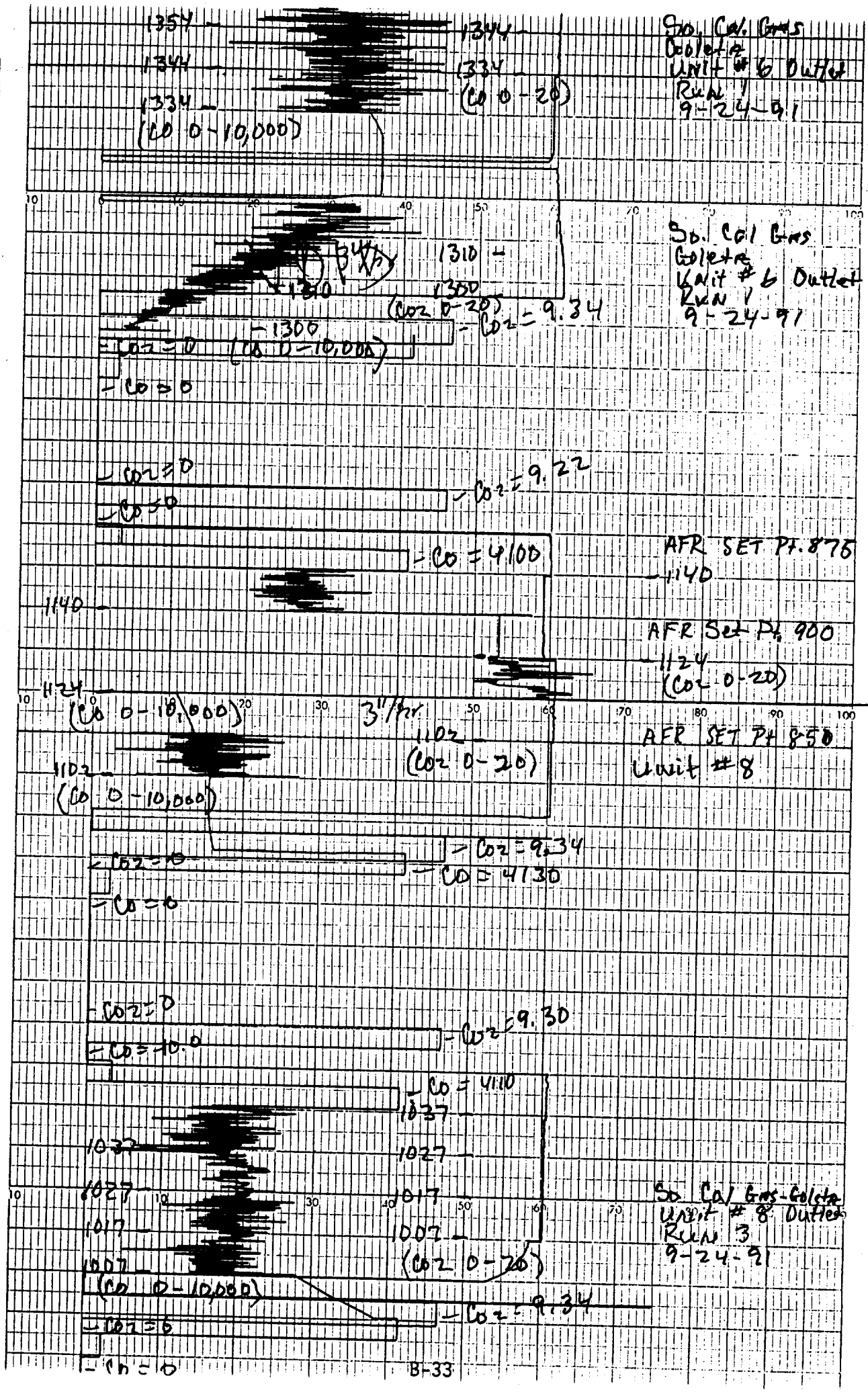
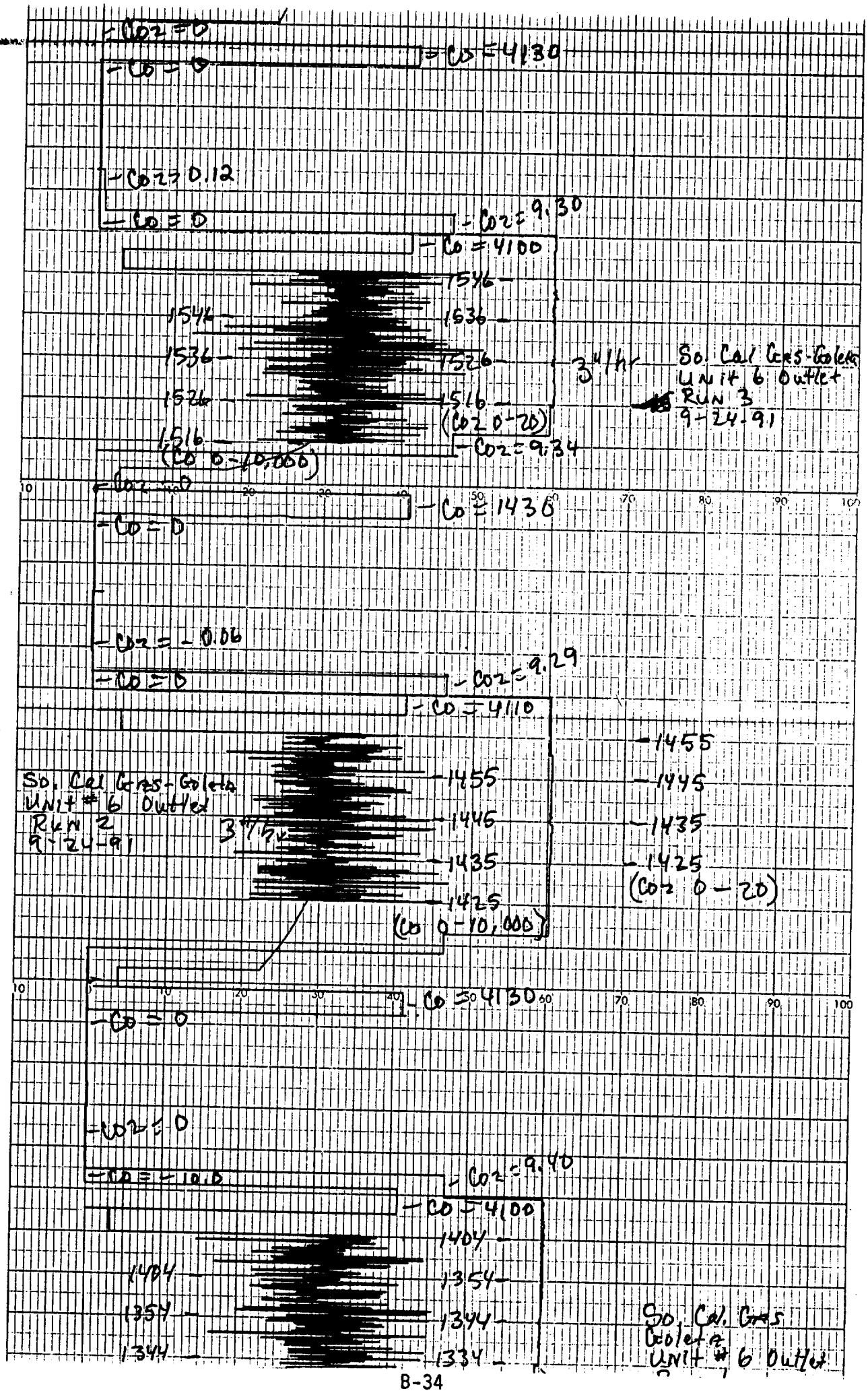


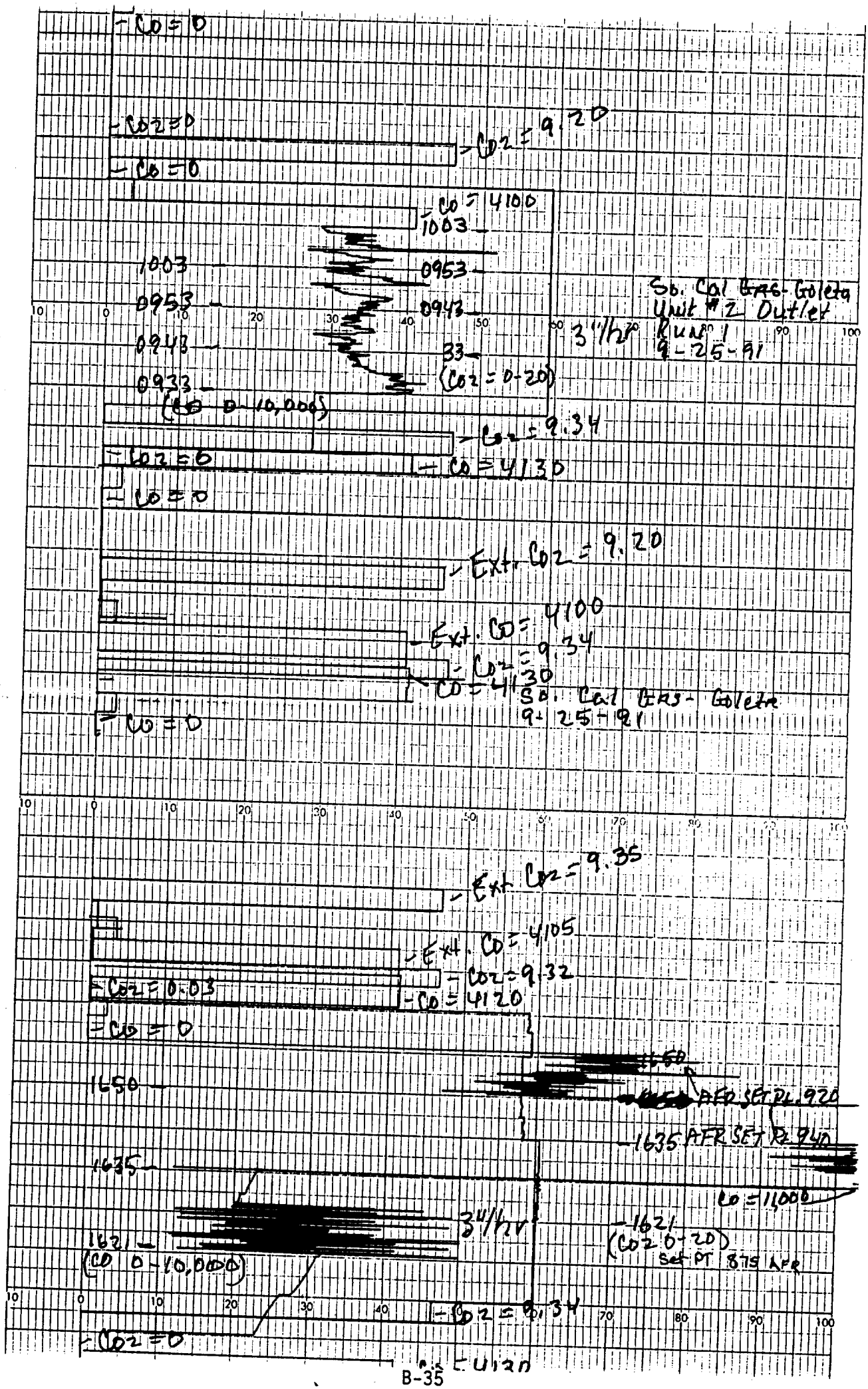
CHART NO. 414044
Charts-Inc
(1527)
CO2 = 9.34
CO2 = 0
CO = 0
CO2 = 0
CO2 = 9.30
CO = 40.0
CO = 4140
So. Cal. Gas
Goleta
Unit #2
Run 2
9-23-91
1220
1210
1200
1150
3"1/2
(CO 0-10,000)
1220
1210
1200
1150
(CO2 0-20)
CO2 = 9.34
CO = 4130
CO2 = 0
CO = 0
CO2 = 0
CO2 = 9.25
CO = 20.0
CO = 4120
So. Cal. Gas
Goleta
Unit #2
1120
1110
1120
1110
1100

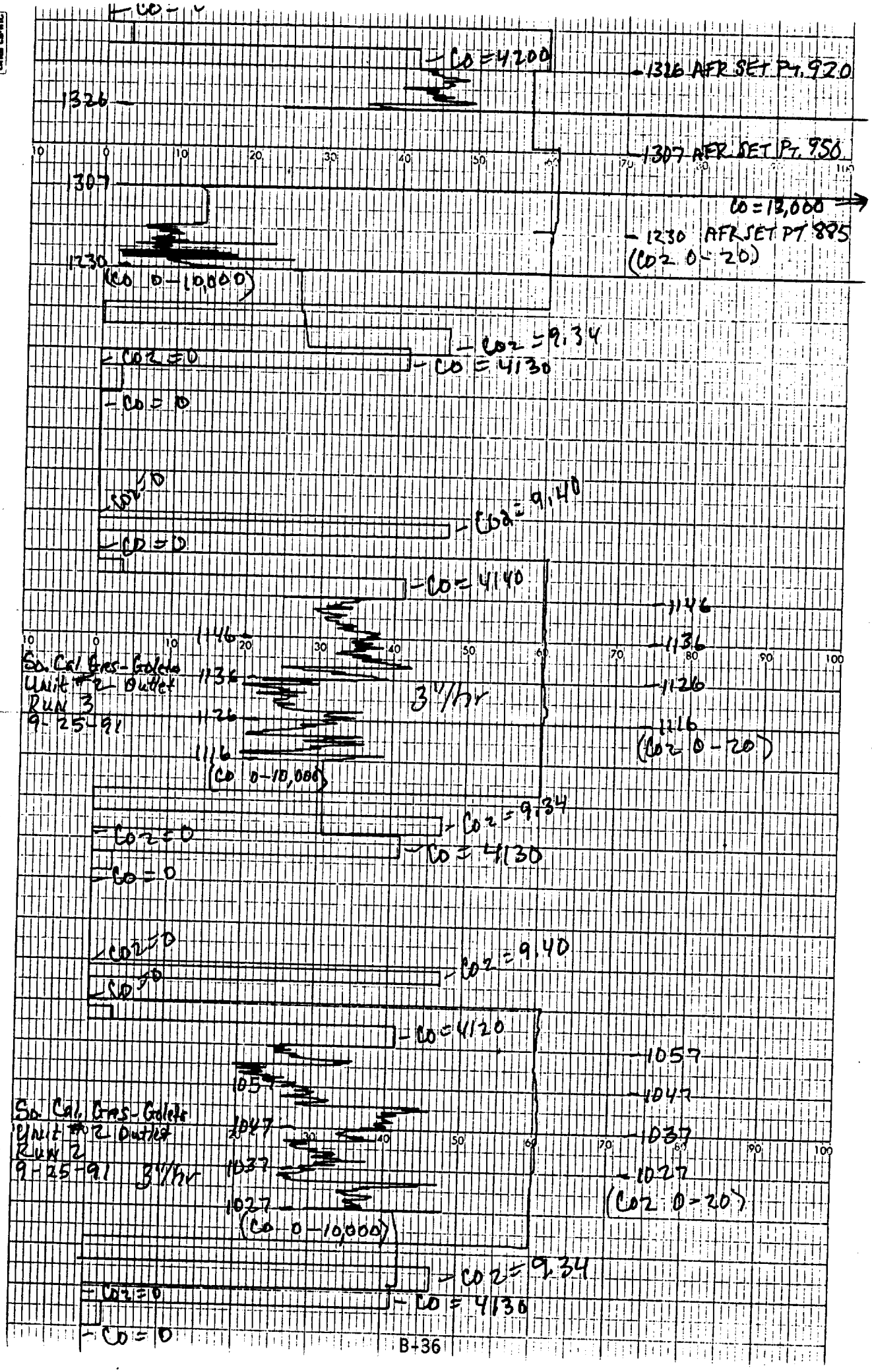

CO2 = 0.02
CO = 0
CO = 4080
AFR SET Pt 840
1415
1415
AFR SET Pt 880
1358
1358
AFR SET Pt 830
1341
1341
(CO2 0-20)
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO2 = 9.23
CO = 0
CO = 4180
1315
1315
1305
1305
1255
1255
1245
1245
(CO2 0-20)
(CO 0-10,000)
Fuel Gas
Goleta
Unit # 7
Run 3
9-23-91
3"/hr
CHART NO. 41044
Charts-Inc
(1527)


CO2 = 0
CO = 10
CO2 = 0
CO2 = 9.30
CO = 60.0
CO = 4130
0943
0933
0923
0913
(CO2 0-20)
(CO 0-10,000)
So. Cal Gas-Goleta
Unit #8
Run 2
9-24-91
CO2 = 9.34
CO2 = 0
CO = 0
CO2 = 0.12
CO2 = 9.32
CO = -30.0
CO = 4090
0845
0835
0825
0815
(CO2 0-20)
(CO 0-10,000)
So. Cal Gas-Goleta
Unit #8
Run 1
9-24-91
Ext. CO2 = 9.20
Ext. CO2 = 9.34
Ext. CO = 4100
CO2 = 0
CO = 4130
CO = 0
So. Cal Gas Goleta
9-24-91
Ext. CO2 = 9.18
Ext. CO2 = 9.35
Ext. CO = 4025
CO2 = 0.02
CO = 4080
CHART NO. 41404
(1527)
Charts-Inc


So. Cal. Gas
Goleta
Unit #6 Outlet
Run 1
9-24-91
1354
1344
1334
(CO 0-20)
1334
(CO 0-10,000)
So. Cal Gas
Goleta
Unit #6 Outlet
Run 1
9-24-91
1310
1300
(CO2 0-20)
CO2 = 9.34
1300
CO2 = 0
(CO 0-10,000)
CO = 0
CO2 = 0
CO2 = 9.22
CO = 0
CO = 4100
AFR SET Pt. 875
1140
1140
AFR Set Pt. 900
1124
(CO2 0-20)
1124
(CO 0-10,000)
3"/hr
1102
(CO2 0-20)
AFR SET Pt 850
Unit #8
1102
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO2 = 9.30
CO = 10.0
CO = 4110
1037
1032
1027
1027
1017
1017
1007
1007
(CO2 0-20)
So. Cal Gas-Goleta
Unit #8 Outlet
Run 3
9-24-91
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 0
Charts Inc
CHART NO. 414044
(1527)


CO2 = 0
CO = 4130
CO = 0
CO2 = 0.12
CO = 0
CO2 = 9.30
CO = 4100
1546
1546
1636
1536
1526
1526
1516
1516
(CO2 0-20)
(CO 0-10,000)
CO2 = 9.34
3 u/hr
So. Cal Gas-Goleta
UNIT 6 Outlet
RUN 3
9-24-91
CO2 = 0
CO = 1430
CO = 0
CO2 = -0.06
CO = 0
CO2 = 9.29
CO = 4110
1455
1445
1435
1425
(CO2 0-20)
So. Cal Gas-Goleta
UNIT # 6 Outlet
Run 2
9-24-91
3 u/hr
1455
1445
1435
1425
(CO 0-10,000)
CO = 4130
CO = 0
CO2 = 0
CO2 = -10.0
CO2 = 9.40
CO = 4100
1404
1354
1344
1334
So. Cal. Gas
Goleta
UNIT # 6 Outlet


CO = 0
CO2 = 0
CO2 = 9.20
CO = 0
CO = 4100
1003
1003
0953
0953
0943
0943
33
0933
(CO2 = 0-20)
(CO 0-10,000)
So. Cal Gas - Goleta
Unit #2 Outlet
3"/hr
Run #1
9-25-91
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
Ext. CO2 = 9.20
Ext. CO = 4100
CO2 = 9.34
CO = 4130
So. Cal Gas - Goleta
9-25-91
CO = 0
Ext. CO2 = 9.35
Ext. CO = 4105
CO2 = 9.32
CO2 = 0.03
CO = 4120
CO = 0
1650
AFR SET PL. 920
1635 AFR SET PL. 940
1635
CO = 11,000
3"/hr
1621
(CO 0-10,000)
1621
(CO2 0-20)
Set PT 875 AFR
CO2 = 9.34
CO2 = 0
CO = 4120


CO = 4200
1326 AFR SET Pt. 920
1326
1307 AFR SET Pt. 950
1307
CO = 13,000
1230 AFR SET PT 885
(CO2 0-20)
1230
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO2 = 9.40
CO = 0
CO = 4140
1146
1146
1136
So. Cal Gas-Goleta
Unit #2 Outlet
RUN 3
9-25-91
1136
3"/hr
1126
1126
1116
(CO2 0-20)
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO2 = 9.40
CO = 0
CO = 4120
1057
1057
1047
So. Cal. Gas-Goleta
Unit #2 Outlet
RUN 2
9-25-91
3"/hr
1047
1037
1037
1027
(CO2 0-20)
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0

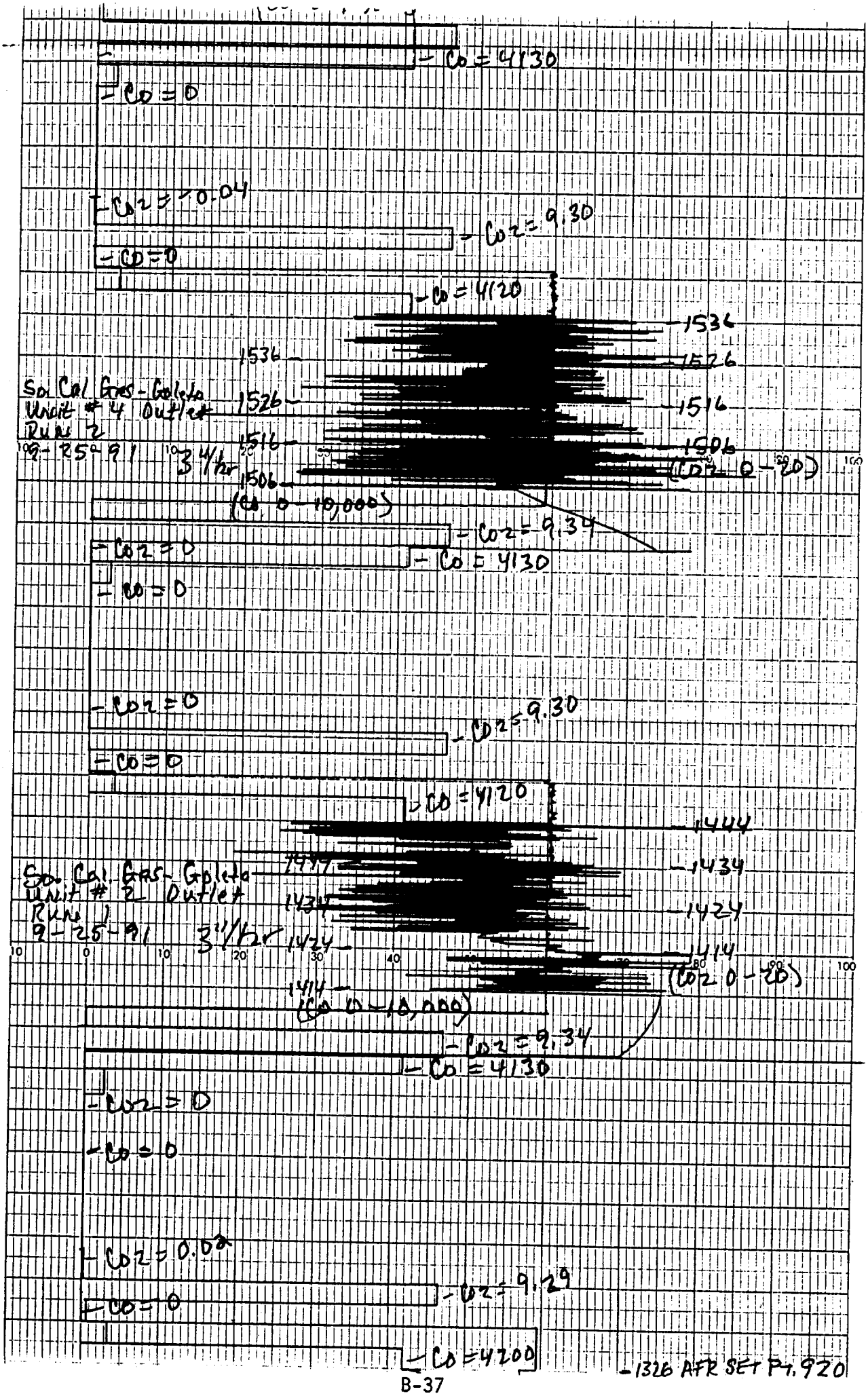
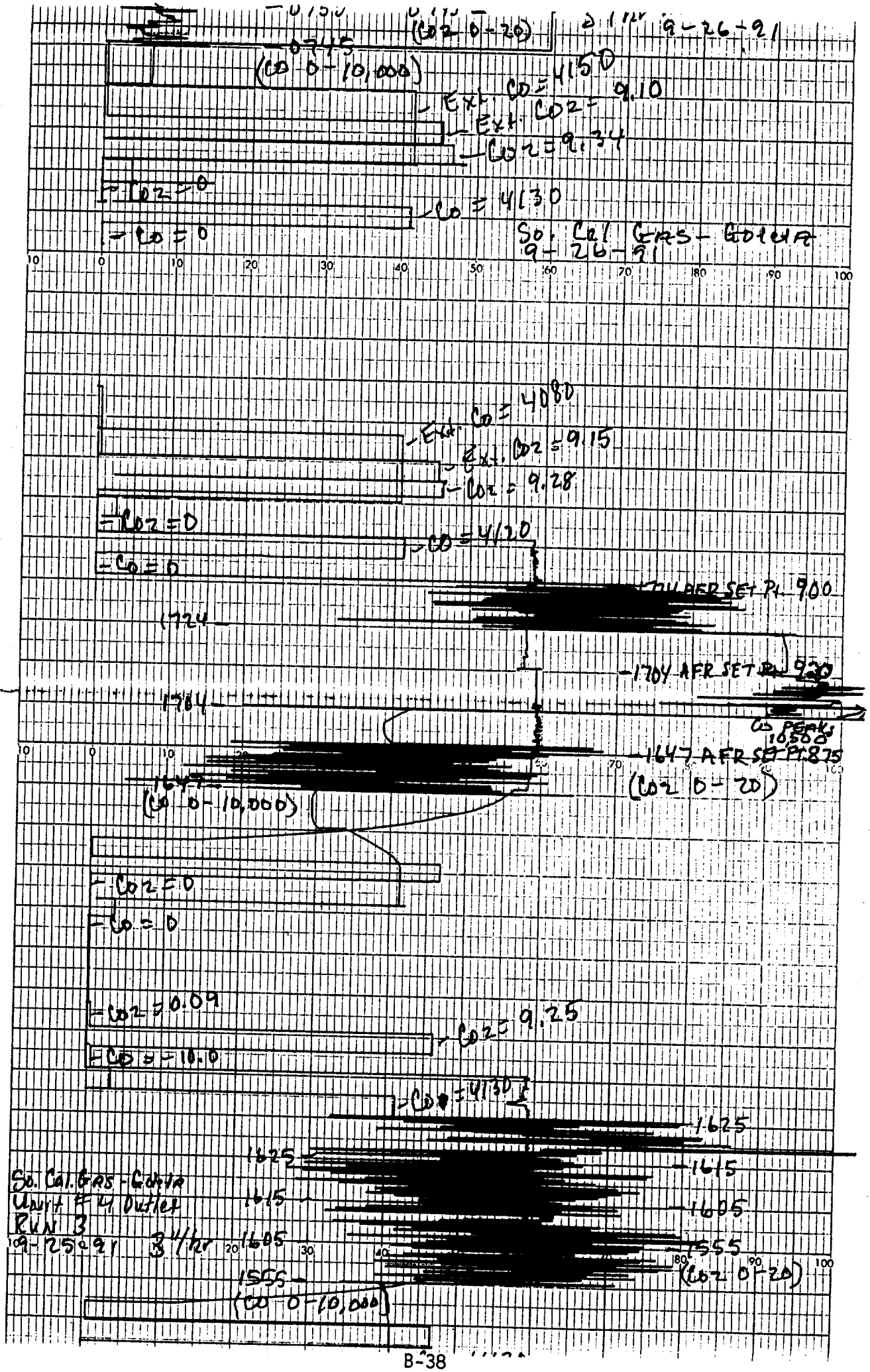
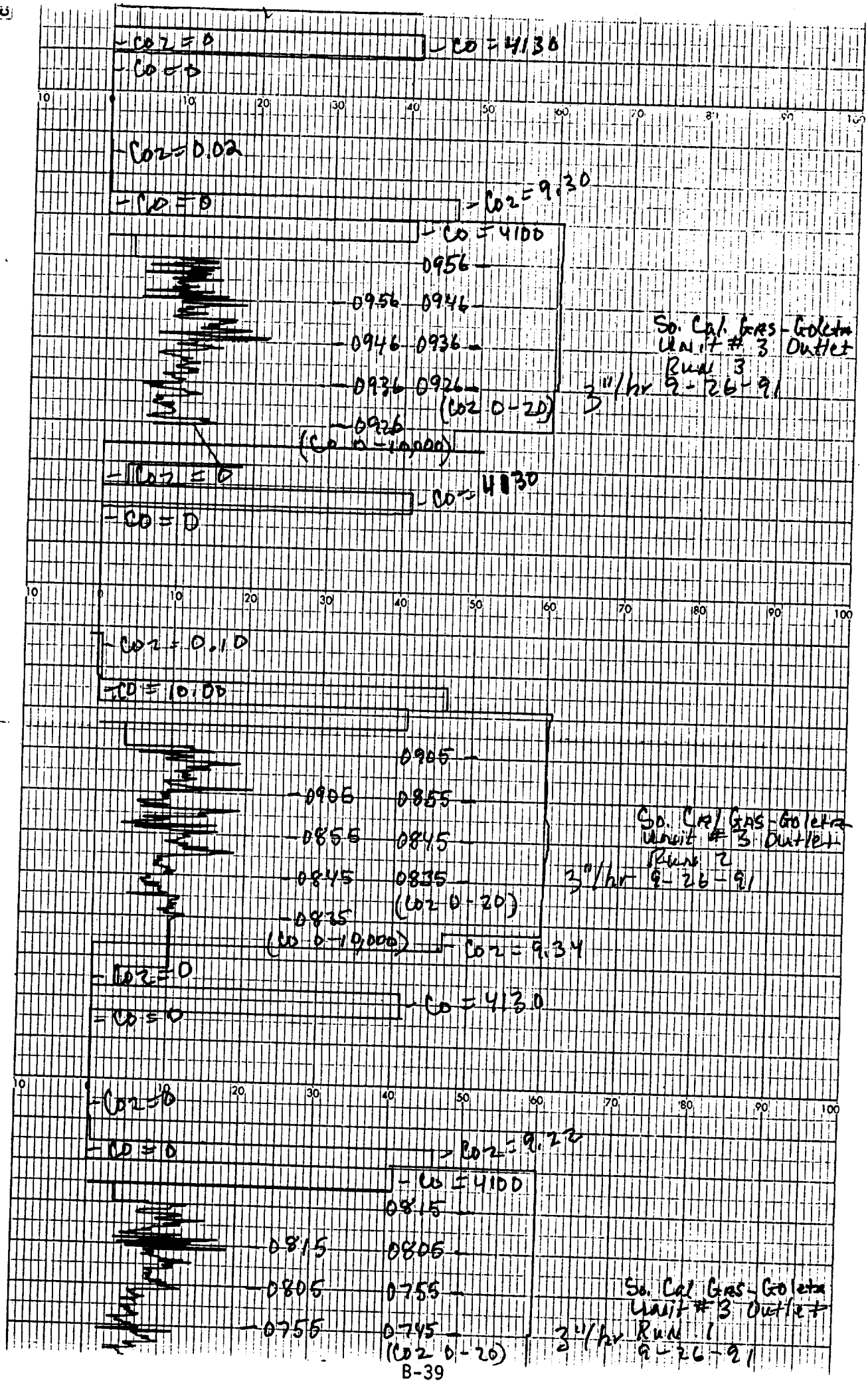


CHART NO. 414044
Charts-Inc
(1527)
CO = 4130
CO = 0
CO2 = 10.04
CO2 = 9.30
CO = 0
CO = 4120
1536
1536
1526
So. Cal Gas - Goleta
Unit # 4 Outlet
Run 2
9-25-91
3 1/hr
1526
1516
1516
1506
1506
(CO2 0 - 20)
(CO 0 - 10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO2 = 9.30
CO = 0
CO = 4120
1444
1434
So. Cal Gas - Goleta
Unit # 2 Outlet
Run 1
9-25-91
3 1/hr
1434
1424
1424
1414
1414
(CO2 0 - 20)
(CO 0 - 10,000)
CO2 = 9.34
CO = 4130
CO2 = 0
CO = 0
CO2 = 0.02
CO2 = 9.29
CO = 0
CO = 4200
1326 AFR SET Pt. 920


(CO2 0-20)
9-26-91
(CO 0-10,000)
Ext. CO = 4150
Ext. CO2 = 9.10
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
So. Cal Gas - Goleta
9-26-91
Ext. CO = 4080
Ext. CO2 = 9.15
CO2 = 9.28
CO2 = 0
CO = 4120
CO = 0
1704 AFR SET PT. 900
1724
1704 AFR SET PT. 920
1984
CO PEAKS 10,500
1647 AFR SET PT. 875
1647
(CO2 0-20)
(CO 0-10,000)
CO2 = 0
CO = 0
CO2 = 0.09
CO2 = 9.25
CO = -10.0
CO = 4130
1625
1625
1615
1615
1605
1605
1555
1555
(CO2 0-20)
(CO 0-10,000)
So. Cal. Gas - Goleta
Unit # 4 Outlet
Run 3
9-25-91 3 1/hr
CHART NO. 414044
Charts Inc
(1327)


CO2 = 0
CO = 4130
CO = 0
CO2 = 0.02
CO = 0
CO2 = 9.30
CO = 4100
0956
0956 0946
0946 0936
0936 0926
(CO2 0-20)
0926
(CO 0-10,000)
So. Cal. Gas - Goleta
Unit # 3 Outlet
Run 3
3"/hr 9-26-91
CO2 = 0
CO = 4130
CO = 0
CO2 = 0.10
CO = 10.00
0905
0905 0855
0855 0845
0845 0835
(CO2 0-20)
0835
(CO 0-10,000)
CO2 = 9.34
So. Cal Gas - Goleta
Unit # 3 Outlet
Run 2
3"/hr 9-26-91
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO = 0
CO2 = 9.22
CO = 4100
0815
0815 0805
0805 0755
0755 0745
(CO2 0-20)
So. Cal Gas - Goleta
Unit # 3 Outlet
Run 1
3"/hr 9-26-91
CHART NO. 414044
Charts-Inc
(1527)

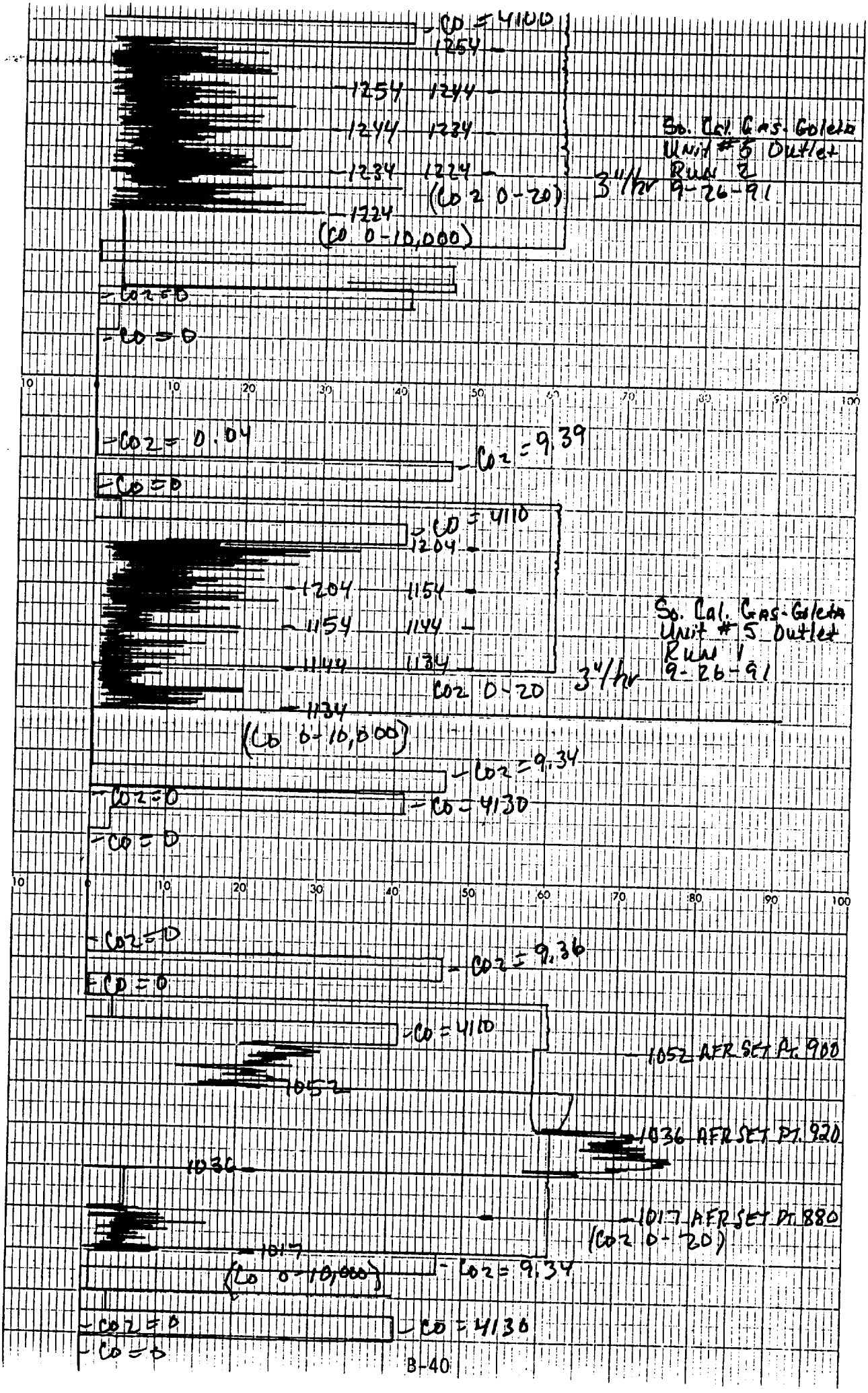
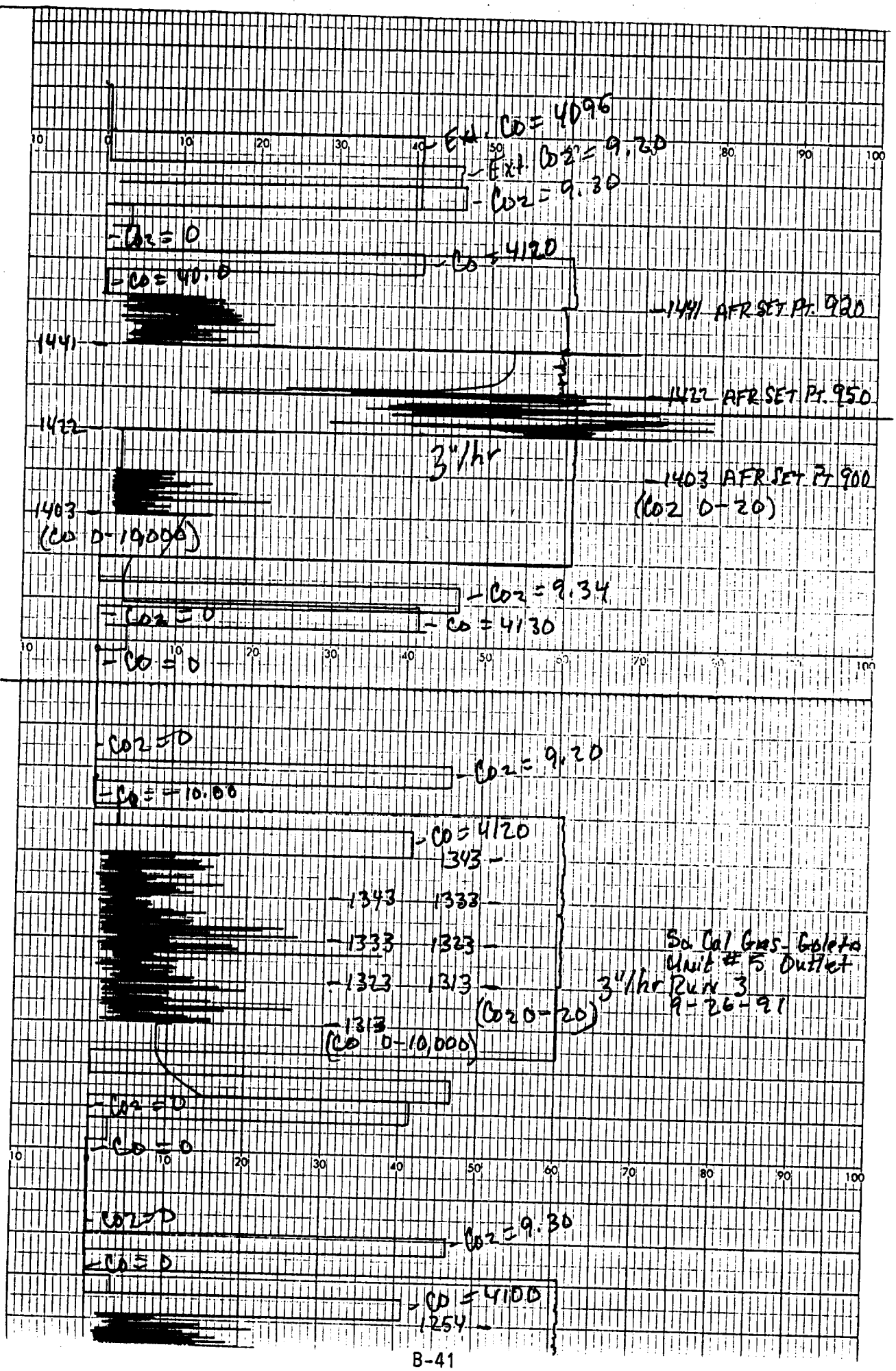


CHART NO. 41044
Charts-Inc
CO = 4100
1254
1254
1244
1244
1234
1234
1224
(CO2 0-20)
1224
(CO 0-10,000)
So. Cal. Gas-Goleta
Unit #5 Outlet
Run 2
3"/hr 9-26-91
CO2 = 0
CO = 0
10 0 10 20 30 40 50 60 70 80 90 100
CO2 = 0.04
CO2 = 9.39
CO = 0
CO = 4110
1204
1204
1154
1154
1144
1144
1134
So. Cal. Gas-Goleta
Unit #5 Outlet
Run 1
9-26-91
CO2 0-20
3"/hr
1134
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
10 0 10 20 30 40 50 60 70 80 90 100
CO2 = 0
CO2 = 9.36
CO = 0
CO = 4110
1052 AFR SET PT. 900
1052
1036 AFR SET PT. 920
1036
1017 AFR SET PT. 880
(CO2 0-20)
1017
(CO 0-10,000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0


Charts-Inc
CHART NO. 414044
(1527)
Ext. CO = 4096
Ext. CO2 = 9.20
CO2 = 9.30
CO2 = 0
CO = 4120
CO = 40.0
1441 AFR SET PT. 920
1441
1422 AFR SET PT. 950
1422
3"/hr
1403 AFR SET PT 900
(CO2 0-20)
1403
(CO 0-10000)
CO2 = 9.34
CO2 = 0
CO = 4130
CO = 0
CO2 = 0
CO2 = 9.20
CO = -10.00
CO = 4120
343
1343
1333
1333
1323
1323
1313
1313
(CO2 0-20)
(CO 0-10,000)
So. Cal Gas - Goleta
Unit # 5 Outlet
3"/hr Run 3
9-26-91
CO2 = 0
CO = 0
CO2 = 0
CO2 = 9.30
CO = 0
CO = 4100
1254

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 OUT

Date : 9/23/91

Test Run : 1

Test Condition: 650 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.07	0.07	11.90	11.91	4300.00	4301.41			197.50	197.99
2	0.07	0.07	11.85	11.89	4300.00	4304.22			197.50	198.98
3	0.08	0.08	11.85	11.92	4100.00	4106.14			201.25	203.78
4	0.08	0.07	11.85	11.95	4150.00	4158.93			203.75	207.36
MEAN		0.07		11.92		4217.68				202.03

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.01	0.00	20.00		0.50
Span Check	1.04	9.25	4120.00		127.50
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	0.00593	-0.00241	-0.00182		-0.00558
Zcf	0.00125	0.00000	5.00000		0.12500

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 OUT

Date : 9/23/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.06	0.06	12.00	12.01	3800.00	3798.45			202.50	202.88
2	0.06	0.05	11.99	12.01	4300.00	4296.70			205.00	206.17
3	0.06	0.05	12.00	12.03	4050.00	4043.36			206.25	208.22
4	0.06	0.04	11.99	12.04	4250.00	4241.96			208.75	211.55
MEAN		0.05		12.02		4095.12				207.20

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.02	0.00	40.00		0.00
Span Check	1.02	9.30	4140.00		202.00
Cal. Gas	1.01	9.34	4130.00		205.10
Scf	-0.00272	-0.00107	-0.00182		-0.00378
Zcf	0.00500	0.00000	10.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 OUT

Date : 9/23/91

Test Run : 3

Test Condition: 650 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.02	0.02	11.95	11.97	4250.00	4243.58			210.00	209.85
2	0.02	0.02	11.88	11.93	4300.00	4280.57			215.00	214.55
3	0.02	0.02	11.90	11.99	4400.00	4366.96			223.75	222.97
4	0.02	0.02	11.92	12.04	4100.00	4057.02			232.50	231.36
MEAN		0.02		11.98		4237.03				219.68

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	1.01	9.23	4180.00		206.25
Cal. Gas	1.01	9.34	4130.00		205.10
Scf	-0.00148	-0.00294	0.00303		0.00140
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #7 OUT

Date : 9/23/91

Test Run : 4

Test Condition: AFR

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.03	0.03	12.08	12.08	3750.00	3757.58			215.00	215.19
2	0.03	0.03	12.00	12.00	5300.00	5332.28			222.00	222.60
3	0.03	0.03	12.04	12.03	4150.00	4192.30			225.00	226.01
MEAN		0.03		12.04		4427.38				221.27

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.02	0.00		0.00
Span Check	1.01	9.35	4080.00		204.00
Cal. Gas	1.01	9.34	4130.00		205.10
Scf	-0.00033	-0.00036	-0.00404		-0.00179
Zcf	0.00000	0.00667	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 OUT

Date : 9/24/91

Test Run : 1

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.01	0.01	11.80	11.81	1200.00	1204.11			28.00	
2	0.01	0.01	11.78	11.80	1450.00	1462.58			23.80	
3	0.01	0.01	11.70	11.73	1500.00	1521.05			22.50	
4	0.01	0.01	11.68	11.73	1650.00	1679.81			23.00	
MEAN		0.01		11.77		1466.89				24.33

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.12	-30.00		1.00
Span Check	1.00	9.32	4090.00		41.50
Cal. Gas	1.01	9.34	4130.00		40.50
Scf	-0.00272	-0.00375	-0.00061		
Zcf	0.00000	0.03000	-7.50000		

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 OUT

Date : 9/24/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
Point #	A	B	A	B	A	B	A	B	A	B
1	0.01	0.01	12.00	12.01	1900.00	1895.94			22.30	22.32
2	0.01	0.01	12.00	12.02	1850.00	1837.51			22.50	22.55
3	0.01	0.01	12.00	12.03	1850.00	1829.11			22.90	22.99
4	0.01	0.01	12.08	12.13	1750.00	1719.36			25.00	25.12
MEAN		0.01		12.05		1820.48				23.25

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	60.00		-0.20
Span Check	1.00	9.30	4130.00		40.40
Cal. Gas	1.01	9.34	4130.00		40.50
Scf	-0.00272	-0.00107	-0.00363		0.00062
Zcf	0.00000	0.00000	15.00000		-0.05000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 OUT

Date : 9/24/91

Test Run : 3

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.01	0.01	12.05	12.06	1850.00	1851.81			26.80	26.82
2	0.01	0.01	12.05	12.07	1950.00	1955.53			26.80	26.87
3	0.02	0.02	12.06	12.09	1900.00	1909.14			26.00	26.12
4	0.02	0.02	12.10	12.15	1850.00	1862.70			24.80	24.95
MEAN		0.02		12.09		1894.79				26.19

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	-10.00		0.20
Span Check	1.00	9.30	4110.00		40.10
Cal. Gas	1.01	9.34	4130.00		40.50
Scf	-0.00272	-0.00107	-0.00061		-0.00370
Zcf	0.00000	0.00000	-2.50000		0.05000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #8 OUT

Date : 9/24/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
Point #	A	B	A	B	A	B	A	B	A	B
1	0.02	0.02	12.15	12.18	1550.00	1551.88			24.00	23.96
2	0.02	0.02	11.80	11.88	5700.00	5720.78			22.80	22.68
3	0.02	0.02	12.00	12.13	2650.00	2666.14			23.20	23.00
MEAN		0.02		12.06		3312.93				23.21

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.30
Span Check	1.00	9.22	4100.00		40.70
Cal. Gas	1.01	9.34	4130.00		40.50
Scf	-0.00363	-0.00428	-0.00242		-0.00082
Zcf	0.00000	0.00000	0.00000		0.10000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 OUT

Date : 9/24/91

Test Run : 1

Test Condition: 650 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.01	0.01	12.00	11.99	3250.00	3253.22			82.00	81.86
2	0.01	0.01	12.03	12.00	3200.00	3209.58			81.00	80.59
3	0.02	0.02	12.05	12.00	3200.00	3215.98			80.00	79.31
4	0.02	0.02	12.03	11.96	3150.00	3172.19			79.00	78.03
MEAN		0.02		11.99		3212.74				79.95

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	-10.00		1.30
Span Check	1.01	9.40	4100.00		83.80
Cal. Gas	1.01	9.34	4130.00		82.70
Scf	-0.00025	0.00161	-0.00121		-0.00060
Zcf	0.00000	0.00000	-2.50000		0.32500

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 OUT

Date : 9/24/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point # 1	0.03	0.03	12.12	12.13	3250.00	3251.97			67.50	67.52
2	0.03	0.03	12.10	12.12	3200.00	3205.82			70.00	70.05
3	0.03	0.03	12.10	12.13	3200.00	3209.71			68.00	68.08
4	0.03	0.03	12.05	12.09	3100.00	3113.19			68.00	68.11
MEAN		0.03		12.12		3195.17				68.44

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	-0.06	0.00		0.20
Span Check	1.02	9.29	4110.00		82.50
Cal. Gas	1.01	9.34	4130.00		82.70
Scf	0.00223	0.00027	-0.00121		-0.00121
Zcf	0.00000	-0.01500	0.00000		0.05000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 OUT

Date : 9/24/91

Test Run : 3

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.02	12.00	12.01	3200.00	3202.91			61.00	61.06
2	0.02	0.02	12.00	12.03	3300.00	3309.01			61.00	61.19
3	0.02	0.02	12.00	12.05	3200.00	3214.59			57.00	57.30
4	0.02	0.02	12.00	12.08	3300.00	3321.11			59.00	59.44
MEAN		0.02		12.04		3261.91				59.75

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.12	0.00		0.00
Span Check	1.00	9.30	4100.00		82.00
Cal. Gas	1.01	9.34	4130.00		82.70
Scf	-0.00272	-0.00428	-0.00182		-0.00212
Zcf	0.00000	0.03000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #6 OUT

Date : 9/24/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.02	12.10	12.11	3000.00	3001.21			52.00	
2	0.02	0.01	11.60	11.62	10500.00	10512.73			16.00	
3	0.02	0.01	11.80	11.83	6500.00	6513.14			35.00	
MEAN		0.01		11.85		6675.69			34.33	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.01	0.03	0.00		0.30
Span Check	1.04	9.32	4120.00		83.00
Cal. Gas	1.01	9.34	4130.00		82.70
Scf	0.00626	-0.00178	-0.00081		
Zcf	0.00333	0.01000	0.00000		

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 OUT

Date : 9/25/91

Test Run : 1

Test Condition: 650 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.03	0.03	11.80	11.82	3600.00	3603.27			112.25	112.49
2	0.03	0.03	11.80	11.87	3290.00	3298.99			111.25	111.97
3	0.03	0.03	11.80	11.91	3375.00	3390.39			111.25	112.45
4	0.03	0.03	11.80	11.96	3400.00	3421.75			111.50	113.19
MEAN		0.03		11.89		3428.60				112.52

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		-0.75
Span Check	1.00	9.20	4100.00		127.80
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00272	-0.00375	-0.00182		-0.00260
Zcf	0.00000	0.00000	0.00000		-0.18750

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 OUT

Date : 9/25/91

Test Run : 2

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.02	12.10	12.09	3650.00	3651.11			121.25	121.53
2	0.02	0.02	12.15	12.12	3200.00	3202.91			115.00	115.78
3	0.02	0.02	12.05	12.00	2700.00	2704.09			116.00	117.32
4	0.02	0.02	12.10	12.03	2725.00	2730.79			113.75	115.57
MEAN		0.02		12.06		3072.22				117.55

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.50
Span Check	1.01	9.40	4120.00		127.50
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00148	0.00161	-0.00061		-0.00558
Zcf	0.00000	0.00000	0.00000		0.12500

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings
Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings
Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]
B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 OUT

Date : 9/25/91

Test Run : 3

Test Condition: 650 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.02	0.02	12.15	12.14	2950.00	2949.11			127.50	127.55
2	0.02	0.02	12.08	12.05	2650.00	2647.60			128.00	128.15
3	0.02	0.02	12.08	12.03	3600.00	3594.56			131.75	132.00
4	0.02	0.02	12.08	12.01	3390.00	3382.83			132.50	132.85
MEAN	0.02		12.06		3143.52				130.14	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		-0.50
Span Check	1.15	9.40	4140.00		129.50
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	0.03437	0.00161	0.00061		0.00019
Zcf	0.00000	0.00000	0.00000		-0.12500

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #2 OUT

Date : 9/25/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.02	12.19	12.20	900.00	897.46			96.25	96.26
2	0.03	0.03	11.45	11.48	13200.00	13089.08			42.00	42.15
3	0.03	0.03	11.89	11.95	4400.00	4338.72			117.50	117.46
MEAN		0.03		11.88		6108.42				85.29

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.02	0.00		-0.50
Span Check	1.01	9.29	4200.00		130.00
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00033	-0.00250	0.00565		0.00154
Zcf	0.00000	0.00667	0.00000		-0.16667

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 OUT

Date : 9/25/91

Test Run : 1

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
Point #	A	B	A	B	A	B	A	B	A	B
1	0.03	0.03	12.02	12.03	6050.00	6051.83			60.00	60.14
2	0.03	0.03	12.05	12.07	5000.00	5004.54			62.50	62.94
3	0.03	0.03	12.10	12.13	4900.00	4907.43			61.25	61.97
4	0.04	0.04	12.10	12.15	4500.00	4509.55			62.50	63.53
MEAN		0.03		12.09		5118.34				62.14

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	1.00	9.30	4120.00		127.50
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00272	-0.00107	-0.00061		-0.00462
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 OUT

Date : 9/25/91

Test Run : 2

Test Condition: 650 HP

Concentration : Drift Uncorrected (A) / Corrected (B)

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
1	0.04	0.04	11.95		5200.00	5201.57			63.75	
2	0.04	0.04	11.95		4900.00	4904.45			67.50	
3	0.05	0.04	11.95		5200.00	5207.88			68.75	
4	0.05	0.04	12.00		5300.00	5311.25			69.50	
MEAN		0.04	11.96			5156.29			67.38	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.01	-0.04	0.00		-0.40
Span Check	1.01	9.30	4120.00		129.50
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00396		-0.00061		
Zcf	0.00250		0.00000		

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 OUT

Date : 9/25/91

Test Run : 3

Test Condition: 650 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
Point #	A	B	A	B	A	B	A	B	A	B
1	0.02	0.02	11.85	11.87	5800.00	5800.51			70.00	69.97
2	0.03	0.03	11.80	11.85	5500.00	5501.25			67.50	67.41
3	0.04	0.03	11.80	11.89	5200.00	5201.62			68.75	68.60
4	0.05	0.04	11.70	11.82	6300.00	6304.61			66.25	66.03
MEAN		0.03		11.86		5701.99				68.00

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.01	0.09	10.00		0.50
Span Check	1.02	9.25	4130.00		129.90
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00025	-0.00482	-0.00061		-0.00096
Zcf	0.00250	0.02250	2.50000		0.12500

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #4 OUT

Date : 9/25/91

Test Run : 4

Test Condition: AFR

Concentration : Drift Uncorrected (A) / Corrected (B)

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
1	0.04	0.04	11.90	11.91	3800.00	3801.53			56.25	56.39
2	0.06	0.06	11.55	11.59	9400.00	9411.39			60.00	60.44
3	0.06	0.05	11.70	11.76	6500.00	6513.14			65.00	65.80
MEAN		0.05		11.75		6575.36				60.88

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.01	0.00	0.00		0.00
Span Check	1.02	9.28	4120.00		128.00
Cal. Gas	1.01	9.34	4130.00		129.90
Scf	-0.00033	-0.00214	-0.00081		-0.00488
Zcf	0.00333	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 OUT

Date : 9/26/91

Test Run : 1

Test Condition: 648 HP

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.02	12.00	12.02	650.00	650.59			12.75	12.76
2	0.02	0.02	12.00	12.06	800.00	802.19			12.00	12.03
3	0.02	0.02	12.00	12.10	1150.00	1155.24			16.88	16.95
4	0.02	0.02	12.00	12.14	1100.00	1107.04			16.00	16.10
MEAN		0.02		12.08		928.76				14.46

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	1.01	9.22	4100.00		11.25
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	-0.00148	-0.00321	-0.00182		-0.00177
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 OUT

Date : 9/26/91

Test Run : 2

Test Condition: 648 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.02	0.02	12.03	12.04	850.00	848.88			15.50	15.46
2	0.02	0.02	12.05	12.08	1250.00	1246.82			15.63	15.50
3	0.02	0.02	12.02	12.07	1100.00	1094.58			15.75	15.53
4	0.02	0.02	12.07	12.14	1350.00	1342.67			18.50	18.18
MEAN		0.02		12.08		1133.24				16.17

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.10	10.00		0.25
Span Check	1.00	9.30	4135.00		11.65
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	-0.00198	-0.00375	-0.00030		0.00154
Zcf	0.00000	0.02500	2.50000		0.06250

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 OUT

Date : 9/26/91

Test Run : 3

Test Condition: 648 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.01	0.01	12.12	12.13	900.00	900.82			16.75	
2	0.01	0.01	12.12	12.14	1125.00	1128.07			18.25	
3	0.01	0.01	12.10	12.14	1400.00	1406.38			21.25	
4	0.01	0.01	12.15	12.20	1050.00	1056.72			19.63	
MEAN		0.01		12.15		1123.00			18.97	

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.02	0.00		0.00
Span Check	1.01	9.30	4100.00		11.33
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	-0.00025	-0.00161	-0.00182		
Zcf	0.00000	0.00500	0.00000		

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #3 OUT

Date : 9/26/91

Test Run : 4

Test Condition: AFR

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.02	0.02	12.24	12.24	600.00	600.73			11.50	11.48
2	0.02	0.02	11.80	11.79	7100.00	7125.88			46.50	46.21
3	0.02	0.02	12.20	12.18	2250.00	2263.70			26.00	25.74
MEAN		0.02		12.07		3330.10				27.81

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		-0.03
Span Check	1.02	9.36	4100.00		11.45
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	0.00297	0.00071	-0.00242		0.00441
Zcf	0.00000	0.00000	0.00000		-0.01000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 OUT

Date : 9/26/91

Test Run : 1

Test Condition: 633 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.03	0.03	12.20	12.19	600.00	600.36			4.25	4.25
2	0.03	0.03	12.20	12.18	700.00	701.27			4.00	4.01
3	0.03	0.03	12.20	12.16	950.00	952.88			3.50	3.52
4	0.03	0.03	12.00	11.94	1300.00	1305.53			4.13	4.16
MEAN		0.03		12.12		890.01				3.98

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	0.00		0.00
Span Check	1.01	9.39	4110.00		11.25
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	-0.00025	0.00134	-0.00121		-0.00177
Zcf	0.00000	0.00000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 OUT

Date : 9/26/91

Test Run : 2

Test Condition: 633 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.02	0.02	12.22	12.31	995.00	995.90			3.25	3.25
2	0.03	0.03	12.20	12.47	1100.00	1103.00			3.00	3.00
3	0.04	0.04	12.20	12.68	850.00	853.88			3.00	3.01
4	0.05	0.05	12.20	12.92	900.00	905.76			2.88	2.89
MEAN		0.03		12.59		964.64				3.04

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	2.00	0.00		0.00
Span Check	1.02	9.30	4100.00		11.29
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	0.00223	-0.05460	-0.00182		-0.00088
Zcf	0.00000	0.50000	0.00000		0.00000

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 OUT

Date : 9/26/91

Test Run : 3

Test Condition: 633 HP

Point #	%O2 A	%O2 B	%CO2 A	%CO2 B	ppm CO A	ppm CO B	ppm SO2 A	ppm SO2 B	ppm NOx A	ppm NOx B
	Concentration : Drift Uncorrected (A) / Corrected (B)									
1	0.04	0.04	12.15	12.17	800.00				3.50	3.51
2	0.05	0.05	12.15	12.22	750.00				2.75	2.77
3	0.05	0.05	12.18	12.30	850.00				2.88	2.92
4	0.06	0.06	12.18	12.34	750.00				2.50	2.55
MEAN		0.05		12.26	787.50					2.94

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.00	0.00	-10.00		-0.05
Span Check	1.03	9.20	4120.00		11.25
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	0.00470	-0.00375			-0.00066
Zcf	0.00000	0.00000			-0.01250

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

A. CALIBRATION AND CORRECTION DATA

Company : SO CAL GAS

Station : GOLETA UNIT #5 OUT

Date : 9/26/91

Test Run : 4

Test Condition: AFR

	Concentration : Drift Uncorrected (A) / Corrected (B)									
	%O2		%CO2		ppm CO		ppm SO2		ppm NOx	
	A	B	A	B	A	B	A	B	A	B
Point #										
1	0.02	0.01	12.22	12.23	600.00	594.53			3.50	3.54
2	0.04	0.02	11.05	11.07	5500.00	5513.37			4.50	4.61
3	0.05	0.02	12.20	12.24	975.00	951.26			3.13	3.33
MEAN		0.02		11.85		2353.06				3.83

	%O2	%CO2	ppm CO	ppm SO2	ppm NOx
Zero Check	0.03	0.00	40.00		-0.25
Span Check	1.05	9.30	4120.00		11.13
Cal. Gas	1.01	9.34	4130.00		11.33
Scf	0.00297	-0.00143	-0.00404		0.00147
Zcf	0.01000	0.00000	13.33333		-0.08333

Scf, Span Drift Correction Factor = (% Drift / 100) / # of Readings

Zcf, Zero Drift Correction Factor = Zero Drift / # of Readings

Cz, Zero Corr. Concentration = measured value - [Zcf x (Point # - 0.5)]

B, Corrected Concentration = Cz / [1 + (Scf x (Point # - 0.5))]

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/23/91

Station : GOLETA UNIT #7 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.04	9.25	4120.00		127.50
Zero Drift	0.01	0.00	20.00		0.50
Final, Actual Span	1.04	9.25	4100.00		127.00
Percent Drift	2.4	-1.0	-0.7		-2.2

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		205.10
Measured Span	1.02	9.30	4140.00		202.00
Zero Drift	0.02	0.00	40.00		0.00
Final, Actual Span	1.00	9.30	4100.00		202.00
Percent Drift	-1.1	-0.4	-0.7		-1.5

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		205.10
Measured Span	1.01	9.23	4180.00		206.25
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	1.01	9.23	4180.00		206.25
Percent Drift	-0.6	-1.2	1.2		0.6

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/23/91

Station : GOLETA UNIT #7 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		205.10
Measured Span	1.01	9.35	4080.00		204.00
Zero Drift	0.00	0.02	0.00		0.00
Final, Actual Span	1.01	9.33	4080.00		204.00
Percent Drift	-0.1	-0.1	-1.2		-0.5

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

8. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #8 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		40.50
Measured Span	1.00	9.32	4090.00		41.50
Zero Drift	0.00	0.12	-30.00		1.00
Final, Actual Span	1.00	9.20	4120.00		40.50
Percent Drift	-1.1	-1.5	-0.2		0.0

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		40.50
Measured Span	1.00	9.30	4130.00		40.40
Zero Drift	0.00	0.00	60.00		-0.20
Final, Actual Span	1.00	9.30	4070.00		40.60
Percent Drift	-1.1	-0.4	-1.5		0.2

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		40.50
Measured Span	1.00	9.30	4110.00		40.10
Zero Drift	0.00	0.00	-10.00		0.20
Final, Actual Span	1.00	9.30	4120.00		39.90
Percent Drift	-1.1	-0.4	-0.2		-1.5

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #8 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		40.50
Measured Span	1.00	9.22	4100.00		40.70
Zero Drift	0.00	0.00	0.00		0.30
Final, Actual Span	1.00	9.22	4100.00		40.40
Percent Drift	-1.1	-1.3	-0.7		-0.2

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #6 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		82.70
Measured Span	1.01	9.40	4100.00		83.80
Zero Drift	0.00	0.00	-10.00		1.30
Final, Actual Span	1.01	9.40	4110.00		82.50
Percent Drift	-0.1	0.6	-0.5		-0.2

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		82.70
Measured Span	1.02	9.29	4110.00		82.50
Zero Drift	0.00	-0.06	0.00		0.20
Final, Actual Span	1.02	9.35	4110.00		82.30
Percent Drift	0.9	0.1	-0.5		-0.5

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		82.70
Measured Span	1.00	9.30	4100.00		82.00
Zero Drift	0.00	0.12	0.00		0.00
Final, Actual Span	1.00	9.18	4100.00		82.00
Percent Drift	-1.1	-1.7	-0.7		-0.8

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

8. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/24/91

Station : GOLETA UNIT #6 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		82.70
Measured Span	1.04	9.32	4120.00		83.00
Zero Drift	0.01	0.03	0.00		0.30
Final, Actual Span	1.03	9.29	4120.00		82.70
Percent Drift	1.9	-0.5	-0.2		0.0

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #2 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.00	9.20	4100.00		127.80
Zero Drift	0.00	0.00	0.00		-0.75
Final, Actual Span	1.00	9.20	4100.00		128.55
Percent Drift	-1.1	-1.5	-0.7		-1.0

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.01	9.40	4120.00		127.50
Zero Drift	0.00	0.00	0.00		0.50
Final, Actual Span	1.01	9.40	4120.00		127.00
Percent Drift	-0.6	0.6	-0.2		-2.2

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.15	9.40	4140.00		129.50
Zero Drift	0.00	0.00	0.00		-0.50
Final, Actual Span	1.15	9.40	4140.00		130.00
Percent Drift	13.7	0.6	0.2		0.1

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #2 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.01	9.29	4200.00		130.00
Zero Drift	0.00	0.02	0.00		-0.50
Final, Actual Span	1.01	9.27	4200.00		130.50
Percent Drift	-0.1	-0.7	1.7		0.5

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #4 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.00	9.30	4120.00		127.50
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	1.00	9.30	4120.00		127.50
Percent Drift	-1.1	-0.4	-0.2		-1.8

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.01	9.30	4120.00		129.50
Zero Drift	0.01	-0.04	0.00		-0.40
Final, Actual Span	1.00	9.34	4120.00		129.90
Percent Drift	-1.6	0.0	-0.2		0.0

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.02	9.25	4130.00		129.90
Zero Drift	0.01	0.09	10.00		0.50
Final, Actual Span	1.01	9.16	4120.00		129.40
Percent Drift	-0.1	-1.9	-0.2		-0.4

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/25/91

Station : GOLETA UNIT #4 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		129.90
Measured Span	1.02	9.28	4120.00		128.00
Zero Drift	0.01	0.00	0.00		0.00
Final, Actual Span	1.01	9.28	4120.00		128.00
Percent Drift	-0.1	-0.6	-0.2		-1.5

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #3 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.01	9.22	4100.00		11.25
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	1.01	9.22	4100.00		11.25
Percent Drift	-0.6	-1.3	-0.7		-0.7

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.00	9.30	4135.00		11.65
Zero Drift	0.00	0.10	10.00		0.25
Final, Actual Span	1.00	9.20	4125.00		11.40
Percent Drift	-0.8	-1.5	-0.1		0.6

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.01	9.30	4100.00		11.33
Zero Drift	0.00	0.02	0.00		0.00
Final, Actual Span	1.01	9.28	4100.00		11.33
Percent Drift	-0.1	-0.6	-0.7		0.0

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #3 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.02	9.36	4100.00		11.45
Zero Drift	0.00	0.00	0.00		-0.03
Final, Actual Span	1.02	9.36	4100.00		11.48
Percent Drift	0.9	0.2	-0.7		1.3

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

8. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #5 OUT

Run 1	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.01	9.39	4110.00		11.25
Zero Drift	0.00	0.00	0.00		0.00
Final, Actual Span	1.01	9.39	4110.00		11.25
Percent Drift	-0.1	0.5	-0.5		-0.7

Run 2	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.02	9.30	4100.00		11.29
Zero Drift	0.00	2.00	0.00		0.00
Final, Actual Span	1.02	7.30	4100.00		11.29
Percent Drift	0.9	-21.8	-0.7		-0.4

Run 3	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.03	9.20	4120.00		11.25
Zero Drift	0.00	0.00	-10.00		-0.05
Final, Actual Span	1.03	9.20	4130.00		11.30
Percent Drift	1.9	-1.5	0.0		-0.3

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

B. ZERO AND SPAN DRIFT PERCENT CALCULATIONS

Company : SO CAL GAS Date : 9/26/91

Station : GOLETA UNIT #5 OUT

Run 4	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span	1.01	9.34	4130.00		11.33
Measured Span	1.05	9.30	4120.00		11.13
Zero Drift	0.03	0.00	40.00		-0.25
Final, Actual Span	1.02	9.30	4080.00		11.38
Percent Drift	0.9	-0.4	-1.2		0.4

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Run	O2 (%)	CO2 (%)	CO (ppm)	SO2 (ppm)	NOx (ppm)
Initial Span					
Measured Span					
Zero Drift					
Final, Actual Span					
Percent Drift					

Final, Actual Span = Measured Span - Zero Drift

Percent Drift = (Final, Actual Span - Initial Span) / Initial Span x 100

Steiner Environmental, Inc.

Date: 9-23 — 9-26-91

Test Location: So. Cal. Gas - Goleta Units 8,7,6,5,4,3,2

SAMPLE HANDLING/LOG-IN

NO	SAMPLE TYPE	VOLUME	COMMENTS
1	30514 ASTM (Meth) F.G. (Sample) All (Test)		
2	30515 ASTM (Meth) F.G. (Sample) All (Test)		
3	30516 ASTM (Meth) F.G. (Sample) All (Test)		
4	30517 ASTM (Meth) F.G. (Sample) All (Test)		
5			
6			
7			
8			
9			
10			
11			
12			

CHAIN-OF-CUSTODY

Signature	Date/Time	Signature	Date/Time
C. Reehard	9-27-91/1300		

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #7 OUT	Temp. Std.:	60
DATE	SEPT 23,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.92	29.91	29.91
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.07	0.05	0.02
Fuel Flow, acfh	6390.00	6332.00	6380.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.64	15.63	15.63
Fuel Temp, dF	68.00	73.00	78.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1044.00	1044.00	1044.00
Btu/lb, Gross Cal. Value :	21624.00	21624.00	21624.00
Hydrogen, Wt.% :	21.83	21.83	21.83
Carbon, Wt.% :	70.99	70.99	70.99
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.64	1.64	1.64
Oxygen, Wt.% :	5.54	5.54	5.54

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,460.16	8,460.16	8,460.16	8,460.16
Fuel Rate, scfh :	6695.73	6570.65	6558.93	6608.43
Heat Rate, MMBtu/hr :	6.990	6.860	6.848	6.899
Flue gas flowrate, dscfm :	988.97	969.56	966.44	974.99

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #7 OUT	Temp. Std.:	60
DATE	SEPT 23,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.92	29.91	29.91
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.03	0.03	0.03
Fuel Flow, acfh	6380.00	6380.00	6380.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.63	15.63	15.63
Fuel Temp, dF	78.00	78.00	78.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1044.00	1044.00	1044.00
Btu/lb, Gross Cal. Value :	21624.00	21624.00	21624.00
Hydrogen, Wt.% :	21.83	21.83	21.83
Carbon, Wt.% :	70.99	70.99	70.99
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.64	1.64	1.64
Oxygen, Wt.% :	5.54	5.54	5.54

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,460.16	8,460.16	8,460.16	8,460.16
Fuel Rate, scfh :	6560.99	6558.93	6558.93	6559.61
Heat Rate, MMBtu/hr :	6.850	6.848	6.848	6.848
Flue gas flowrate, dscfm :	967.21	966.91	966.91	967.01

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #8 OUT	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.92	29.92	29.92
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.01	0.01	0.02
Fuel Flow, acfh	6121.00	5959.00	5943.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.64	15.64	15.64
Fuel Temp, dF	64.00	70.00	80.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6462.82	6220.54	6088.95	6257.44
Heat Rate, MMBtu/hr :	6.935	6.675	6.533	6.714
Flue gas flowrate, dscfm :	981.61	944.81	925.27	950.57

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #8 OUT	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.92	29.92	29.92
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.02	0.02	0.02
Fuel Flow, acfh	5943.00	5943.00	5943.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.64	15.64	15.64
Fuel Temp, dF	80.00	80.00	80.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6088.95	6088.95	6088.95	6088.95
Heat Rate, MMBtu/hr :	6.533	6.533	6.533	6.533
Flue gas flowrate, dscfm :	925.27	925.27	925.27	925.27

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT ..... SO CAL GAS
SOURCE ..... GOLETA UNIT #6 OUT Temp. Std.: 60
DATE ..... SEPT 24,1991 Press. Std: 29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.88	29.90	29.85
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.02	0.03	0.02
Fuel Flow, acfh	6225.00	6157.00	6208.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.63	15.62	15.60
Fuel Temp, dF	88.00	91.00	92.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

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CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10 8499.09	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6276.88 6276.88	6178.39	6208.51	6221.26
Heat Rate, MMBtu/hr :	6.735 6.735	6.629	6.662	6.675
Flue gas flowrate, dscfm :	953.83 954.9	939.31	943.44	945.53

8499.09 Δ = +0.12% OK

196.355

Run1 84.29 113.05 0 .10 -1.07

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]
60 SD L EPA

Run1 = 10E6 x [3.65(23.09) + 1.53(73.89) + 0.57(0) + 0.14(.69) - .46(2.33)] / 22753 x [illegible] =

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
where: psig = psia - 14.7

Run1 scfh = 6225 x [(29.88 + 0.94 x 2.036) / (88 + 460)] x (60 + 460) / 29.92
= 6276.88

* MMBtu/hr = scfh x (Btu/scf) / 10E6

Run1 MMBtu/hr = 6276.88 x 1073 / 10^6 = 6.7351

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

Run1 dscfm = 6.7351 x 8499.09 x 1/60 x 20.9 / (20.9 - 0.02)

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #6 OUT	Temp. Std.:	60
DATE	SEPT 24,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.85	29.85	29.85
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.02	0.01	0.01
Fuel Flow, acfh	6208.00	6208.00	6208.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.60	15.60	15.60
Fuel Temp, dF	92.00	92.00	92.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1073.00	1073.00	1073.00
Btu/lb, Gross Cal. Value :	22753.00	22753.00	22753.00
Hydrogen, Wt.% :	23.09	23.09	23.09
Carbon, Wt.% :	73.89	73.89	73.89
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	0.69	0.69	0.69
Oxygen, Wt.% :	2.33	2.33	2.33

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,489.10	8,489.10	8,489.10	8,489.10
Fuel Rate, scfh :	6208.51	6208.51	6208.51	6208.51
Heat Rate, MMBtu/hr :	6.662	6.662	6.662	6.662
Flue gas flowrate, dscfm :	943.44	942.99	942.99	943.14

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #2 OUT	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3	
Barometric Press., in.Hg..	29.90	29.90	29.80	
Brake Horsepower	650.00	650.00	650.00	
Fuel Flow, scfh				
Oxygen, %	0.03	0.02	0.02	
Fuel Flow, acfh	6464.00	6476.00	6305.00	avg 6415.
Fuel Press, psig	0.94	0.94	0.94	0.94
" " psia	15.63	15.63	15.58	15.61
Fuel Temp, dF	62.00	70.00	75.00	~~207~~ 69.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6846.82	6755.99	6495.64	6699.48
Heat Rate, MMBtu/hr :	7.175	7.080	6.807	7.021
Flue gas flowrate, dscfm :	1014.90	1000.95	962.38	992.75

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #2 OUT	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.80	29.80	29.80
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.02	0.03	0.03
Fuel Flow, acfh	6305.00	6305.00	6305.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.58	15.58	15.58
Fuel Temp, dF	75.00	75.00	75.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6495.64	6495.64	6495.64	6495.64
Heat Rate, MMBtu/hr :	6.807	6.807	6.807	6.807
Flue gas flowrate, dscfm :	962.38	962.84	962.84	962.69

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #4 OUT	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.84	29.82	29.82
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.03	0.04	0.03
Fuel Flow, acfh	6160.00	6208.00	6139.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.60	15.59	15.59
Fuel Temp, dF	82.00	82.00	79.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6272.19	6317.09	6281.64	6290.31
Heat Rate, MMBtu/hr :	6.573	6.620	6.583	6.592
Flue gas flowrate, dscfm :	929.72	936.83	931.12	932.56

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #4 OUT	Temp. Std.:	60
DATE	SEPT 25,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.82	29.82	29.82
Brake Horsepower	650.00	650.00	650.00
Fuel Flow, scfh			
Oxygen, %	0.04	0.06	0.05
Fuel Flow, acfh	6139.00	6139.00	6139.00
Fuel Press, psig	0.94	0.94	0.94
" " psia	15.59	15.59	15.59
Fuel Temp, dF	79.00	79.00	79.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1048.00	1048.00	1048.00
Btu/lb, Gross Cal. Value :	22109.00	22109.00	22109.00
Hydrogen, Wt.% :	22.43	22.43	22.43
Carbon, Wt.% :	72.00	72.00	72.00
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.66	1.66	1.66
Oxygen, Wt.% :	3.91	3.91	3.91

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,474.22	8,474.22	8,474.22	8,474.22
Fuel Rate, scfh :	6281.64	6281.64	6281.64	6281.64
Heat Rate, MMBtu/hr :	6.583	6.583	6.583	6.583
Flue gas flowrate, dscfm :	931.57	932.46	932.02	932.02

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #3 OUT	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.83	29.83	29.86
Brake Horsepower	648.00	648.00	648.00
Fuel Flow, scfh			
Oxygen, %	0.02	0.02	0.01
Fuel Flow, acfh	6160.00	6051.00	6119.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.65	15.65	15.67
Fuel Temp, dF	62.00	63.00	66.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6535.51	6407.59	6448.71	6463.94
Heat Rate, MMBtu/hr :	6.810	6.677	6.720	6.735
Flue gas flowrate, dscfm :	962.18	943.34	948.94	951.49

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #3 OUT	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.86	29.86	29.86
Brake Horsepower	648.00	648.00	648.00
Fuel Flow, scfh			
Oxygen, %	0.02	0.02	0.02
Fuel Flow, acfh	6119.00	6119.00	6119.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.67	15.67	15.67
Fuel Temp, dF	66.00	66.00	66.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6448.71	6448.71	6448.71	6448.71
Heat Rate, MMBtu/hr :	6.720	6.720	6.720	6.720
Flue gas flowrate, dscfm :	949.40	949.40	949.40	949.40

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 529]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #5 OUT	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 1	RUN 2	RUN 3
Barometric Press., in.Hg..	29.85	29.84	29.83
Brake Horsepower	633.00	633.00	633.00
Fuel Flow, scfh			
Oxygen, %	0.03	0.03	0.05
Fuel Flow, acfh	6505.00	6586.00	6430.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.66	15.66	15.65
Fuel Temp, dF	78.00	81.00	84.00

FUEL ANALYSIS DATA :

	RUN 1	RUN 2	RUN 3
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 1	RUN 2	RUN 3	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6700.49	6744.19	6546.08	6663.59
Heat Rate, MMBtu/hr :	6.982	7.027	6.821	6.943
Flue gas flowrate, dscfm :	986.94	993.38	965.12	981.81

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

FUEL / FLOWRATE CALCULATIONS

PLANT	SO CAL GAS		
SOURCE	GOLETA UNIT #5 OUT	Temp. Std.:	60
DATE	SEPT 26,1991	Press. Std:	29.92

FUEL FLOWRATE DATA :

	RUN 4A	RUN 4B	RUN 4C
Barometric Press., in.Hg..	29.83	29.83	29.83
Brake Horsepower	633.00	633.00	633.00
Fuel Flow, scfh			
Oxygen, %	0.01	0.02	0.02
Fuel Flow, acfh	6430.00	6430.00	6430.00
Fuel Press, psig	1.00	1.00	1.00
" " psia	15.65	15.65	15.65
Fuel Temp, dF	66.00	66.00	66.00

FUEL ANALYSIS DATA :

	RUN 4A	RUN 4B	RUN 4C
Btu/scf, Gross Cal. Value:	1042.00	1042.00	1042.00
Btu/lb, Gross Cal. Value :	21741.00	21741.00	21741.00
Hydrogen, Wt.% :	22.00	22.00	22.00
Carbon, Wt.% :	71.20	71.20	71.20
Sulfur, Wt.% :	0.00	0.00	0.00
Nitrogen, Wt.% :	1.79	1.79	1.79
Oxygen, Wt.% :	5.01	5.01	5.01

CALCULATIONS :

	RUN 4A	RUN 4B	RUN 4C	AVERAGE
F-Factor,dscf/MMBtu :	8,469.22	8,469.22	8,469.22	8,469.22
Fuel Rate, scfh :	6770.09	6770.09	6770.09	6770.09
Heat Rate, MMBtu/hr :	7.054	7.054	7.054	7.054
Flue gas flowrate, dscfm :	996.24	996.71	996.71	996.55

* F-Factor = 10E6 x [3.64(%H) + 1.53(%C) + 0.57(%S) + 0.14(%N) - 0.46(%O2)] / (Btu/lb) x [(Tstd + 460) / 528]

* scfh = fuel acfh x [Pb + (P,psig x 2.036 in.Hg/psi) / (T fuel + 460)] x [(Tstd + 460) / Pstd]
  where: psig = psia - 14.7

* MMBtu/hr = scfh x (Btu/scf) / 10E6

* dscfm = MMBtu/hr x dscf/MMBtu x (1hr/60min) x [20.9 / (20.9- %O2)]

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #7 OUT
DATE : SEPT 23,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.07	0.05	0.02	0.05
Qs(std), dscfm	988.97	969.56	966.44	974.99
NOx, ppm	202.03	207.20	219.68	209.64
CO, ppm	4217.68	4095.12	4237.03	4183.28
HC, ppm				
F-Factor	8460.16	8460.16	8460.16	8460.16
NOx, MW = 46.005				
NOx, lb/hr	1.45	1.46	1.54	1.49
NOx, ppm @ O2	57.22	58.63	62.07	59.31
NOx, lb/MMBtu	0.2080	0.2131	0.2257	0.2156
NOx, g/HP-hr	1.01	1.02	1.08	1.04
CO, MW = 28.010				
CO, lb/hr	18.48	17.59	18.14	18.07
CO, ppm @ O2	1194.64	1158.81	1197.25	1183.56
CO, lb/MMBtu	2.6442	2.5649	2.6499	2.6197
CO, g/HP-hr	12.89	12.27	12.66	12.61

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #7 OUT
DATE : SEPT 23,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.03	0.03	0.03
Qs(std), dscfm	967.21	966.91	966.91
NOx, ppm	215.19	222.60	226.01
CO, ppm	3757.58	5322.28	4192.30
HC, ppm			
F-Factor	8460.16	8460.16	8460.16
NOx, MW = 46.005			
NOx, lb/hr	1.51	1.57	1.59
NOx, ppm @ O2	60.83	62.93	63.89
NOx, lb/MMBtu	0.2212	0.2288	0.2323
NOx, g/HP-hr	1.06	1.09	1.11
CO, MW = 28.010			
CO, lb/hr	16.10	22.79	17.95
CO, ppm @ O2	1062.28	1504.62	1185.17
CO, lb/MMBtu	2.3512	3.3303	2.6232
CO, g/HP-hr	11.23	15.91	12.53

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #8 OUT
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.01	0.01	0.02	0.01
Qs(std), dscfm	981.61	944.81	925.27	950.57
NOx, ppm	24.33	23.25	26.19	24.59
CO, ppm	1466.89	1820.48	1894.79	1727.39
HC, ppm				
F-Factor	8489.10	8489.10	8489.10	8489.10
NOx, MW = 46.005				
NOx, lb/hr	0.17	0.16	0.18	0.17
NOx, ppm @ O2	6.87	6.57	7.40	6.95
NOx, lb/MMBtu	0.0251	0.0240	0.0270	0.0253
NOx, g/HP-hr	0.12	0.11	0.12	0.12
CO, MW = 28.010				
CO, lb/hr	6.38	7.62	7.77	7.25
CO, ppm @ O2	414.30	514.16	535.41	487.95
CO, lb/MMBtu	0.9201	1.1419	1.1891	1.0837
CO, g/HP-hr	4.45	5.32	5.42	5.06

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #8 OUT
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.02	0.02	0.02
Qs(std), dscfm	925.27	925.27	925.27
NOx, ppm	23.96	22.68	23.00
CO, ppm	1551.88	5720.78	2666.14
HC, ppm			
F-Factor	8489.10	8489.10	8489.10
NOx, MW = 46.005			
NOx, lb/hr	0.16	0.15	0.15
NOx, ppm @ O2	6.77	6.41	6.50
NOx, lb/MMBtu	0.0247	0.0234	0.0237
NOx, g/HP-hr	0.11	0.11	0.11
CO, MW = 28.010			
CO, lb/hr	6.36	23.45	10.93
CO, ppm @ O2	438.51	1616.50	753.36
CO, lb/MMBtu	0.9739	3.5901	1.6732
CO, g/HP-hr	4.44	16.36	7.63

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #6 OUT
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.02	0.03	0.02	0.02
Qs(std), dscfm	~~953.83~~	939.31	943.44	945.53
NOx, ppm	~~79.95~~ p.B-20	68.44	59.75	69.38
CO, ppm	3212.74	3195.17	3261.91	3223.27
HC, ppm				
F-Factor	8489.10	8489.10	8489.10	8489.10

See p. B-89 for flow rate calc'n calc'n checks.

F = 8499.09 dscf/MMBtu
Q = 954.9 dscfm

NOx, MW = 46.005				
NOx, lb/hr	0.55	0.47	0.41	0.48
NOx, ppm @ O2	22.59	19.35	16.88	19.61
NOx, lb/MMBtu	0.0824	0.0706	0.0616	0.0715
NOx, g/HP-hr	0.39	0.33	0.29	0.33
CO, MW = 28.010				
CO, lb/hr	13.57	13.29	13.63	13.50
CO, ppm @ O2	907.81	903.28	921.71	910.94
CO, lb/MMBtu	2.0162	2.0061	2.0470	2.0231
CO, g/HP-hr	9.47	9.28	9.51	9.42

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460) Runl NOx : $\frac{8.223\times10^{-5} \times 954.9 \text{ dscfm} \times 46.005 \times 79.95}{60+460}$ = 0.5554

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)] Runl NOx : $79.95 \times \left(\frac{20.9-15\%}{20.9-.02}\right) = 79.95 \times \frac{5.9}{20.88} = 22.59$

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm Runl NOx : $\frac{8499.09 \times 46.005 \times 1.3711\times10^{-6}}{60+460} \times \frac{20.9}{20.9-0.02} \times 79.95 = .0825$

* g/HP-hr = lb/hr x (453.59 g/lb) / HP Runl NOx : $\frac{0.5554 \times 453.59}{650} = 0.386$

$\frac{lb}{hr}$ CO = $\frac{8.223\times10^{-5} \times 954.9 \text{ dscfm} \times 28.01 \times 3212.74}{60+460}$ = 13.59

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #6 OUT
DATE : SEPT 24,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN4A	RUN 4B	RUN 4C
Oxygen (%)	0.02	0.01	0.01
Qs(std), dscfm	943.44	942.99	942.99
NOx, ppm	52.00	16.00	35.00
CO, ppm	3001.21	10512.73	6513.14
HC, ppm			
F-Factor	8489.10	8489.10	8489.10
NOx, MW = 46.005			
NOx, lb/hr	0.36	0.11	0.24
NOx, ppm @ O2	14.69	4.52	9.89
NOx, lb/MMBtu	0.0536	0.0165	0.0361
NOx, g/HP-hr	0.25	0.08	0.17
CO, MW = 28.010			
CO, lb/hr	12.54	43.91	27.20
CO, ppm @ O2	848.04	2969.13	1839.52
CO, lb/MMBtu	1.8834	6.5942	4.0854
CO, g/HP-hr	8.75	30.64	18.98

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #2 OUT
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.03	0.02	0.02	0.02
Qs(std), dscfm	1014.90	1000.95	962.38	992.75
NOx, ppm	112.52	117.55	130.14	120.07
CO, ppm	3428.60	3072.22	3143.52	3214.78
HC, ppm				
F-Factor	8474.22	8474.22	8474.22	8474.22
NOx, MW = 46.005				
NOx, lb/hr	0.83	0.86	0.91	0.87
NOx, ppm @ O2	31.81	33.22	36.77	33.93
NOx, lb/MMBtu	0.1158	0.1210	0.1339	0.1236
NOx, g/HP-hr	0.58	0.60	0.64	0.60
CO, MW = 28.010				
CO, lb/hr	15.41	13.62	13.40	14.14
CO, ppm @ O2	969.27	868.11	888.26	908.55
CO, lb/MMBtu	2.1489	1.9246	1.9693	2.0143
CO, g/HP-hr	10.76	9.51	9.35	9.87

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #2 OUT
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.02	0.03	0.03
Qs(std), dscfm	962.38	962.84	962.84
NOx, ppm	96.26	42.15	117.46
CO, ppm	897.46	13089.08	4338.72
HC, ppm			
F-Factor	8474.22	8474.22	8474.22

NOx, MW = 46.005			
NOx, lb/hr	0.67	0.30	0.82
NOx, ppm @ O2	27.20	11.92	33.21
NOx, lb/MMBtu	0.0990	0.0434	0.1209
NOx, g/HP-hr	0.47	0.21	0.57
CO, MW = 28.010			
CO, lb/hr	3.83	55.82	18.50
CO, ppm @ O2	253.59	3700.31	1226.57
CO, lb/MMBtu	0.5622	8.2037	2.7193
CO, g/HP-hr	2.67	38.95	12.91

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #4 OUT
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.03	0.04	0.03	0.03
Qs(std), dscfm	929.72	936.83	931.12	932.56
NOx, ppm	62.14	67.38	68.00	65.84
CO, ppm	5118.34	5156.29	5701.99	5325.54
HC, ppm				
F-Factor	8474.22	8474.22	8474.22	8474.22
NOx, MW = 46.005				
NOx, lb/hr	0.42	0.46	0.46	0.45
NOx, ppm @ O2	17.57	19.06	19.22	18.62
NOx, lb/MMBtu	0.0640	0.0694	0.0700	0.0678
NOx, g/HP-hr	0.29	0.32	0.32	0.31
CO, MW = 28.010				
CO, lb/hr	21.08	21.40	23.52	22.00
CO, ppm @ O2	1446.97	1458.39	1611.97	1505.78
CO, lb/MMBtu	3.2080	3.2333	3.5738	3.3384
CO, g/HP-hr	14.71	14.93	16.41	15.35

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #4 OUT
DATE : SEPT 25,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.04	0.06	0.05
Qs(std), dscfm	931.57	932.46	932.02
NOx, ppm	56.39	60.44	65.80
CO, ppm	3801.53	9411.39	6513.14
HC, ppm			
F-Factor	8474.22	8474.22	8474.22
NOx, MW = 46.005			
NOx, lb/hr	0.38	0.41	0.45
NOx, ppm @ O2	15.95	17.11	18.62
NOx, lb/MMBtu	0.0581	0.0623	0.0678
NOx, g/HP-hr	0.27	0.29	0.31
CO, MW = 28.010			
CO, lb/hr	15.69	38.87	26.89
CO, ppm @ O2	1075.22	2664.45	1843.05
CO, lb/MMBtu	2.3838	5.9072	4.0861
CO, g/HP-hr	10.95	27.13	18.76

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #3 OUT
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.02	0.02	0.01	0.02
Qs(std), dscfm	962.18	943.34	948.94	951.49
NOx, ppm	14.46	16.17	18.97	16.53
CO, ppm	928.76	1133.24	1123.00	1061.67
HC, ppm				
F-Factor	8469.22	8469.22	8469.22	8469.22
NOx, MW = 46.005				
NOx, lb/hr	0.10	0.11	0.13	0.11
NOx, ppm @ O2	4.09	4.57	5.36	4.67
NOx, lb/MMBtu	0.0149	0.0166	0.0195	0.0170
NOx, g/HP-hr	0.07	0.08	0.09	0.08
CO, MW = 28.010				
CO, lb/hr	3.96	4.74	4.72	4.47
CO, ppm @ O2	262.44	320.22	317.17	299.94
CO, lb/MMBtu	0.5815	0.7095	0.7028	0.6646
CO, g/HP-hr	2.77	3.31	3.30	3.13

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #3 OUT
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.02	0.02	0.02
Qs(std), dscfm	949.40	949.40	949.40
NOx, ppm	11.48	46.21	25.74
CO, ppm	600.73	7125.88	2263.70
HC, ppm			
F-Factor	8469.22	8469.22	8469.22
NOx, MW = 46.005			
NOx, lb/hr	0.08	0.32	0.18
NOx, ppm @ O2	3.24	13.06	7.27
NOx, lb/MMBtu	0.0118	0.0475	0.0265
NOx, g/HP-hr	0.06	0.22	0.12
CO, MW = 28.010			
CO, lb/hr	2.53	29.97	9.52
CO, ppm @ O2	169.75	2013.54	639.65
CO, lb/MMBtu	0.3761	4.4615	1.4173
CO, g/HP-hr	1.77	20.98	6.66

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #5 OUT
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 1	RUN 2	RUN 3	AVERAGE
Oxygen (%)	0.03	0.03	0.05	0.04
Qs(std), dscfm	986.94	993.38	965.12	981.81
NOx, ppm	3.98	3.04	2.94	3.32
CO, ppm	890.01	964.64	787.50	880.72
HC, ppm				
F-Factor	8469.22	8469.22	8469.22	8469.22
NOx, MW = 46.005				
NOx, lb/hr	0.03	0.02	0.02	0.02
NOx, ppm @ O2	1.13	0.86	0.83	0.94
NOx, lb/MMBtu	0.0041	0.0031	0.0030	0.0034
NOx, g/HP-hr	0.02	0.02	0.01	0.02
CO, MW = 28.010				
CO, lb/hr	3.89	4.24	3.37	3.83
CO, ppm @ O2	251.61	272.71	222.84	249.05
CO, lb/MMBtu	0.5575	0.6042	0.4938	0.5518
CO, g/HP-hr	2.79	3.04	2.41	2.75

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

EMISSION RATE CALCULATIONS

PLANT : SO CAL GAS
SOURCE : GOLETA UNIT #5 OUT
DATE : SEPT 26,1991

Temp. Std. : 60 dF
Press. Std.: 29.92 in. Hg. 15 % O2 Correction

	RUN 4A	RUN 4B	RUN 4C
Oxygen (%)	0.01	0.02	0.02
Qs(std), dscfm	996.24	996.71	996.71
NOx, ppm	3.54	4.61	3.33
CO, ppm	594.53	5513.37	951.26
HC, ppm			
F-Factor	8469.22	8469.22	8469.22
NOx, MW = 46.005			
NOx, lb/hr	0.03	0.03	0.02
NOx, ppm @ O2	1.00	1.30	0.94
NOx, lb/MMBtu	0.0036	0.0047	0.0034
NOx, g/HP-hr	0.02	0.02	0.02
CO, MW = 28.010			
CO, lb/hr	2.62	24.34	4.20
CO, ppm @ O2	167.91	1557.90	268.79
CO, lb/MMBtu	0.3721	3.4519	0.5956
CO, g/HP-hr	1.88	17.44	3.01

* lb/hr = 8.223E-5 x Qs(std) x MW x ppm / (Tstd + 460)

* ppm @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9 - %O2 measured)]

* lb/MMBtu = F-Factor x MW x [1.3711E-6 / (Tstd + 460)] x [20.9 / (20.9 - O2%)] x ppm

* g/HP-hr = lb/hr x (453.59 g/lb) / HP

REPORT OF ANALYSIS

CUSTOMER ORDER NUMBER: SP2750-90REL.11

COMPONENT	CONCENTRATION(v/v)	REFERENCE STANDARD	ANALYZER MAKE,MODEL,S/N,DETECTION	EXPIRATION DATE	REPLICATE ANALYSIS DATA	
CYLINDER NO.: CC98701						
			Monitor Labs Model 8440		12/21/90	01/02/91
Nitric Oxide	19.41 ± 0.39 ppm	GMIS	S/N 136	07/02/92	19.37 ppm	19.44 ppm
		Cylinder #	Continuous		19.46 ppm	19.36 ppm
Nitrogen,O2-Free Balance		CAL5735	Chemiluminescence		19.41 ppm	19.42 ppm
Cylinder Pressure: 2000 psig		@ 19.42 ppm	Last Cal Date: 10/23/90	Mean:	19.41 ppm	19.41 ppm
CYLINDER NO.: CC98699						
			Monitor Labs Model 8440		12/21/90	01/02/91
Nitric Oxide	19.85 ± 0.40 ppm	GMIS	S/N 136	07/02/92	19.91 ppm	19.93 ppm
		Cylinder #	Continuous		19.82 ppm	19.82 ppm
Nitrogen,O2-Free Balance		CAL5735	Chemiluminescence		19.79 ppm	19.81 ppm
Cylinder Pressure: 2000 psig		@ 19.42 ppm	Last Cal Date: 10/23/90	Mean:	19.84 ppm	19.85 ppm
CYLINDER NO.: CC98760						
			Monitor Labs Model 8440		12/12/90	12/27/90
Nitric Oxide	206.9 ± 2.1 ppm	GMIS	S/N 136	06/27/92	206.9 ppm	207.4 ppm
		Cylinder #	Continuous		206.8 ppm	207.1 ppm
Nitrogen,O2-Free Balance		CC7341	Chemiluminescence		206.4 ppm	206.7 ppm
Cylinder Pressure: 2000 psig		@ 247.5 ppm	Last Cal Date: 10/23/90	Mean:	206.7 ppm	207.1 ppm
CYLINDER NO.: CC98703						
			Monitor Labs Model 8440		12/12/90	12/27/90
Nitric Oxide	205.1 ± 2.1 ppm	GMIS	S/N 136	06/27/92	204.8 ppm	205.2 ppm
		Cylinder #	Continuous		205.2 ppm	205.7 ppm
Nitrogen,O2-Free Balance		CC7341	Chemiluminescence		204.5 ppm	205.0 ppm
Cylinder Pressure: 2000 psig		@ 247.5 ppm	Last Cal Date: 10/23/90	Mean:	204.9 ppm	205.3 ppm

CC98760	NOx	206.9 ppm	CC98701	NOx	19.76 ppm
	NO2	<1 ppm		NO2	<0.35 ppm
CC98703	NOx	205.1 ppm	CC98699	NOx	19.85 ppm
	NO2	<1 ppm		NO2	<0.1 ppm

NOTE
cyl ALM 012106 seen @ site :
EPA Protocol Gas #1
exp date 12/12/91
CO Span gas 4016 ppm CO

ppm = umole/mole % = mole-%

The above analyses were performed in accordance with EPA-1987 Traceability Protocol # 1, Section 3.0.4, Procedure G1.

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

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Ans'd.....

REPORT OF ANALYSIS

TO: STEIØ1
Sue Powers
Steiner Environmental
4930 Boylan St.
Bakersfield, CA 93308

DATE: 18 December 1990

CUSTOMER ORDER NUMBER: B1-SP2750-90 Rel. 11

CYLINDER NUMBER CC98762

COMPONENT	CONCENTRATION (v/v)
Nitric Oxide	129.9 ± 1.3 ppm
Nitrogen Dioxide	<0.6 ppm
Nitrogen*	Balance

Cylinder Pressure: 2000 psig

*Oxygen-free.

Replicate	12/11/90	129.6 ppm	12/18/90 130.0 ppm
Analysis		129.7 ppm	130.1 ppm
Data On		129.6 ppm	130.4 ppm
NO:	Mean	129.6 ppm	130.2 ppm

Expiration Date NO: 6/18/92

(The Nitric Oxide analysis was performed in accordance with Section 3.0.4 of the revised EPA)
(traceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the National)
(Institute of Standards & Technology by direct intercomparison with GMIS, cylinder number)
(CC12643 at 99.3 ppm Nitric Oxide in Oxygen-free Nitrogen. The analysis was performed using)
(a Monitor Labs Model 8440, S/N 136 analyzer with continuous chemiluminescence detection.)
(The last multipoint calibration was performed 10/23/90.)

ANALYST M.S. Calhoun

APPROVED J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

SMF - 01

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
EPA PROTOCOL GAS MIXTURES

STEI01

TO:

SUE POWERS
STEINER ENVIRONMENTAL, INC.
4930 BOYLAN ST.
BAKERSFIELD, CA 93308

DATE : 09/03/91

CUSTOMER ORDER NUMBER: SP 2750-90 R.30

PAGE 1

COMPONENT	CONCENTRATION(v/v)	REFERENCE STANDARD	ANALYZER MAKE,MODEL,S/N,DETECTION	EXPIRATION DATE	REPLICATE ANALYSIS DATA	
CYLINDER NO.:	CC101291					
			Monitor Labs Model 8440		08/22/91	08/30/91
Nitric Oxide	19.34 ± 0.39 ppm	GMIS	S/N 136	02/30/93	19.37 ppm	19.35 ppm
NOX	19.34 ppm	Cylinder #	Continuous		19.34 ppm	19.33 ppm
Nitrogen,O2-Free Balance		CC99513	Chemiluminescence		19.43 ppm	19.24 ppm
Cylinder Pressure: 2000 psig		@ 49.0 ppm	Last Cal Date: 08/07/91		Mean: 19.38 ppm	19.30 ppm

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ppm = umole/mole % = mole-%

The above analyses were performed in accordance with EPA-1987 Traceability Protocol # 1, Section 3.0.4, Procedure G1.

Analyst: B.E. Gross

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOTT - MARRIN, INC. 2001 THIRD ST., UNIT H RIVERSIDE, CALIFORNIA 92507

REPORT OF ANALYSIS

CUSTOMER ORDER NUMBER: B1.-SP-2750-90 Rel. 6

CYLINDER NUMBER CC7380

COMPONENT	CONCENTRATION (v/v)
Nitric Oxide	82.7 ± 0.8 ppm
Nitrogen Dioxide	<0.4 ppm
Nitrogen*	Balance

Cylinder Pressure: 2000 psig

*Oxygen-free.

Replicate	11/9/90	82.5 ppm	11/16/90	82.9 ppm
Analysis		82.7 ppm		82.7 ppm
Data On		82.3 ppm		83.0 ppm
NO:	Mean	82.5 ppm		82.9 ppm

Expiration Date NO: 5/16/92

above analysis was performed in accordance with Section 3.0.4 of the revised EPA trace-
ility protocol No. 1 dated June 9, 1987. The analysis is traceable to the National
institute of Standards & Technology by direct intercomparison with GMIS, cylinder number
(CC12643 at 99.3 ppm Nitric Oxide in Oxygen-free Nitrogen. The analysis was performed using
(a Monitor Labs Model 8440, S/N 136 analyzer with continuous chemiluminescence detection. The
(last multipoint calibration was performed 10/23/90.

CYLINDER NUMBER _____

COMPONENT CONCENTRATION (v/v)

SCOTT - MARRIN, INC. 2001 THIRD ST., UNIT H RIVERSIDE, CALIFORNIA 92507

REPORT OF ANALYSIS

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Ans'd.....

CUSTOMER ORDER NUMBER: B1-SP2750-90 Rel. 11

CYLINDER NUMBER CC7207

COMPONENT	CONCENTRATION (v/v)
Nitric Oxide	50.9 ± 0.5 ppm
Nitrogen Dioxide	<0.3 ppm
Nitrogen*	Balance

Replicate	12/10/90	50.7 ppm	12/17/90	51.2 ppm
Analysis		50.8 ppm		51.1 ppm
Data On		50.7 ppm		51.1 ppm
NO:	Mean	50.7 ppm		51.1 ppm

Expiration Date NO: 6/17/92

Cylinder Pressure: 2000 psig

*Oxygen-free.

(The Nitric Oxide analysis was performed in accordance with Section 3.0.4 of the revised EPA) aceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the National) nstitute of Standards & Technology by direct intercomparison with GMIS, cylinder number) (CC88855 at 50 ppm Nitric Oxide in Oxygen-free Nitrogen. The analysis was performed using a) (Monitor Labs Model 8440, S/N 136 analyzer with continuous chemiluminescence detection. The) (last multipoint calibration was performed 10/23/90.)

CYLINDER NUMBER CC12840

COMPONENT	CONCENTRATION (v/v)
Nitric Oxide	40.5 ± 0.4 ppm
Nitrogen Dioxide	<0.2 ppm
Nitrogen*	Balance

Replicate	12/10/90	40.5 ppm	12/17/90	40.4 ppm
Analysis		40.5 ppm		40.5 ppm
Data On		40.7 ppm		40.4 ppm
NO:	Mean	40.6 ppm		40.4 ppm

Expiration Date NO: 6/17/92

Cylinder Pressure: 2000 psig

*Oxygen-free.

(The Nitric Oxide analysis was performed in accordance with Section 3.0.4 of the revised EPA) aceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the National) nstitute of Standards & Technology by direct intercomparison with GMIS, cylinder number) C88855 at 50 ppm Nitric Oxide in Oxygen-free Nitrogen. The analysis was performed using a) (Monitor Labs Model 8440, S/N 136 analyzer with continuous chemiluminescence detection. The) (last multipoint calibration was performed 10/23/90.)

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

STEI01
TO:
SUE POWERS
STEINER ENVIRONMENTAL, INC.
4930 BOYLAN ST.
BAKERSFIELD, CA 93308

DATE: 05/03/91

CUSTOMER ORDER NUMBER: SP 2750-90 R-23/ Reanalysis

PAGE 1

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CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC12800	Nitrogen Dioxide	11.33 ± 0.23 ppm	SRM 1685b
	Nitrogen,O2-Free	Balance	
	NO_x	11.33 ppm	

ppm = umole/mole   % = mole-%

The above analysis is traceable to the National Institute of Standards and Technology by intercomparison with the reference standard listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: [signature]
B.E. Gross

Approved: [signature]
J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

TELEX: 510-100-8831 (ScotGas)
FAX: 714-887-0549
PHONE: 714-887-2571

Scott Specialty Gases a division of

Scott Environmental Technology Inc. 2600 CAJON BLVD., SAN BERNARDINO, CA 92405

PAPE & STEINER
5801 NORRIS ROAD
BAKERSFIELD, CA 93308

Date: 4/23/90
Our Project No.: 6264
Your P.O. No.: SP2546-90 REL 12

Gentlemen:

Thank you for choosing Scott for your Specialty Gas needs. The analyses for the gases ordered, as reported by our laboratory, are listed below. Results are in volume percent, unless otherwise indicated.

ANALYTICAL REPORT

CGA 660
Cyl. No. AAL-2062 ✓ Analytical Accuracy ±1%/±5%

Component	Concentration
NITRIC OXIDE	37.91 ppm
NOX	54.91 ppm
NITROGEN DIOXIDE	17 ppm
NITROGEN	BALANCE
NO2=±5%	

Cyl. No. _____ Analytical Accuracy _____

Component	Concentration

Cyl. No. _____ Analytical Accuracy _____

Component	Concentration

Cyl. No. _____ Analytical Accuracy _____

Component	Concentration

CERTIFIED

Analyst _____

Approved By [signature]

The only liability of this Company for gas which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

SCOTT-MARRIN, INC. 2001 THIRD ST., UNIT I RIVERSIDE, CALIFORNIA 92507

REPORT OF ANALYSIS

CUSTOMER ORDER NUMBER: B-SP-2750-90 Rel. 2

CYLINDER NUMBER CC86236

COMPONENT	CONCENTRATION(v/v)
Carbon Monoxide	8.21 ± 0.16 ppm
Nitrogen	Balance

CYLINDER NUMBER _____

COMPONENT		CONCENTRATION(v/v)		
Replicate	8/23/90	8.13 ppm	8/30/90	8.17 ppm
Analysis		8.19 ppm		8.21 ppm
Data On		8.24 ppm		8.28 ppm
CO:	Mean	8.19 ppm		8.22 ppm

Expiration Date CO: 2/30/92

CYLINDER NUMBER CC56541

COMPONENT	CONCENTRATION(v/v)
Carbon Monoxide	825 ± 8 ppm
Nitrogen	Balance

CYLINDER NUMBER _____

COMPONENT		CONCENTRATION(v/v)		
Replicate	8/24/90	825 ppm	8/31/90	827 ppm
Analysis		822 ppm		824 ppm
Data On		821 ppm		831 ppm
CO:	Mean	823 ppm		827 ppm

Expiration Date CO: 2/31/92

CYLINDER NUMBER CC56425

COMPONENT	CONCENTRATION(v/v)
Carbon Monoxide	4130 ± 41 ppm
Nitrogen	Balance

CYLINDER NUMBER _____

COMPONENT		CONCENTRATION(v/v)		
Replicate	8/24/90	4140 ppm	8/31/90	4100 ppm
Analysis		4110 ppm		4130 ppm
Data On		4130 ppm		4150 ppm
CO:	Mean	4130 ppm		4130 ppm

Expiration Date CO: 2/31/92

CYLINDER NUMBER CC92991

COMPONENT	CONCENTRATION(v/v)

CYLINDER NUMBER _____

COMPONENT	CONCENTRATION(v/v)

(The Carbon Monoxide analysis was performed in accordance with Section 3.0.4 of the revised)
PA traceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the National)
stitute of Standards & Technology by direct intercomparison with SRM 2612, cylinder number)
11054 at 9.92 ppm Carbon Monoxide in Air. The analysis was performed using a Carle Model)
8000 gas chromatograph with catalytic methanation/flame ionization detection. The last multi-)
(point calibration was performed 9/11/90.)

SCOTT-MARRIN, INC. 2001 THIRD ST., UNIT I RIVERSIDE, CALIFORNIA 92507

REPORT OF ANALYSIS

CUSTOMER ORDER NUMBER: B-SP-2750-90 Rel. 2

CYLINDER NUMBER CC86236 CYLINDER NUMBER CC63352

COMPONENT CONCENTRATION(v/v) COMPONENT CONCENTRATION(v/v)

(The Carbon Monoxide analysis was performed in accordance with Section 3.0.4 of the revised)
(EPA traceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the)
(National Institute of Standards & Technology by direct intercomparison with SRM 2612,)
(cylinder number FF11054 at 9.92 ppm Carbon Monoxide in Air. The analysis was performed)
(using a Carle Model 8000 gas chromatograph with catalytic methanation/flame ionization)
(detection. The last multipoint calibration was performed 9/11/90.)

CYLINDER NUMBER CC56541 CYLINDER NUMBER

COMPONENT CONCENTRATION(v/v) COMPONENT CONCENTRATION(v/v)

(The Carbon Monoxide analysis was performed in accordance with Section 3.0.4 of the revised)
(EPA traceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the)
(National Institute of Standards & Technology by direct intercomparison with GMIS, cylinder)
(number L382 at 1046 ppm Carbon Monoxide in Nitrogen. The analysis was performed using a)
(Carle Model 8000 gas chromatograph with catalytic methanation/flame ionization detection.)
(The last multipoint calibration was performed 9/11/90.)

CYLINDER NUMBER CC56425 ✓ CYLINDER NUMBER

COMPONENT CONCENTRATION(v/v) COMPONENT CONCENTRATION(v/v)

(The Carbon Monoxide analysis was performed in accordance with Section 3.0.4 of the revised)
(EPA traceability protocol No. 1 dated June 9, 1987. The analysis is traceable to the)
(National Institute of Standards & Technology by direct intercomparison with GMIS, cylinder)
(number CC7245 at 5040 ppm Carbon Monoxide in Nitrogen. The analysis was performed using)
(a Carle Model 8000 gas chromatograph with catalytic methanation/flame ionization detection.)
(The last multipoint calibration was performed 9/11/90.)

CYLINDER NUMBER CYLINDER NUMBER

COMPONENT CONCENTRATION(v/v) COMPONENT CONCENTRATION(v/v)

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

STEI01

TO:

SUE POWERS
STEINER ENVIRONMENTAL, INC.
4930 BOYLAN ST.
BAKERSFIELD, CA 93308

DATE: 03/21/91

CUSTOMER ORDER NUMBER: SP 2750-90REL18 / Reanalysis

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
AAL9891	Carbon Monoxide Nitrogen	3.58 ± 0.07 ppm Balance	SRM 2612
ALM002202	Nitric Oxide Nitrogen,O2-Free NO_x	2.109 ± 0.042 ppm Balance 2.79 ppm	SRM 2628
ALM002293	Nitric Oxide Nitrogen,O2-Free NO_x	2.373 ± 0.047 ppm Balance 3.04 ppm	SRM 2628
ALM001538	Carbon Monoxide Nitrogen	8130 ± 81 ppm Balance	SRM 2639

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: Mark Monson
M.J. Monson

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

STEI01

TO:

SUE POWERS
STEINER ENVIRONMENTAL
4930 BOYLAN STREET
BAKERSFIELD, CA 93308

DATE: 07/10/91

CUSTOMER ORDER NUMBER: SP-2750-90REL27

PAGE 1

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC42679 ✓	Carbon Monoxide	38.3 ± 0.4 ppm	SRM 2614a
	Carbon Dioxide	15.21 ± 0.15 %	SRM 1675b
	Oxygen	3.80 ± 0.04 %	SRM 2658a
	Nitrogen	Balance	
CC40347	Carbon Monoxide	15.31 ± 0.31 ppm	SRM 2613a
	Carbon Dioxide	5.01 ± 0.05 %	SRM 1674b
	Oxygen	16.02 ± 0.16 %	SRM 2659
	Nitrogen	Balance	
CC42904	Carbon Monoxide	15.44 ± 0.31 ppm	SRM 2613a
	Carbon Dioxide	4.92 ± 0.05 %	SRM 1674b
	Oxygen	16.08 ± 0.16 %	SRM 2659
	Nitrogen	Balance	

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: J.T. Marrin

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOTT-MARRIN, INC.
2001 THIRD ST. • UNIT H • RIVERSIDE, CA 92507
TELEPHONE (714) 784-1240

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

STEI01

TO:

SUE POWERS
STEINER ENVIRONMENTAL
4930 BOYLAN STREET
BAKERSFIELD, CA 93308

DATE: 07/29/91

CUSTOMER ORDER NUMBER: SP 2750-90REL30

PAGE 1

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC28641 ✓	Carbon Monoxide	388 ± 4 ppm	SRM 1680b
	Carbon Dioxide	9.34 ± 0.09 %	SRM 1675b
	Oxygen	1.011 ± 0.010 %	SRM 2657
	Nitrogen	Balance	
CC28301	Carbon Monoxide	382 ± 4 ppm	SRM 1680b
	Carbon Dioxide	9.36 ± 0.09 %	SRM 1675b
	Oxygen	1.004 ± 0.010 %	SRM 2657
	Nitrogen	Balance	

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance, NIST Report No. MMAP 232.09/202491.

Analyst: M.S. Calhoun

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

APPENDIX C

MANUAL MODE OPERATING DATA

DATE	TIME	UNIT	~~LEAN~~	~~RICH~~		SET POINT	AFR Set Pt	SWING
9-								
9-23-91	1341	#7				MIN.	830	RB 755-840
9-23-91	1358	#7				MAX.	880	LB 774-882
9-23-91	1415	#7				4th Pt.	840	RB 836-897
								LB 831-907
								RB 722-874
								LB 756-897
9-24-91	1102	#8				MIN.	850	RB 818-873
9-24-91	1124	#8				MAX.	900	LB 833-866
9-24-91	1140	#8				4th Pt.	875	RB 896-907
								LB 900-911
								RB 862-883
								LB 845-891
9-24-91	1621	#6				MIN.	875	RB 786-897
9-24-91	1635	#6				MAX.	940	LB 772-904
9-24-91	1650	#6				4th Pt.	920	RB 923-948
								LB 932-950
								RB 912-925
								LB 912-931
9-25-91	1230	#2				MIN.	885	[redacted] 864-897
9-25-91	1307	#2				MAX.	950	[redacted] 948-953
9-25-91	1326	#2				4th Pt.	920	[redacted] 918-922
9-25-91	1647	#4				MIN.	875	[redacted] 852-891
9-25-91	1704	#4				MAX.	920	[redacted] 918-927
9-25-91	1724	#4				4th Pt.	900	[redacted] 893-915
9-26-91	1017	#3				MIN.	880	[redacted] 873-891
9-26-91	1036	#3				MAX.	920	[redacted] 923-927
9-26-91	1052	#3				4th Pt.	900	[redacted] 897-906
9-26-91	1403	#5				MIN.	900	[redacted] 854-938
9-26-91	1422	#5				MAX.	950	[redacted] 925-957
9-26-91	1441	#5				4th Pt.	920	[redacted] 916-940

APPENDIX D

AUTOMATIC MODE OPERATING DATA

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-23-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 7 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6390
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	68
Wet Bulb Temperature (°F)	66
Dry Bulb Temperature (°F)	74
Relative Humidity (%)	65
Barometric Pressure ("Hg)	29.92
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 1 1050-1130 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-23-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca
UNIT NO: 7 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6332
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	73
Wet Bulb Temperature (°F)	66
Dry Bulb Temperature (°F)	72
Relative Humidity (%)	73
Barometric Pressure ("Hg)	29.91
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 2 1150-1230 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern California Gas	DATE: 9-23-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 7 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6380
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	78
Wet Bulb Temperature (°F)	63
Dry Bulb Temperature (°F)	74
Relative Humidity (%)	54
Barometric Pressure ("Hg)	29.91
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 3 1245-1325 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-24-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca
UNIT NO: 8 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6121
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	64
Wet Bulb Temperature (°F)	62
Dry Bulb Temperature (°F)	66
Relative Humidity (%)	80
Barometric Pressure ("Hg)	29.92
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 1 0815 - 0855 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-24-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 8 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	5959
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	70
Wet Bulb Temperature (°F)	63
Dry Bulb Temperature (°F)	68
Relative Humidity (%)	77
Barometric Pressure ("Hg)	29.92
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 2 0913-0953 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-24-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 8 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	5943
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	80
Wet Bulb Temperature (°F)	66
Dry Bulb Temperature (°F)	72
Relative Humidity (%)	72
Barometric Pressure ("Hg)	29.92
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 3 1007 - 1047 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-24-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 6 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6157
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	88
Wet Bulb Temperature (°F)	69
Dry Bulb Temperature (°F)	81
Relative Humidity (%)	55
Barometric Pressure ("Hg)	29.90
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 1 1334-1414 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-24-91
MANUFACTURER: Ingersoll - Rand	TEST LOCATION: Goleta, CA
UNIT NO: 6 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6225
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	91
Wet Bulb Temperature (°F)	67
Dry Bulb Temperature (°F)	76
Relative Humidity (%)	64
Barometric Pressure ("Hg)	29.88
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 2 1425-15 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-24-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 6 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: KVG-6	CONTROL DEVICE MODEL NO:

Fuel Flow	6208
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	92
Wet Bulb Temperature (°F)	68
Dry Bulb Temperature (°F)	78
Relative Humidity (%)	61
Barometric Pressure ("Hg)	29.85
Brake Horse Power (Rated)	660
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	330
Revolutions Per Minute (Actual)	330

COMMENTS: Run 3 1516-1556 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-25-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca
UNIT NO: 2 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6464
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	62
Wet Bulb Temperature (°F)	60
Dry Bulb Temperature (°F)	62
Relative Humidity (%)	90
Barometric Pressure ("Hg)	29.90
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 1 0933-1013 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern California Gas	DATE: 9-25-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 2 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6476
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	70
Wet Bulb Temperature (°F)	61
Dry Bulb Temperature (°F)	64
Relative Humidity (%)	85
Barometric Pressure ("Hg)	29.90
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 2 1027-1107 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: So. Cal. Gas	DATE: 9-25-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 2 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6305
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	75
Wet Bulb Temperature (°F)	62
Dry Bulb Temperature (°F)	66
Relative Humidity (%)	80
Barometric Pressure ("Hg)	29.80
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 3 1116 - 1156 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-25-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 4 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6160
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	82
Wet Bulb Temperature (°F)	64
Dry Bulb Temperature (°F)	70
Relative Humidity (%)	72
Barometric Pressure ("Hg)	29.84
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 1 1414-1454 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-25-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 4 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6.208
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	82
Wet Bulb Temperature (°F)	64
Dry Bulb Temperature (°F)	72
Relative Humidity (%)	65
Barometric Pressure ("Hg)	29.82
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 2 1506-1546 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-25-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 4 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6139
Fuel Flow Units	SCFH
Fuel Gas Pressure	0.94
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	79
Wet Bulb Temperature (°F)	63
Dry Bulb Temperature (°F)	71
Relative Humidity (%)	65
Barometric Pressure ("Hg)	29.82
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	650
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 3 1555-1635 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-26-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 3 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6160
Fuel Flow Units	SCFH
Fuel Gas Pressure	1.0
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	62
Wet Bulb Temperature (°F)	60
Dry Bulb Temperature (°F)	61
Relative Humidity (%)	95
Barometric Pressure ("Hg)	29.83
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	648
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 1 0745-0825 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-26-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, Ca.
UNIT NO: 3 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6051
Fuel Flow Units	SCFH
Fuel Gas Pressure	1.0
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	63
Wet Bulb Temperature (°F)	60
Dry Bulb Temperature (°F)	61
Relative Humidity (%)	95
Barometric Pressure ("Hg)	29.83
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	648
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 2 0835-0915 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-26-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 3 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6119
Fuel Flow Units	SCFH
Fuel Gas Pressure	1.0
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	66
Wet Bulb Temperature (°F)	62
Dry Bulb Temperature (°F)	64
Relative Humidity (%)	90
Barometric Pressure ("Hg)	29.86
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	648
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 3 0926-1006 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-26-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 5 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6505
Fuel Flow Units	SCFH
Fuel Gas Pressure	1.0
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	78
Wet Bulb Temperature (°F)	64
Dry Bulb Temperature (°F)	68
Relative Humidity (%)	80
Barometric Pressure ("Hg)	29.85
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	633
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 1 1134-1214 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE
COMPLIANCE DATA
CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-26-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 5 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6586
Fuel Flow Units	SCFH
Fuel Gas Pressure	1.0
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	81
Wet Bulb Temperature (°F)	64
Dry Bulb Temperature (°F)	68
Relative Humidity (%)	80
Barometric Pressure ("Hg)	29.84
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	633
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 2 1224-1304 Outlet

ICE-CK.LST

Steiner Environmental, Inc.

INTERNAL COMBUSTION ENGINE COMPLIANCE DATA CHECK LIST

COMPANY NAME: Southern Cal. Gas	DATE: 9-26-91
MANUFACTURER: Ingersoll-Rand	TEST LOCATION: Goleta, CA
UNIT NO: 5 IC Engine	TYPE OF CONTROL DEVICE:
UNIT MODEL NO: LVG-8	CONTROL DEVICE MODEL NO:

Fuel Flow	6430
Fuel Flow Units	SCFH
Fuel Gas Pressure	1.0
Fuel Gas Pressure Units	PSIG
Fuel Gas Temperature (°F)	84
Wet Bulb Temperature (°F)	66
Dry Bulb Temperature (°F)	70
Relative Humidity (%)	82
Barometric Pressure ("Hg)	29.83
Brake Horse Power (Rated)	650
Brake Horse Power (Actual)	633
Kilowatts (Rated)	
Kilowatts (Actual)	
Revolutions Per Minute (Rated)	300
Revolutions Per Minute (Actual)	300

COMMENTS: Run 3 1313-1353 Outlet

ICE-CK.LST