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AIR MEASUREMENT SERVICES, INC.

Horizon Test No.: W07-046-FR
Date Tested: March 22, 2006
Report Date: March 31, 2006
Revision No.: 0

EMISSIONS COMPLIANCE TEST RESULTS ON A LANDFILL GAS FLARE TOTAL NON-METHANE ORGANIC CARBON (NMOC) DESTRUCTION / REMOVAL EFFECIENCY (DRE)

Antelope Valley Air Pollution Control District
Authority to Construct C008629

Prepared for:

Waste Management of California, Inc.
Antelope Valley Recycling & Disposal Facility
1200-1202 West City Ranch Road
Palmdale, California 93551

Prepared by:

Horizon Air Measurement Services, Inc.
996 Lawrence Drive, Suite 108
Newbury Park, California 91320

Regulatory Agency:

US EPA Region IX
Air Division
75 Hawthorne Street (Air-5)
San Francisco, California 94105

Robert Carrier
Project Manager

Richard J. Vacherot
Technical Director

HORIZON
AIR MEASUREMENT SERVICES, INC.

March 31, 2006

Mr. Matt Salazar
Air Division
U.S. EPA Region IX
75 Hawthorne Street (Air-5)
San Francisco, California 94105

Dear Mr. Salazar:

On behalf of Waste Management of California, Inc. Antelope Valley Recycling and Disposal Facility, please find enclosed two copies of the final report entitled "Emissions Compliance Test on a Landfill Gas Flare to Determine Total Non-Methane Organic Carbon (NMOC) Destruction / Removal Efficiency (DRE)".

If you have any questions, please call me at (805) 498-8781.

Sincerely,

HORIZON AIR MEASUREMENT SERVICES, INC.

Robert Carrier/pf

Robert Carrier
Project Manager

cc: Nicole Stetson, Waste Management of California, Inc.
Wayne Nakagawa, SCS Engineers

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INTRODUCTORY INFORMATION

A. Facility Identifying Information:

Owner/Company Name:	Waste Management of California, Inc.
Owner Mailing Address:	1200-1202 W. City Ranch Road Palmdale, CA 93551
Facility Name:	Antelope Valley Recycling & Disposal
Facility Location:	1200-1202 W. City Ranch Road Palmdale, CA 93551
AVAPCD Authority to Construct:	C008629
Company Responsible Official: **Phone Number:**	Ms. Nicole Stetson (661)223-3418
Test Firm: **Address:** **Phone Number:**	Horizon Air Measurement Services, Inc. 996 Lawrence Drive, Newbury Park, CA 91320 (805)498-8781
Test Date:	March 22, 2006
Test Firm Representatives:	Mr. Richard Vacherot, Technical Director
Test Personnel:	Mr. Robert Carrier, Mr. Travis Williams and Mr. Mike Bivona
Test Purpose:	To determine Total Non-Methane Hydrocarbon Destruction Efficiency

1. INTRODUCTION

Waste Management of California, Inc. is required by the Federal Plan for the Emission Guideline (EG) (40 CFR Part 62, Subpart GGG) to conduct an emissions compliance test on the subject landfill gas flare located at the Antelope Valley Recycling & Disposal Facility in Palmdale, California. The New Source Performance Standards (NSPS) for municipal solid waste landfills (40 CFR Part 60, Subpart WWW), includes a requirement for initial source testing of enclosed combustion devices [60.752(b)(2)(iii)(B)] to determine compliance with the NMOC destruction efficiency requirement of 98% destruction efficiency (DRE) for NMOCs (by weight) or an outlet concentration of 20 ppmv NMOC as hexane at 3% oxygen. Horizon Air Measurement Services, Inc. (Horizon) has been retained to conduct the test program.

The emissions test was completed on March 22, 2006 in accordance with the Horizon Test Plan W07-046-TP which had been submitted to US EPA Region IV at least 30 days prior to the emission test. Three, 60-minute test runs were completed for each parameter of interest. The emission parameters measured at each sample location are provided in Table 1-1.

A summary of results is provided in Section 2. A brief description of the flare and flare operating conditions during the test program is provided in Section 3. Section 4 provides a detailed description of sampling/analytical techniques.

Table 1-1
Compounds of Interest - Test Methods
Antelope Valley Recycling & Disposal Facility - Landfill Flare

Parameter	Location	Method	Number of Test Runs
Total Non Methane Organic Compounds	Inlet	EPA Method 25C	3
	Outlet	EPA Method 25C	3
Oxygen	Inlet	EPA Method 3C	3
	Outlet	EPA Method 3A	3
Carbon Dioxide	Inlet	EPA Method 3C	3
	Outlet	EPA Method 3A	3
Methane	Inlet	EPA Method 25C	3
	Outlet	EPA Method 25C	3
Flow Rate/Temperature	Inlet	EPA Method 2	3
	Outlet	Calculated - EPA Method 19	3
Moisture	Inlet	Wet Bulb/Dry Bulb	3

2. SUMMARY OF RESULTS

A summary of results is provided in Table 2-1. Destruction efficiency averaged 99.1%, which is well within the 40 CFR Part 60, subpart WWW requirement of 98%. The concentration of NMOC averaged 1.6 ppmv, as C_6 @ 3%O_2.

No sampling or analytical problems were encountered during any phase of the test program.

Table 2-1
Summary of Results
Antelope Valley Landfill and Recycling Center
March 22, 2006

	Run 1	Run 2	Run 3	Average
Inlet				
Oxygen, %	1.2	1.4	1.1	1.2
Carbon Dioxide, %	37.8	37.3	36.8	37.3
Methane, %	48.8	40.1	39.1	42.7
Heating Value, Btu/scf	493	405	395	431
Flow Rate, dscfm	736	645	634	672
acfm	873	790	779	814
Non-Methane Organic Carbon				
ppm, C_1	5330	5440	5180	5317
lb/hr, as CH_4	9.80	8.75	8.19	8.91
Exhaust				
Oxygen, %	12.9	12.6	12.2	12.6
Carbon Dioxide, %	7.2	7.4	7.6	7.4
Flow Rate, dscfm	8994	6539	6007	7180
Non-Methane Organic Carbon				
ppm, C_1	4.3	3.8	5.0	4.4
ppm, as C_6@3%O_2	1.6	1.4	1.7	1.6
lb/hr, as CH_4	0.096	0.062	0.075	0.078
Destruction Efficiency, %	99.0	99.3	99.1	99.1

3. FLARE DESCRIPTION AND OPERATION

3.1 Flare Description

The landfill gas flare is a McGill Environmental Systems, Inc. which consists of an insulated steel cylinder 35 feet high and 104 inches inside diameter. Operating flow rate is limited by ATC C008629 to not exceed 1388 standard cubic feet per minute. The flare is equipped with condensate injection.

3.2 Flare Operation During Testing

The flare was tested under the prevailing landfill gas flow rate, condensate injection rate and temperature set point (>1400°F). Following are the average operating parameter values recorded during the emissions testing

Parameter	Run1	Run 2	Run 3
landfill gas flow rate, scfm	768	770	754
flare temperature, °F	1481	1477	1478
condensate injection rate, gpm	0.38	0.39	0.38

This data, recorded at 10-minute intervals during the test period, is provided in Appendix G, Process Data.

3.3 Sample Location

Flare exhaust samples were obtained from each of two ports positioned at right angles, located five feet from the top of the flare and approximately 30 feet above ground level. Inlet samples were obtained from the 10-inch diameter (ID) landfill gas line supplying the flare 62 inches (6.2 diameters) downstream and 36 inches (3.6 diameters) upstream of any flow disturbance.

4. SAMPLING/ANALYSES

The sampling/analytical program has been designed to quantify the parameters of interest outlined in Table 1-1. Three, one-hour test runs were conducted simultaneously at the flare inlet and outlet using the test methods outlined in the following subsections.

4.1 Sample Location

4.1.1 Flare Exhaust

At the flare exhaust, a minimum of 16 sample points (8 per diameter), determined in accordance with Method 1, were utilized for the determination of oxygen and carbon dioxide. A single sample point was utilized for the collection of the TNMOC samples.

4.1.2 Landfill Gas Supply Line

Twelve sample points (6 per diameter), determined in accordance with Method 1, were utilized for flow rate determination. A single sample point was utilized for the collection of total non methane organic compounds, methane and CO_2/O_2 at the flare inlet duct.

4.2 Moisture

4.2.1 Inlet

Landfill gas moisture content was determined using a wet bulb/dry bulb thermometer.

4.2.2 Outlet

Moisture content of the flare exhaust was not determined since the flow rate was calculated using EPA Method 19.

4.3 Flow Rate

4.3.1 Inlet

Landfill gas flow rate was determined using EPA Method 2 as described in Appendix A.

4.3.2 Outlet

Since the flare exhaust velocity is below the applicable limit (11 fps) of EPA Method 2, the exhaust flow rate was calculated stoichiometrically using EPA Method 19.

4.4 Carbon Dioxide and Oxygen

4.4.1 Exhaust

Concentrations of O_2 and CO_2 at the flare exhaust were continuously monitored using EPA Method 3A as detailed in Appendix A.

4.4.2 Inlet

Concentration of O_2 and CO_2 of the landfill gas were determined using EPA Method 3C as described in Appendix A.

4.5 Total Non Methane Organic Compounds and Methane

4.5.1 Exhaust

Methane and total non methane organic compounds (NMOC) samples were collected and analyzed at the outlet using EPA Method 25C procedure as described in Appendix A.

4.5.2 Inlet

Total non methane organic compound and methane concentration were determined at the flare inlet using EPA Method 25C as described in Appendix A

APPENDIX A - Methods Description

Method:	**Sample Velocity Traverses for Stationary Sources**
Applicable for Methods:	EPA Method 1, SCAQMD Method 1.1, CARB Method 1
Principle:	To aid in the representative measurements of pollutant emissions and/or total volumetric flow rate from a stationary source, a measurement site where the effluent stream is flowing in a known direction is selected, and the cross section of the stack is divided into a number of equal areas. A traverse point is then located within these equal areas. The method cannot be used when, 1) flow is cyclonic or swirling, 2) stack is small than about 0.30 meter (12 inches) in diameter or 3) the measurement of the site is less than two stack or duct diameters downstream or less than a half diameter upstream from the flow disturbance.

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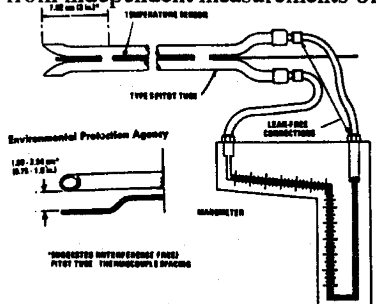
Method: **Stack Gas Velocity and Volumetric Flow Rate**

Applicable for Methods: EPA Method 2, CARB 2, SCAQMD Method 2.1

Principle: The average gas velocity in a stack gas is determined from the gas density and from measurement of the average velocity head with a type S or standard pitot tube.

Sampling Procedure: Set up the apparatus as shown in the figure. Measure the velocity head and temperature at the traverse points specified by EPA Method 2, CARB Method 2 or SCAQMD Method 2.1. Measure the static pressure in the stack and determine the atmospheric pressure. The stack gas molecular weight is determined from independent measurements of O_2, CO_2 and H_2O concentrations.



Sample Recovery: and Analyses: The stack gas velocity is determined from the measured average velocity head, the measured dry concentrations of O_2 and CO_2 and the measured concentration of H_2O. The velocity is determined from the following set of equations:

Where,

ΔP = velocity head, inches in H_2O
Ts = gas/temperature, degrees R
Ps = absolute static pressure

Mwd = dry molecular weight
Mw = molecular weight
Cp = pitot flow coefficient

Dry molecular weight of stack gas

$$Mwd = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$$

Molecular weight of stack gas, wet basis

$$M_w = (M_{wd}\ x\ M_d) + 18\ (1 - M_d)$$

$$Where,\ M_d = \frac{100 - Bws}{100}$$

Stack gas velocity

$$(V_s)\ avg. = (5130)\ C_p\ x\ \sqrt{\Delta P}\ avg.\ x\ \sqrt{T_s}\ x\ (\frac{1}{P_s\ x\ M_w})^{1/2}$$

Method: **EPA Method 3C**

Reference: Determination of CO_2, CH_4, N_2 and O_2 from Stationary Sources

Principle: Gaseous samples are collected in SUMMA polished stainless steel canisters or a Tedlar bag. The canisters are then pressurized with nitrogen and analyzed for CO_2, CH_4, N_2 and O_2

Sampling Procedure:

SUMMA Canister

Samples are collected, in duplicate, using 6-liter SUMMA polished stainless steel canisters which are evacuated to less than 10 mm Hg absolute. The tanks are pressurized and evacuated three times with ultrapure nitrogen and leak checked prior to use. A gas flow metering device and stainless steel shutoff valve is located just upstream of the canister. Representative, integrated samples are collected through a heat conditioned 1/4" stainless steel probe. The gas samples are metered into the canisters through the vacuum regulator maintaining a constant flow rate throughout each sampling period.

The sampling apparatus is checked for leaks prior to the sampling program by attaching the probe end to an absolute pressure gauge and vacuum pump in series. The sample lines were evacuated to less than 10 mm Hg and the gauge shutoff valve is then closed. The sample lines are deemed to be leak-free if no loss of vacuum occurs as indicated by the vacuum gauge. During sampling the tank pressures are monitored with a 0-30 inch vacuum gauge to ensure integrated sampling.

Tedlar Bag

Samples are collected by evacuating the canister at a constant rate over each test run using a rotameter/needle valve and a diaphragm pump. Prior to each sampling run, the evacuated canister (containing the Tedlar bag) is leak checked at 2" Hg vacuum. The sample train upstream of the Tedlar bag is then purged with stack gas. At the conclusion of each test run, each Tedlar bag sample is sealed and stored in an opaque containing pending analysis.

Analytical Procedure: Samples are analyzed for CO_2, CH_4, N_2 and O_2 using a gas chromatograph (GC) equipped with a thermal conductivity detector (TCD).

CONTINUOUS EMISSIONS MONITORING SYSTEM - TRUCK

EPA Methods 3A, 6C, 7E, 10

The continuous emissions monitoring system consists of a Thermo Electron Model 10AR chemiluminescence NO/NO_x analyzer, a Teledyne electro chemical O_2 analyzer, a Thermo Electron Model 48H CO gas filter correlation analyzer, a TECO Model 43C-HL pulsed flourescent SO_2 analyzer and a Fuji PIR 2000 non dispersive infrared CO_2 analyzer. All analyzer specifications are provided in Table 1. All concentrations are determined on a dry basis. Concentrations of NO_X, CO, SO_2 and CO_2 are continuously recorded on a Linseis 10-inch strip chart recorder and a Strawberry Tree Data Acquisition System (DAS). The extractive monitoring system conforms with the requirements of SCAQMD Method 100.1.

The sampling probe (heated to 250°F), constructed of 1/2 inch-diameter 316 stainless steel, is connected to a condenser with a six foot length of 3/8 inch Teflon line (heated to 250°F). A Nupro stainless steel filter (10 micron) is connected at the tip of the probe and maintained at stack temperature.

The condenser consists of a series of two stainless steel moisture knock-out bottles immersed in an ethylene glycol/dry ice bath. The system is designed to minimize contact between the sample and the condensate. Condensate is continuously removed from the knock-out bottles via a peristaltic pump. The condenser outlet temperature is monitored either manually at 10-minute intervals or on a strip chart recorder/DAS system. The sample exiting the condenser is then transported through a filter, housed in a stainless steel holder, followed by 3/8 inch O.D. Teflon tubing and a Teflon coated (or stainless steel/viton) diaphragm pump to the sample manifold. The sample manifold is constructed of stainless steel tubing and directs the sample through each of five rotameters to the NO_X monitor, O_2 monitor, CO monitor, SO_2 monitor and CO_2 monitor and excess sample exhaust line, respectively. Sample flow through each channel is controlled by a back pressure regulator and by stainless steel needle valves on each rotameter. All components of the sampling system that contact the sample are composed of stainless steel, Teflon or glass.

The calibration system is comprised of two parts: the analyzer calibration and the system bias check. The calibration gases are, at a minimum, certified to $\pm$ 1% by the manufacturer. Where necessary to comply with the reference method requirements, EPA Protocol 1 gases are used. The cylinders are equipped with pressure regulators which supply the calibration gas to the analyzers at the same pressure and flow rate as the sample. The selection of zero, span or sample gas directed to each analyzer is accomplished by operation of the zero, calibration or sample selector knobs located on the main flow control panel.

For EPA Methods 3A/6C/7E/10 the following procedures are conducted before and after each series of test runs:

<u>Leak Check:</u>

The leak check is performed by plugging the end of the sampling probe, evacuating the system to at least 20 inches of Hg. The leak check is deemed satisfactory if the system holds 20 inches of Hg vacuum for five minutes with less than one inch Hg loss.

Alternately the leak check is accomplished by plugging the probe at the tip and operating the system in the "sample" position. The excess sample vent is closed and the flow observed on the low-flow (0-140 cc/min) sample delivery system. If no flow is observed the system is deemed leak tight.

<u>Linearity Check:</u>

NO_X, CO, O_2, SO_2 and CO analyzer linearity check is performed by introducing, at a minimum, zero gas, mid range calibration gas (40-60% scale) and high range calibration gas (80-100% scale). Instrument span value is set on each instrument with the mid range gas. Linearity is confirmed, if all values agree with the calibration gas value to within 2% of the range.

Stratification Check:

A stack stratification check is performed (pre-test only) by traversing the stack (6 points per traverse). If the gas composition is homogenous, < 10% variation between any two points in the gas stream throughout the cross sectional diameter of the stacks, single point gas sampling is performed at an average point. If stratification exceeds the 10% criteria, then the stack cross section is traversed during sampling.

System Bias Check:

The system bias check is accomplished by transporting the same gases used to zero and span the analyzers to the sample system as close as practical to the probe inlet. This is accomplished by opening a valve located on the probe, allowing the gas to flow to the probe and back through the moisture knockout and sample line to the analyzers. During this check the system is operated at the normal sampling rate with no adjustments. The system bias check is considered valid if the difference between the gas concentration exhibited by the measurement system which a known concentration gas is introduced at the sampling probe tip and when the sample gas is introduced directly to the analyzer, does not exceed ± 5% of the analyzer range.

Response Time:

Response time (upscale and downscale) for each analyzer is recorded during the system bias check. Upscale response time is defined as the time it takes the subject analyzer gas to reach 95% of the calibration gas value after introducing the upscale gas to the sample bias calibration system. Downscale response time is defined as the time it takes the subject analyzer to return to zero after the zero gas is introduced into the sample system bias calibration system.

NO_x Conversion Efficiency

The NO_x analyzer NO_2 conversion efficiency is determined by injecting a NO_2 gas standard directly into the NO_x analyzer (after initial calibration). The analyzer response must be a least 90% of the NO_2 standard gas value.

NO_2 Converter Efficiency (alternate method)

The mid level NO gas standard is directly injected into a clean leak-free Tedlar bag. The bag is then diluted 1:1 with air (20.9 % O_2). The bag is immediately attached to the NO_x sample line. The initial NO_x concentration is recorded on the strip chart. After at least 30 minutes the Tedlar bag is reattached to the NO_x sample line. Analyzer response must be at 98% of the initial Tedlar bag NO_x value to be acceptable.

In between each sampling run the following procedures are conducted:

Zero and Calibration Drift Check:

Upon the completion of each test run, the zero and calibration drift check is performed by introducing zero and mid range calibration gases to the instruments, with no adjustments (with the exception of flow to instruments) after each test run. The analyzer response must be within ± 3% of the actual calibration gas value.

Analyzer Calibration:

Upon completion of the drift test, the analyzer calibration is performed by introducing the zero and mid range gases to each analyzer prior to the upcoming test run and adjusting the instrument calibration as necessary.

System Bias Check

(same as above)

A schematic of the sample system and specific information of the analytical equipment is provided in the following pages.

TABLE 1

CONTINUOUS EMISSIONS MONITORING LABORATORY - TRUCK

NO_X CHEMILUMINESCENT ANALYZER -- THERMO ELECTRON MODEL 10 A

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
Operating Ranges (ppm)	2.5, 10, 25, 100, 250, 1000, 2500, 10000
Output	0-1 volt

O_2 ANALYZER, FUEL TYPE -- TELEDYNE MODEL 326RA

Response Time (0-90%)	60 seconds
Accuracy	± 1% of scale at constant temperature ± 1% of scale of ± 5% of reading, whichever is greater, over the operation temperature range.
Operating Ranges (%)	0-5, 0-25
Output	0-1 volt

O_2 ANALYZER, PARAMAGNETIC -- SERVOMEX MODEL 1400B

Response Time (0-90%)	15 seconds
Accuracy	0.1% oxygen
Linearity	± 1% scale
Operating Ranges (%)	0-25, 0-100
Output	0-1 volt

CO GAS FILTER CORRELATION -- THERMO ELECTRON MODEL 48H

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
Operating Ranges (ppm)	50, 100, 250, 500, 1000, 2500, 5000, 10,000, 25,000, 50,000
Output	0-1 volt

TABLE 1 (Cont.)

CO_2 INFRARED GAS ANALYZER -- HORIBA - MODEL PIR 2000

Response Time (0-90%)	5 seconds
Zero Drift	± 1% of full scale in 24 hours
Span Drift	± 1% of full scale in 24 hours
Linearity	± 2% of full scale
Resolution	Less than 1% of full scale
Operating Ranges (%)	0-5, 0-15, 0-25
Output	0-1 volt

SO_2 PULSED FLOURESCENT ANALYZER - TECO MODEL 43C-HL

Response Time	80 seconds
Zero Drift	± 1% of full scale in 24 hours
Span Drift	± 1% of full scale in 24 hours
Linearity	± 2% of full scale
Resolution	less than 1% of full scale
Operating Ranges	5, 10, 20, 50, 100, 200 ppm and customized
Output	0-10 volt

RATFISCH FID TOTAL HYDROCARBON ANALYZER -- MODEL 55CA

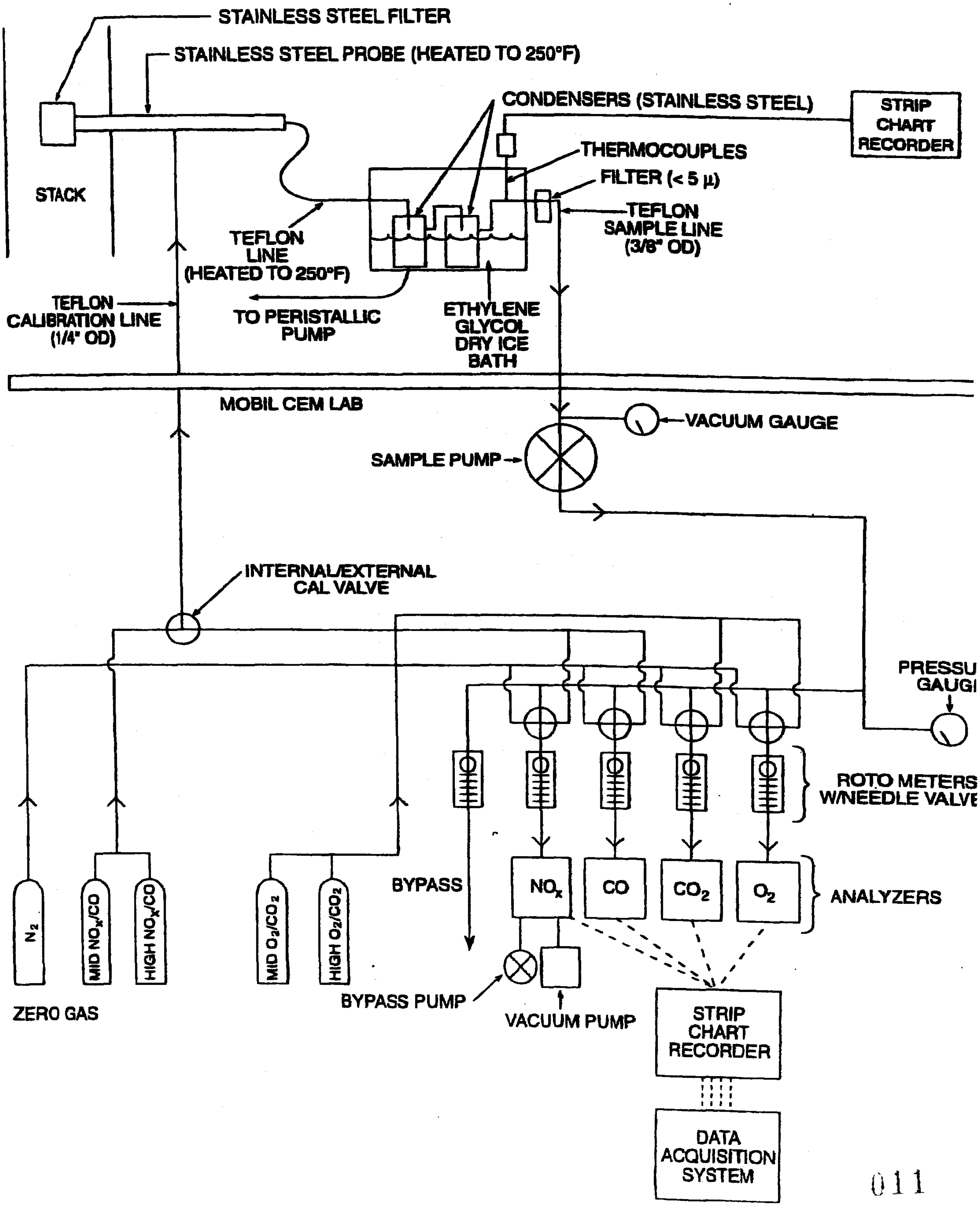
Response Time (0-90%)	5 seconds
Zero Drift	± 1% full scale in 24 hours
Span Drift	± 1% full scale in 24 hours
Linearity	± 1% full scale - constant
Accuracy	± 1% full scale at constant temp.
Operating Ranges (ppm)	10, 100, 1000, 10,000
Output	0 - 10 volts

LINSEIS MODEL L2045 FOUR PEN STRIP CHART RECORDER

Pen Speed	up to 120 cm/min
Measuring Response	0-20 volts
Linearity Error	0.25%
Accuracy	0.3%
Zero Suppression	Manual (from 1 to 10X full scale)

LINEAR 3 PEN CONTINUOUS -- MODEL 595 STRIP CHART

Pen Response	20 inches/second
Measuring Response	1 Mv through 5V
Zero Set	Electronically adjustable full scale with 1 full scale of zero suppression
Accuracy	Total limit of error ± 0.5%


STAINLESS STEEL FILTER
STAINLESS STEEL PROBE (HEATED TO 250°F)
CONDENSERS (STAINLESS STEEL)
STRIP CHART RECORDER
THERMOCOUPLES
FILTER (< 5 µ)
STACK
TEFLON SAMPLE LINE (3/8" OD)
TEFLON LINE (HEATED TO 250°F)
TEFLON CALIBRATION LINE (1/4" OD)
TO PERISTALLIC PUMP
ETHYLENE GLYCOL DRY ICE BATH
MOBIL CEM LAB
VACUUM GAUGE
SAMPLE PUMP
INTERNAL/EXTERNAL CAL VALVE
PRESSU GAUGI
ROTO METERS W/NEEDLE VALVE
N2
MID NOx/CO
HIGH NOx/CO
MID O2/CO2
HIGH O2/CO2
BYPASS
NOx
CO
CO2
O2
ANALYZERS
ZERO GAS
BYPASS PUMP
VACUUM PUMP
STRIP CHART RECORDER
DATA ACQUISITION SYSTEM

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Method: **Oxygen (O_2) by Continuous Analyzer**

Applicable Reference Methods: EPA 3A, EPA 20, CARB 100, BAAQMD ST-14, SCAQMD 100.1

Principle: A sample is continuously withdrawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of O_2 concentration.

Analyzer: Teledyne Model 326R

Measurement Principle: Electrochemical cell

Ranges: 0-5, 0-25% 0-100%

Accuracy: 1% of full scale

Output: 0-1 V

Interferences: Halogens and halogenated compounds will cause a positive interference. Acid gases will consume the fuel cell and cause a slow calibration drift.

Response Time: 90% <60 seconds

Sampling Procedure: A representative flue gas sample is collected and conditioned using the CEM system described previously. If Method 20 is used, that method's specific procedures for selecting sample points are used. Otherwise, stratification checks are performed at the start of a test program to select single or multiple-point sample locations.

Analytical Procedure: An electrochemical cell is used to measure O_2 concentration. Oxygen in the flue gas diffuses through a Teflon membrane and is reduced on the surface of the cathode. A corresponding oxidation occurs at the anode internally and an electric current is produced that is proportional to the concentration of oxygen. This current is measured and conditioned by the instrument's electronic circuitry to give an output in percent O_2 by volume.

Method:	**Carbon Dioxide (CO_2) by Continuous Analyzer**
Applicable Reference	EPA 3A, CARB 100, BAAQMD ST-5, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of CO_2 concentration.
Analyzer:	PIR 2000
Measurement Principle:	Non-dispersive infrared (NDIR)
Accuracy:	1% of full scale
Ranges:	0-5, 0-15%
Output:	0-1 V
Interferences:	A possible interference includes water. Since the instrument receives dried sample gas, this interference is not significant.
Response Time:	5 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously.
Analytical Procedure:	Carbon dioxide concentrations are measured by short path length non-dispersive infrared analyzers. These instruments measure the differential in infrared energy absorbed from energy beams passed through a reference cell (containing a gas selected to have minimal absorption of infrared energy in the wavelength absorbed by the gas component of interest) and a sample cell through which the sample gas flows continuously. The differential absorption appears as a reading on a scale of 0-100%.

Method: **Methane and Total Non-Methane Hydrocarbons by Total Carbon Analyses**

Reference: EPA Method 25C

Principle: Gaseous samples are collected in stainless steel canisters. The canisters are then pressurized with nitrogen and analyzed for methane and total non methane hydrocarbons (TNMHC) using a TCA/FID.

Sampling Procedure: Samples are collected, in duplicate, using stainless steel canisters which are evacuated to less than 10 mm Hg absolute. The tanks are pressurized and evacuated three times with ultrapure nitrogen and leak checked prior to use. A gas flow metering device and stainless steel shutoff valve is located just upstream of the canister. Representative, integrated samples are collected through a heat conditioned 1/4" stainless steel probe. The gas samples are metered into the canisters through the vacuum regulator maintaining a constant flow rate throughout each sampling period.

The sampling apparatus is checked for leaks prior to the sampling program by attaching the probe end to an absolute pressure gauge and vacuum pump in series. The sample lines were evacuated to less than 10 mm Hg and the gauge shutoff valve is then closed. The sample lines are deemed to be leak-free if no loss of vacuum occurs as indicated by the vacuum gauge. During sampling the tank pressures are monitored with a 0-30 inch vacuum gauge to ensure integrated sampling.

Analytical Procedure: Samples are analyzed for methane and total non methane hydrocarbons (TNMHC) by total combustion analyses (TCA)/flame ionization detection (FID).

APPENDIX B - Computer Printout of Results

CEM Emission Rates

Facility: **Antelope Valley L.F.**
Source: **Flare Exhaust**
Job No.: **W07-046**
Date: **3/22/2006**

Run Number	******	1	2	3
Inlet				
Flow Rate	dscfm	736	645	634
Total Non-Methane Hydrocarbons, as Methane				
Concentration	ppm	5330	5440	5180
Concentration	lb/dscf	2.22E-04	2.26E-04	2.15E-04
Emission Rate	lb/hr	9.78	8.74	8.18
Exhaust				
Flow Rate	dscfm	8994	6539	6007
Oxygen	%	12.9	12.6	12.2
Total Non-Methane Hydrocarbons				
Concentration, as Methane	ppm	4.30	3.78	5.00
Concentration, as C_6 @ 3% O2	ppm	1.60	1.36	1.71
Concentration, as Methane	lb/dscf	1.79E-07	1.57E-07	2.08E-07
Emission Rate, as Methane	lb/hr	0.0964	0.0616	0.0749
Destruction Efficiency	%	99.0	99.3	99.1

Facility: Antelope Valley LF
Source: Flare Inlet
Job No.: W07-046
Test Date: 3/22/06

SCAQMD Methods 1-4 Flowrate Determination

STD TEMP: 68

RUN NUMBER	******	1	2	3
DATE OF RUN	******	03/22/06	03/22/06	03/22/06
CLOCK TIME: INITIAL	******	900	1105	1213
CLOCK TIME: FINAL	******	1000	1205	1313
AVG. STACK TEMPERATURE	Degrees F	98	105	107
AVG. SQUARE DELTA P	Inches H20	0.3703	0.3382	0.3332
NOZZLE DIAMETER	Inches	NA	NA	NA
BAROMETRIC PRESSURE	Inches HG	27.57	27.57	27.57
SAMPLING TIME	Minutes	60	60	60
SAMPLE VOLUME	Cubic Feet	NA	NA	NA
AVG. METER TEMP.	Degrees F	NA	NA	NA
AVG. DELTA H	Inches H20	NA	NA	NA
DGM CALIB. FACTOR [Y]	******	NA	NA	NA
WATER COLLECTED	Milliliters	NA	NA	NA
CO 2	Percent	37.8	37.3	36.8
O 2	Percent	1.17	1.37	1.05
CO	Percent			
CH4	Percent	48.8	40.1	39.1
N 2	Percent	12.2	21.2	23.1
STACK AREA	Square Inches	78.5	78.5	78.5
STATIC PRESSURE	Inches WG	0.90	0.90	0.80
PITOT COEFFICIENT	******	0.99	0.99	0.99
SAMPLE VOLUME DRY	DSCF	0.00	0.00	0.00
WATER AT STD.	SCF	0.0	0.0	0.0
MOISTURE	Percent	3.5	4.0	4.0
MOLE FRACTION DRY GAS	******	0.97	0.96	0.96
MOLECULAR WT.DRY	lb/lb Mole	28.24	29.21	29.24
EXCESS AIR	Percent	57	32	21
MOLECULAR WT. WET	lb/lb Mole	27.88	28.76	28.79
STACK GAS PRESSURE	Inches HG	27.64	27.64	27.63
STACK VELOCITY	AFPM	1600	1448	1429
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	736	645	634
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	873	790	779

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Antelope Valley L.F.	Date:	3/22/06
Location:		Job #:	W07-046
Unit:	Flare Exhaust	Bomb#:	Run 1

Fuel temperature		deg F	Std. Temp.	**68**	
Fuel Pressure		psi			
Fuel Flow Rate		cfm	Fuel Flow	**736.2**	scfm
Exhaust Outlet O2	**12.9**	%			
Barometric Pressure	27.57				

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		**1.17**			0.012
Nitrogen		**12.23**			0.122
Carbon Dioxide		**37.80**			0.378
Methane		**48.80**	492.88	443.79	4.182
Ethane	C2		0.00	0.00	0.000
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**492.88**	**443.79**	**4.69**

CALCULATIONS

EXHAUST FLOW RATE, Q = (scfm*Exp Fac)*(20.92(20.92-%O2)

8994.0 DSCFM

F - FACTOR = (Exp Fac*10^6)/(hhv*((460+Tstd)/528))

9523.9 SCF/MMBtu

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Antelope Valley L.F.	Date:	3/22/06
Location:		Job #:	W07-046
Unit:	Flare Exhaust	Bomb#:	Run 2

Fuel temperature		deg F	Std. Temp.	**68**	
Fuel Pressure		psi			
Fuel Flow Rate		cfm	Fuel Flow	**644.6**	scfm
Exhaust Outlet O2	**12.6**	%			
Barometric Pressure					

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		**1.37**			0.014
Nitrogen		**21.23**			0.212
Carbon Dioxide		**37.30**			0.373
Methane		**40.10**	405.01	364.67	3.437
Ethane	C2		0.00	0.00	0.000
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**405.01**	**364.67**	**4.04**

CALCULATIONS

EXHAUST FLOW RATE, Q = (scfm*Exp Fac)*(20.92(20.92-%O2)

6539.0 DSCFM

F - FACTOR = (Exp Fac*10^6)/(hhv*((460+Tstd)/528))

9964.1 SCF/MMBtu

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Antelope Valley L.F.	Date:	3/22/06
Location:		Job #:	W07-046
Unit:	Flare Exhaust	Bomb#:	Run 3

Fuel temperature		deg F	Std. Temp.	**68**	
Fuel Pressure		psi			
Fuel Flow Rate		cfm	Fuel Flow	**633.5**	scfm
Exhaust Outlet O2	**12.2**	%			
Barometric Pressure	27.57				

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		**1.05**			0.011
Nitrogen		**23.05**			0.231
Carbon Dioxide		**36.80**			0.368
Methane		**39.10**	394.91	355.58	3.351
Ethane	C2		0.00	0.00	0.000
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**394.91**	**355.58**	**3.96**

CALCULATIONS

EXHAUST FLOW RATE, Q = (scfm*Exp Fac)*(20.92(20.92-%O2)

6007.1 DSCFM

F - FACTOR = (Exp Fac*10^6)/(hhv*((460+Tstd)/528))

10027.3 SCF/MMBtu

020

Facility:	**Antelope Valley L.F.**	**Run No.:**	**1**
Source:	**Flare Exhaust**	**Fuel:**	**L.F.G.**
Job No.:	**W07-046**	**Std. O2:**	**3**
Date:	**03/22/06**		

	O2 %	CO2 %
Range:	25.00	15.00
Span:	12.00	7.00
Low:		
High:	20.12	12.01

** POST-TEST DRIFT (DIRECT)**

Values				
Zero:	0.02	0.00		
Span:	11.98	6.96		

Percent Drift		
Zero:	0.08	0.00
Span:	-0.08	-0.27

** PRE-TEST BIAS **

Values				
Zero:	0.02	0.02		
Span:	11.98	6.96		

** POST-TEST BIAS **

Values				
Zero:	-0.02	0.02		
Span:	12.03	7.01		

** BIAS CORRECTION **

Zero Average	0.00	0.02
Span Average	12.01	6.99

** POST-TEST DRIFT (BIAS)**

Percent Drift		
Zero:	0.16	0.00
Span:	-0.20	-0.33

Bias-Corrected Concentration	**12.88**	**7.26**
Bias-Corrected Conc.(O2 adjusted)		

** RAW AVERAGE CONCENTRATION **

Average:		12.89	7.24
O2 adjust:	3.0		
Date	Time	O2	CO2
22-Mar-06	900	13.00	6.79
22-Mar-06	901	13.13	6.76
22-Mar-06	902	13.53	6.21
22-Mar-06	903	13.77	6.47
22-Mar-06	904	13.52	6.50
22-Mar-06	905	13.40	6.73
22-Mar-06	906	13.55	6.58
22-Mar-06	907	13.65	6.61
22-Mar-06	908	13.59	6.38
22-Mar-06	909	13.48	6.32
22-Mar-06	910	13.86	6.46
22-Mar-06	911	12.94	6.89

22-Mar-06	912	12.97	7.06
22-Mar-06	913	13.30	6.87
22-Mar-06	914	13.23	6.78
22-Mar-06	915	13.14	6.96
22-Mar-06	916	13.14	6.76
22-Mar-06	917	13.63	6.47
22-Mar-06	918	13.13	6.86
22-Mar-06	919	12.73	7.19
22-Mar-06	920	12.62	7.29
22-Mar-06	921	12.76	7.12
22-Mar-06	922	13.03	6.94
22-Mar-06	923	12.93	7.09
22-Mar-06	924	13.48	6.52
22-Mar-06	925	13.35	6.66
22-Mar-06	926	13.31	6.71
22-Mar-06	927	13.35	6.79
22-Mar-06	928	13.41	6.57
22-Mar-06	929	13.11	7.01
22-Mar-06	930	13.21	6.94
22-Mar-06	931	13.21	6.89
22-Mar-06	952	14.04	6.00
22-Mar-06	953	17.83	3.01
22-Mar-06	954	20.39	2.68
22-Mar-06	955	12.81	8.05
22-Mar-06	956	12.85	8.10
22-Mar-06	957	12.58	8.04
22-Mar-06	958	12.05	8.08
22-Mar-06	959	11.63	8.42
22-Mar-06	1000	11.51	8.33
22-Mar-06	1001	11.64	8.35
22-Mar-06	1002	11.84	8.09
22-Mar-06	1003	11.90	8.09
22-Mar-06	1004	12.00	8.03
22-Mar-06	1005	11.62	8.37
22-Mar-06	1006	11.47	8.52
22-Mar-06	1007	11.61	8.30
22-Mar-06	1008	11.86	8.11
22-Mar-06	1009	11.92	8.20
22-Mar-06	1010	11.81	8.16
22-Mar-06	1011	11.93	8.19
22-Mar-06	1012	11.96	8.11
22-Mar-06	1013	11.73	8.31
22-Mar-06	1014	11.66	8.39
22-Mar-06	1015	11.57	8.39
22-Mar-06	1016	11.72	8.41
22-Mar-06	1017	11.91	8.13
22-Mar-06	1018	12.02	8.15
22-Mar-06	1019	12.08	8.07
22-Mar-06	1020	11.71	8.34

Facility:	**Antelope Valley L.F.**	**Run No.:**	**2**
Source:	**Flare Exhaust**	**Fuel:**	**L.F.G.**
Job No.:	**W07-046**	**Std. O2:**	**3**
Date:	**3/22/06**		

	O2 %	CO2 %
Range:	25	15
Span:	12.00	7.00
Low:		
High:	20.12	12.01

** POST-TEST DRIFT (DIRECT)**

Values				
Zero:	0.02	0.00		
Span:	11.98	6.96		

Percent Drift		
Zero:	0.08	0.00
Span:	-0.08	-0.27

** PRE-TEST BIAS **

Values				
Zero:	0.02	0.02		
Span:	11.98	6.96		

** POST-TEST BIAS **

Values				
Zero:	-0.02	0.02		
Span:	12.03	7.01		

** BIAS CORRECTION **

Zero Average	0.00	0.02
Span Average	12.01	6.99

** POST-TEST DRIFT (BIAS)**

Percent Drift		
Zero:	0.16	0.00
Span:	-0.20	-0.33

Bias-Corrected Concentration	**12.60**	**7.41**
Bias-Corrected Conc.(O2 adjusted)		

** RAW AVERAGE CONCENTRATION **

Average:			12.60	7.39
O2 adjust:		3.0		
Date	Time		O2	CO2
22-Mar-06	1105		13.00	6.79
22-Mar-06	1106		13.13	6.76
22-Mar-06	1107		13.53	6.21
22-Mar-06	1108		13.77	6.47
22-Mar-06	1109		13.52	6.50
22-Mar-06	1110		13.40	6.73
22-Mar-06	1111		13.55	6.58
22-Mar-06	1112		13.65	6.61
22-Mar-06	1113		13.59	6.38
22-Mar-06	1114		13.48	6.32
22-Mar-06	1115		13.86	6.46
22-Mar-06	1116		12.94	6.89

22-Mar-06	1117	12.97	7.06
22-Mar-06	1118	13.30	6.87
22-Mar-06	1119	13.23	6.78
22-Mar-06	1120	13.14	6.94
22-Mar-06	1121	13.14	6.76
22-Mar-06	1122	11.63	6.47
22-Mar-06	1123	13.13	6.86
22-Mar-06	1124	12.73	7.19
22-Mar-06	1125	13.48	7.29
22-Mar-06	1126	12.76	7.12
22-Mar-06	1127	13.03	6.94
22-Mar-06	1128	12.93	6.79
22-Mar-06	1129	13.48	6.52
22-Mar-06	1130	13.35	6.66
22-Mar-06	1131	13.31	6.71
22-Mar-06	1132	13.35	6.79
22-Mar-06	1133	13.41	6.57
22-Mar-06	1134	13.11	7.01
22-Mar-06	1135	13.21	6.94
22-Mar-06	1136	11.63	6.89
22-Mar-06	1138	12.81	7.19
22-Mar-06	1139	12.81	7.19
22-Mar-06	1140	12.85	8.10
22-Mar-06	1141	12.58	8.04
22-Mar-06	1142	12.05	8.08
22-Mar-06	1143	11.63	8.42
22-Mar-06	1144	11.51	8.33
22-Mar-06	1145	11.64	8.35
22-Mar-06	1146	11.84	8.09
22-Mar-06	1147	11.90	8.09
22-Mar-06	1148	12.00	8.03
22-Mar-06	1149	11.62	8.37
22-Mar-06	1150	11.47	8.52
22-Mar-06	1151	11.61	8.30
22-Mar-06	1152	11.86	8.11
22-Mar-06	1153	11.92	8.20
22-Mar-06	1154	11.81	8.16
22-Mar-06	1155	11.93	8.19
22-Mar-06	1156	11.62	8.11
22-Mar-06	1157	11.73	8.31
22-Mar-06	1158	11.66	8.39
22-Mar-06	1200	11.57	8.39
22-Mar-06	1201	11.72	8.41
22-Mar-06	1202	11.91	8.13
22-Mar-06	1203	12.02	8.15
22-Mar-06	1204	12.08	8.07
22-Mar-06	1205	11.71	8.34

Facility:	**Antelope Valley L.F.**	**Run No.:**	**3**
Source:	**Flare Exhaust**	**Fuel:**	**L.F.G.**
Job No.:	**W07-046**	**Std. O2:**	**3**
Date:	**3/22/06**		

	O2 %	CO2 %
Range:	25	15
Span:	12.00	7.00
Low:		
High:	20.12	12.01

** POST-TEST DRIFT (DIRECT)**

Values				
Zero:	0.02	0.00		
Span:	11.98	6.96		

Percent Drift		
Zero:	0.08	0.00
Span:	-0.08	-0.27

** PRE-TEST BIAS **

Values				
Zero:	0.02	0.02		
Span:	11.98	6.96		

** POST-TEST BIAS **

Values				
Zero:	-0.02	0.02		
Span:	12.03	7.01		

** BIAS CORRECTION **

Zero Average	0.00	0.02
Span Average	12.01	6.99

** POST-TEST DRIFT (BIAS)**

Percent Drift		
Zero:	0.16	0.00
Span:	-0.20	-0.33

Bias-Corrected Concentration	**12.18**	**7.62**
Bias-Corrected Conc.(O2 adjusted)		

** RAW AVERAGE CONCENTRATION **

Average:			12.19	7.60
O2 adjust:		3.0		
Date	Time		O2	CO2
22-Mar-06	1213		12.15	7.61
22-Mar-06	1214		12.03	7.77
22-Mar-06	1215		12.04	7.70
22-Mar-06	1216		12.08	7.70
22-Mar-06	1217		12.19	7.62
22-Mar-06	1218		12.03	7.73
22-Mar-06	1219		12.10	7.65
22-Mar-06	1220		12.05	7.74
22-Mar-06	1221		12.13	7.66
22-Mar-06	1222		11.94	7.87
22-Mar-06	1223		12.01	7.81
22-Mar-06	1224		12.04	7.76

22-Mar-06	1225	12.04	7.75
22-Mar-06	1226	11.89	7.82
22-Mar-06	1227	11.98	7.83
22-Mar-06	1228	11.90	7.90
22-Mar-06	1229	12.01	7.74
22-Mar-06	1230	12.15	7.65
22-Mar-06	1231	12.06	7.76
22-Mar-06	1232	12.01	7.77
22-Mar-06	1233	12.18	7.60
22-Mar-06	1234	12.12	7.70
22-Mar-06	1235	12.07	7.73
22-Mar-06	1236	12.18	7.62
22-Mar-06	1237	12.00	7.79
22-Mar-06	1238	12.10	7.72
22-Mar-06	1239	12.10	7.67
22-Mar-06	1240	12.05	7.74
22-Mar-06	1241	11.94	7.87
22-Mar-06	1242	12.03	7.68
22-Mar-06	1243	12.43	7.45
22-Mar-06	1244	12.20	6.74
22-Mar-06	1245	12.08	7.81
22-Mar-06	1246	12.00	7.77
22-Mar-06	1247	12.08	7.68
22-Mar-06	1248	11.99	7.81
22-Mar-06	1249	12.15	7.68
22-Mar-06	1250	12.17	7.59
22-Mar-06	1251	12.39	7.45
22-Mar-06	1252	12.31	7.47
22-Mar-06	1253	12.23	7.57
22-Mar-06	1254	12.21	7.65
22-Mar-06	1255	12.37	7.43
22-Mar-06	1256	12.20	7.61
22-Mar-06	1257	12.33	7.54
22-Mar-06	1258	12.86	6.88
22-Mar-06	1259	12.82	7.17
22-Mar-06	1300	13.32	6.52
22-Mar-06	1301	12.60	7.35
22-Mar-06	1302	12.41	7.43
22-Mar-06	1303	12.27	7.54
22-Mar-06	1304	13.17	6.73
22-Mar-06	1305	12.27	7.56
22-Mar-06	1306	12.26	7.53
22-Mar-06	1307	11.84	7.97
22-Mar-06	1308	11.79	7.94
22-Mar-06	1309	12.13	7.64
22-Mar-06	1310	12.51	7.28
22-Mar-06	1311	12.15	7.70
22-Mar-06	1312	12.09	7.68
22-Mar-06	1313	12.23	7.61

Facility: Anteloope Valley Landfill
Source: Flare
Job No.: w07-046
Test Date: 3/22/06

SCAQMD Method 100.1 Performance Data

PRETEST	CALIBRATION ERROR	
LEAK CHECK		
RANGE :	25	20
	O2	CO2
ZERO		
Instrument	0.00	0.00
Cylinder	0.00	0.00
Difference (%)	0.00	0.00
LOW LEVEL		
Instrument		
Cylinder		
Difference (%)	0.00	0.00
MID LEVEL		
Instrument	11.83	7.00
Cylinder	12.00	7.00
Difference (%)	-0.68	0.00
HIGH LEVEL		
Instrument	20.00	11.80
Cylinder	20.12	12.01
Difference (%)	-0.48	-1.05

PRETEST	LINEARITY	
	Cylinder	Instrument
	O2	
Zero	0.00	0.00
High Level	20.12	20.00
Slope	1.01	
Intercept	0.00	Status
Predicted Value	11.93	<1
Linearity (%)	-0.39	PASS
	CO2	
Zero	0.00	0.00
High Level	12.01	11.80
Slope	1.02	
Intercept	0.00	Status
Predicted Value	6.88	<1
Linearity (%)	0.61	PASS

SYSTEM RESPONSE TIME	#1	#2	#3
Upscale			
O2	36	31	32
CO2	32	31	34
Downscale			
O2	34	34	30
CO2	34	30	31

POST TEST	CALIBRATION ERROR	
LEAK CHECK		
	O2	CO2
ZERO		
Instrument	0.00	0.00
Cylinder	0.00	0.00
Difference (%)	0.00	0.00
LOW LEVEL		
Instrument		
Cylinder		
Difference (%)	0.00	0.00
MID LEVEL		
Instrument	7.20	7.20
Cylinder	12.00	7.00
Difference (%)	-19.20	1.00
HIGH LEVEL		
Instrument	20.13	12.05
Cylinder	20.12	12.01
Difference (%)	0.02	0.20

POST TEST	LINEARITY	
	Cylinder	Instrument
	O2	
Zero	0.00	0.00
High Level	20.12	20.13
Slope	1.00	
Intercept	0.00	Status
Predicted Value	12.00	<1
Linearity (%)	-19.21	PASS
	CO2	
Zero	0.00	0.00
High Level	12.01	12.05
Slope	1.00	
Intercept	0.00	Status
Predicted Value	7.02	<1
Linearity (%)	0.88	PASS

APPENDIX C - Laboratory Results

AtmAA Inc.
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environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Methane and Total Gaseous Non-Methane Organics Analysis in Tank and Canister Samples

Report Date: March 27, 2006
Client: Horizon Air Measurement Services, Inc.
Site: Palmdale Landfill / Waste Management
Client Project No.: W60-046

Date Received: March 22, 2006
Date Analyzed: March 24, 2006

ANALYSIS DESCRIPTION

Percent level methane was measured by thermal conductivity detection/gas chromatography (TCD/GC). Low level methane and TGNMO were measured by Method 25 analysis, (FID/TCA).

AtmAA Lab No.:	00816-8	00816-9	00816-10	00816-11	00816-12	00816-13
Sample ID:	Tank S	Tank R	Tank K	SUMMA 16	SUMMA 17	SUMMA 18
	(Concentration, ppmv)					
Methane	488000	401000	391000	3.00	<1	<1
Ethane	9.40	8.38	7.63	<1	<1	<1
TGNMO	5330	5440	5180	4.30	3.78	5.00

TGNMO is total gaseous non-methane organics (excluding ethane), reported as ppmv methane.
Ethane is reported as ppmv methane.

Michael L. Porter c/o MLP

Michael L. Porter
Laboratory Director

0223

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Site: Palmdale Landfill / Waste Management
Date Received: March 22, 2006
Date Analyzed: March 24, 2006

Components	Sample ID	Repeat Analysis		Mean Conc.	% Diff. From Mean
		Run #1	Run #2		
		(Concentration, ppmv)			
Methane	Tank S	404000	406000	488000	0.10
	S16	3.03	2.97	3.00	1.0
	S17	<1	<1	---	---
	S18	<1	<1	---	---
Ethane	Tank S	9.41	9.39	9.40	0.11
	Tank R	8.63	8.13	8.38	3.0
	Tank K	7.78	7.47	7.63	2.0
	S16	<1	<1	---	---
	S17	<1	<1	---	---
	S18	<1	<1	---	---
TGNMO	Tank S	5520	5140	5330	3.6
	Tank R	5470	5400	5440	0.64
	Tank K	5230	5130	5180	0.97
	S16	4.30	4.30	4.30	0.0
	S17	3.84	3.71	3.78	1.7
	S18	5.07	4.93	5.00	1.4

Six tank and canister samples, laboratory numbers 00816-(8-13), were analyzed for methane and TGNMO. Agreement between repeat analyses is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 11 repeat measurements from six samples is 1.3%.

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Carbon Dioxide and Oxygen Analysis in Steel Tank Samples

Report Date: March 28, 2006
Client: Horizon Air Measurement Services
Site: Waste Management / Palmdale
Client Project No.: W06-046

Date Received: March 21, 2006
Date Analyzed: March 22, & 23, 2006

ANALYSIS DESCRIPTION

Carbon dioxide and oxygen were measured by thermal conductivity detection/gas chromatography (TCD/GC).

AtmAA Lab No.:	00816-8	00816-9	00816-10
Sample ID:	Tank S	Tank R	Tank K
	(Concentration in %v)		
Carbon Dioxide	37.8	37.3	36.8
Oxygen	1.17	1.37	1.05

Michael L. Porter c/o MLP
Laboratory Director

031

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Site: Waste Management / Palmdale
Date Received: March 21, 2006
Date Analyzed: March 22, & 23, 2006

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in %v)			
Carbon Dioxide	Tank S	37.6	37.9	37.8	0.40
Oxygen	Tank S	1.13	1.2	1.17	3.0
	Tank R	1.63	1.11	1.37	19
	Tank K	0.99	1.10	1.05	5.3

Three steel tank samples, laboratory numbers 00816-(8-10), were analyzed for carbon dioxide and oxygen. Agreement between repeat analyses is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 4 repeat measurements from three steel tank samples is 6.9%.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES
Project No.	**Field Logbook No.**	
Sampler: (*Signature*)	**Chain of Custody Tape No.**	

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:			Disposed of by: (*Signature*)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

№ 8956

APPENDIX D - Field Data Sheets

VELOCITY DATA SHEET - METHOD 2

Facility:	Antelope Valley LF	**Baro. Press:**	27.51	**D_1 upstream:**	3.6
Source:	Flare Inlet	**Static Press:**	0.90	**D_1 downstream:**	6.2
Job #:	007-045	**Pitot Tube #:**	STD 24"	**Stack Diameter:**	10"
Date:	~~3/21/06~~ 3/22/06	**Pitot Tube Type:**	STD	**Leak Check**	
Operator:	RC	**Magnahelic:**	#2	**Initial:** ✓	**Final:** ✓
Run #:	1				

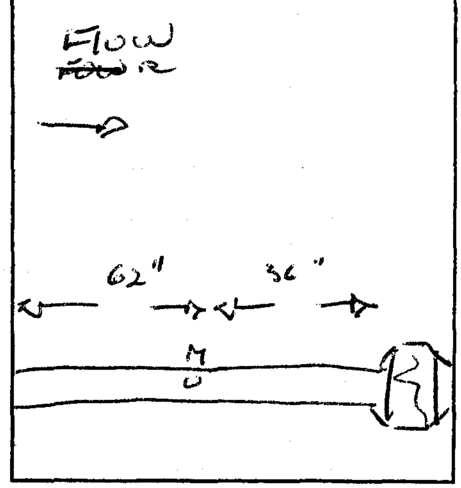
~~Dry~~ Wet bulb: 80 °F

nc ~~2.8~~ 3.5 in H_2O

CH_4 - 44.4%
CO_2 - 40.7%
O_2 - 0.1%
N_2 (Bal) - 14.3%

Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A-6	9.5 (9.6)	~~0.50~~ 0.12	97	
5	8.5	~~0.32~~ 0.14	97	
4	7.0	~~0.40~~ 0.16	97	
3	3.0	~~0.30~~ 0.16	98	
2	1.5	~~0.38~~ 0.14	98	
1	0.5 (0.4)	~~0.48~~ ~~0.48~~ 0.12	98	
B-6		0.12	97	
5		0.14	98	
4		0.14	99	
3		0.16	99	
2		0.14	99	
1		0.12	99	
Average		$\sqrt{\Delta P}$=0.3703	T_s=98.0	∠=

Side View



Top View

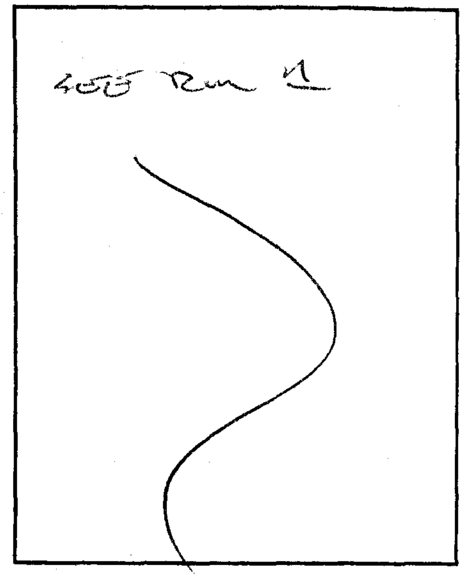
VELOCITY DATA SHEET - METHOD 2

Facility:	AVLERC	**Baro. Press:**	27.52	**D_1 upstream:**	3.6
Source:	Flare Inlet	**Static Press:**	0.90	**D_1 downstream:**	6.2
Job #:	007-046	**Pitot Tube #:**	STD 24"	**Stack Diameter:**	10"
Date:	3/22/06	**Pitot Tube Type:**	STD	**Leak Check**	
Operator:	M	**Magnahelic:**	#2	**Initial:**	**Final:**
		wet bulb	86°F	✓	✓
Run #:	2	4.0% H_2O			

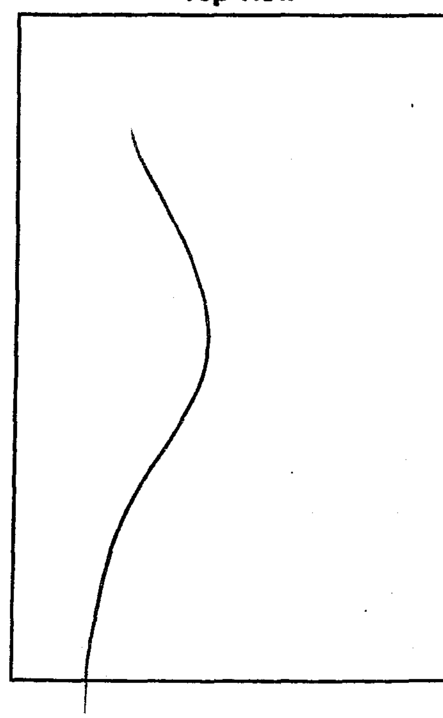
Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A-6		0.10	105	
5		0.12	105	
4		0.14	105	
3		0.12	105	
2		0.10	105	
1		0.08	105	
B-6		0.10	105	
5		0.12	105	
4		0.12	105	
3		0.14	105	
2		0.12	105	
1		0.12	105	
Average		$\sqrt{\Delta P}$= 0.3382	T_s= 105.0	∠=

M M

Side View



Top View



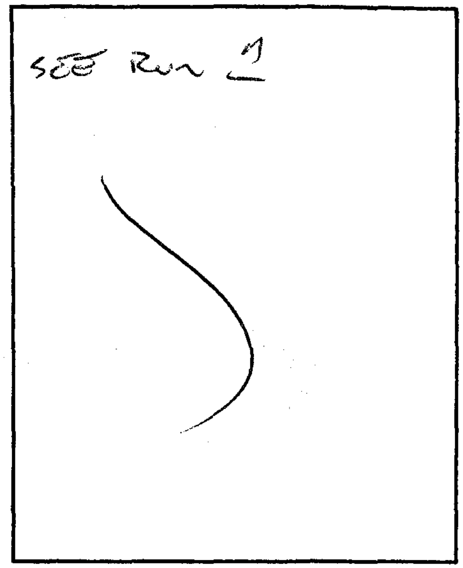
VELOCITY DATA SHEET - METHOD 2

Facility:	ALFRC	**Baro. Press:**	27.57	**D₁ upstream:**	3.6
Source:	Flare Inlet	**Static Press:**	0.80	**D₁ downstream:**	6.2
Job #:	W07-046	**Pitot Tube #:**	STD 24"	**Stack Diameter:**	10"
Date:	3/22/06	**Pitot Tube Type:**	STD	**Leak Check**	
Operator:	LC	**Magnahelic:**	#2	**Initial:** ✓	**Final:** ✓
Run #:	3	wet bulb = 89°F 4.0% H_2O			

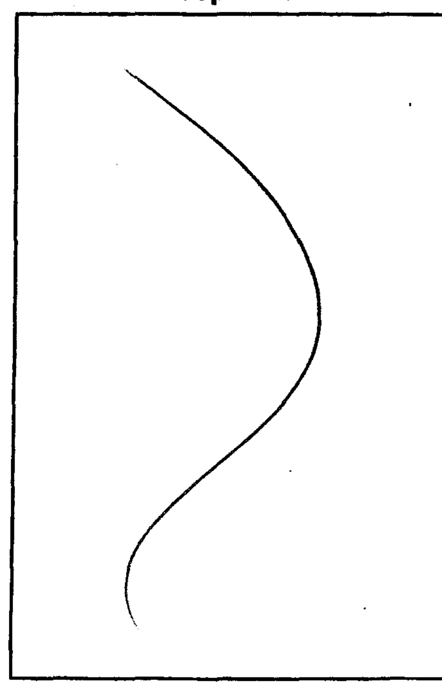
Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A-6		0.10	107	
5		0.12	107	
4		0.12	107	
3		0.14	107	
2		0.10	107	
1		0.10	107	
B-6		0.08	107	
5		0.10	107	
4		0.12	107	
3		0.14	107	
2		0.12	107	
1		0.10	107	
Average		$\sqrt{\Delta P}$=0.3332	T_s=107.0	∠=

MC ✓

Side View



Top View



TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET

Job #: 6007-046
Facility: Antelope Valley LFRC
Location: Palmdale, CA
Date: 3/22/06
Operator: RE

Control Device: LFG Flare
Sample Location: Inlet
Ambient Temp.: ~70 °F
Baro. Pressure: 27.57

SAMPLE A

Tank #: S **Trap #:**
Initial Vacuum: 1.0
Final Vacuum:
Start Time: 0900-1000

Run 1

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	27	100
05	26	100
10	25	100
15	24	100
20	23	100
25	22	100
30	21	100
35	20	100
40	19	100
45	18	100
50	17	100
55	16	100
60	15	

SAMPLE B

Tank #: R **Trap #:**
Initial Vacuum: 1.0
Final Vacuum:
End Time: 1105-1205

Run 2

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	27	100
05	26	100
10	25	100
15	24	100
20	23	100
25	22	100
30	21	100
35	20	100
40	19	100
45	18	100
50	17	100
55	16	100
60	15	

LEAK RATE

Pre Test : ✓
Post Test: ✓

038

TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET

Job #: W07-046
Facility: AVCERL
Location: Palmdale, CA
Date: 3/22/06
Operator: RC

Control Device: LFG Flare
Sample Location: Inlet
Ambient Temp.: ~70°F
Baro. Pressure: 27.67

SAMPLE A

Tank #: K Trap #: ______
Initial Vacuum: 1.0
Final Vacuum: ______
Start Time: 1213 – 1313

SAMPLE B

Tank #: ______ Trap #: ______
Initial Vacuum: ______
Final Vacuum: ______
End Time: ______

Run 3

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	27	100
05	26	100
10	25	100
15	24	100
20	23	100
25	22	100
30	21	100
35	20	100
40	19	100
45	18	100
50	17	100
55	16	100
60	15	

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00		
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

LEAK RATE

Pre Test : ✓
Post Test: ✓

039

TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET

Job #: W07-046
Facility: ANTELOPE VALLEY L.F.
Location: Palmdale, CA
Date: 03-22-06
Operator: TW

Control Device: Flare
Sample Location: OUTLET
Ambient Temp.:
Baro. Pressure: 27.87

M25C

SAMPLE A

Tank #: S16 **Trap #:** NA
Initial Vacuum: 29
Final Vacuum:
Start Time:

SAMPLE B

Tank #: S17 **Trap #:** NA
Initial Vacuum:
Final Vacuum:
End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29	
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29	
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

LEAK RATE

Pre Test : ✓ | ✓
Post Test: ✓ | ✓

TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET

Job #: L07-026

Facility: Antelope Valley, L.F.

Location: Palmdale, CA

Date: 03-22-06

Operator: TW

Control Device: Flare

Sample Location: OUTLET

Ambient Temp.:

Baro. Pressure: 27.57

M25C

SAMPLE ~~A~~ C

Tank #: 818 **Trap #:** NA

Initial Vacuum:

Final Vacuum:

Start Time:

SAMPLE B

Tank #: **Trap #:**

Initial Vacuum:

Final Vacuum:

End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29	
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00		
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

LEAK RATE

Pre Test : ✓

Post Test:

VELOCITY DATA SHEET - METHOD 2

Facility: ANRDF
Source: Flare Exh
Job #: 007-046
Date: 3/22/06
Operator: RE

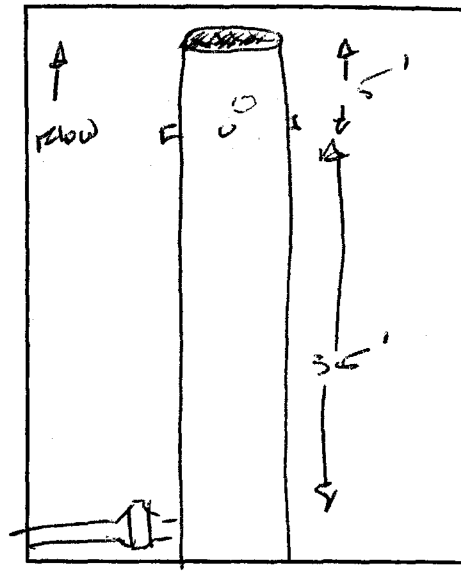
Baro. Press: 27.57
Static Press: -0.00
Pitot Tube #: 10-1
Pitot Tube Type: "S"
Magnahelic: Manometer

D₁ upstream: 0.58
D₁ downstream: 4.0
Stack Diameter: 104"
Leak Check
Initial: ✓/✓ **Final:** ✓/✓

Run #: Prelim - O2/CO2 sample points

Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A-8	100.7	<0.01	1241	ND
7	93.1	<0.01	1361	
6	83.8	<0.01	1346	
5	70.4	<0.01	1333	
4	33.6	<0.01	1366	
3	20.2	<0.01	1345	
2	10.9	<0.01	1298	
1	3.3	<0.01	1271	
B-8		<0.01	1350	
7		<0.01	1398	
6		<0.01	1349	
5		<0.01	1321	
4		<0.01	1331	
3		<0.01	1402	
2		<0.01	1306	
1		<0.01	1276	
Average		$\sqrt{\Delta P}$=	T_s=	∠=

Side View



Top View

APPENDIX F - Calibrations

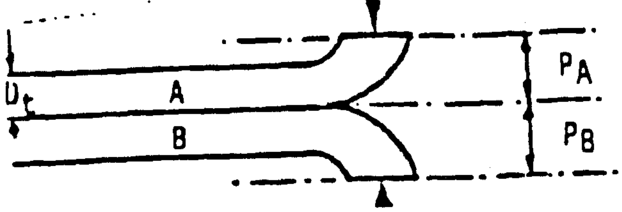
INCONEL 10-1

TYPE S PITOT TUBE INSPECTION DATA FORM

Tubing diameter, D_t 0.394 in.

Pitot Tube Assembly Level? (Yes) / No

Pitot Tube Openings Damaged? Yes / (No)



NOTE: 0.848

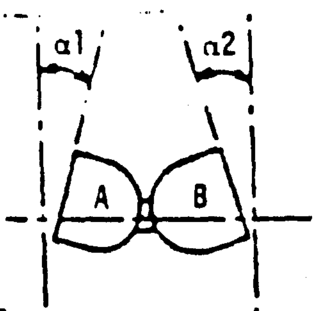
$\{1.05\ D_t < P < 1.50\ D_t$

$P_A = P_B$

0.4137 – 0.5910

P_A = 0.424 in.

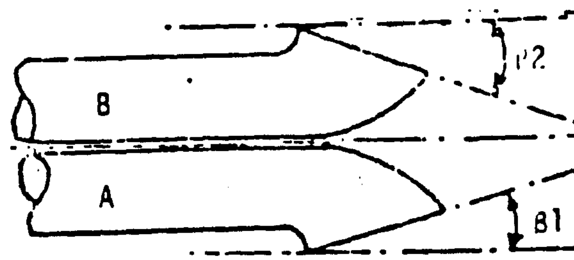
P_B = 0.424 in.



α_1 = 1.0 °

α_2 = 1.0 °

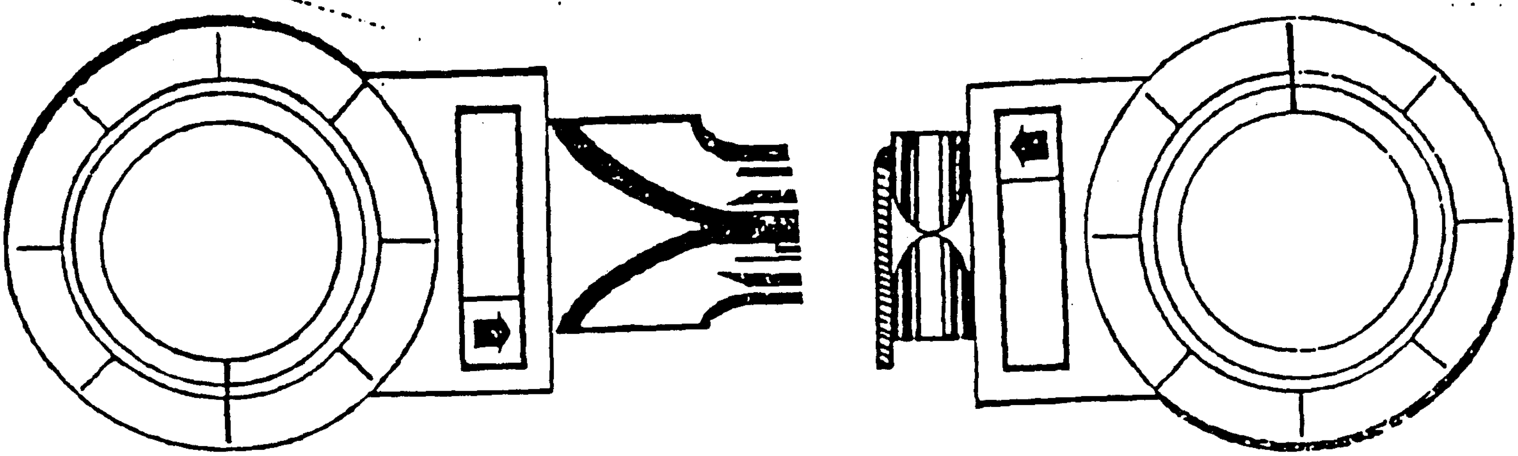
(<10°)



β_1 1.0

β_2 1.0

(< 5°)



Level Position to Find γ = 1.0

Z = A sin γ 0.0148 in. (< 1/8 in.)

Level Position to find θ 1.0

W = A sin θ 0.0148 in. (< 1/32 in.)

Comments ______

Checked by: [signature]

Date: 1-3-06

Calibration Required? NO

044

STACK TEMPERATURE SENSOR CALIBRATION DATA- APEX PROBE ASSEMBLIES

Date: 03/06/06
Calibrated by: B. Jones

THERMOCOUPLE ID:	ICE WATER						ABSOLUTE T DIFF., %			BOILING WATER						ABSOLUTE T DIFF., %			BOILING 0IL						ABSOLUTE T DIFF., %		
	REF			TC						REF			TC						REF			TC					
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Stainless Steel Probes																											
3-1	32	32	32	31	30	31	0.2	0.4	0.2	212	212	212	211	210	210	0.1	0.3	0.3	536	536	535	532	534	534	0.4	0.2	0.1
4-2	32	32	32	30	32	32	0.4	0.0	0.0	212	212	212	209	209	210	0.4	0.4	0.3	534	534	534	530	531	531	0.4	0.3	0.3
4-3	32	32	32	30	30	31	0.4	0.4	0.2	212	212	212	208	209	210	0.6	0.4	0.3	546	545	544	540	542	542	0.6	0.3	0.2
6-2	31	31	32	30	29	30	0.2	0.4	0.4	212	212	212	208	209	209	0.6	0.4	0.4	540	540	539	535	535	538	0.5	0.5	0.1
6-3	32	32	32	31	31	30	0.2	0.2	0.4	212	212	212	209	209	210	0.4	0.4	0.3	539	538	538	537	535	534	0.2	0.3	0.4
6-4	32	32	32	30	30	30	0.4	0.4	0.4	212	212	212	210	210	210	0.2	0.3	0.3	539	539	539	533	533	535	0.6	0.6	0.4
A6-5	32	32	32	31	31	31	0.2	0.2	0.2	212	212	212	211	211	211	0.1	0.1	0.1	538	539	539	535	535	535	0.3	0.4	0.4
A8-1	31	32	32	30	30	31	0.2	0.4	0.2	212	212	212	211	210	210	0.1	0.3	0.3	540	540	540	531	533	536	0.9	0.7	0.4
A8-2	32	32	32	32	31	31	0.0	0.2	0.2	212	212	212	211	212	210	0.1	0.0	0.3	540	539	538	536	536	536	0.4	0.3	0.2
A8-3	32	32	32	31	30	31	0.2	0.4	0.2	212	212	212	210	210	211	0.3	0.3	0.1	537	537	537	531	532	534	0.6	0.5	0.3
10-1	32	32	32	32	31	31	0.0	0.2	0.2	212	212	212	210	210	210	0.3	0.3	0.3	537	537	536	534	534	534	0.3	0.3	0.2
M17-1	32	32	32	33	33	32	-0.2	-0.2	0.0	212	212	212	211	211	211	0.1	0.1	0.1	540	540	540	542	542	541	-0.2	-0.2	-0.1
M17-2	32	31	32	32	33	33	0.0	-0.4	-0.2	212	212	212	210	210	210	0.3	0.3	0.3	541	539	539	539	539	540	0.2	0.0	-0.1
M17-3	32	32	32	31	32	31	0.2	0.0	0.2	212	212	212	211	211	212	0.1	0.1	0.0	543	545	545	545	546	546	-0.2	-0.1	-0.1
Inconel																											
10-2 Inc	32	32	32	33	33	33	-0.2	-0.2	-0.2	212	212	212	210	211	211	0.3	0.1	0.1	540	539	538	539	537	538	0.1	0.2	0.0
6-1 Inc	32	32	32	36	36	36	-0.8	-0.8	-0.8	212	212	212	206	207	208	0.9	0.7	0.6	549	550	549	543	540	540	0.6	1.0	0.9
Loose Thermocouple																											
6-5	32	32	32	33	33	33	-0.2	-0.2	-0.2	212	212	212	210	211	211	0.3	0.1	0.1	536	536	536	537	538	537	-0.1	-0.2	-0.1
6-8	32	32	32	33	32	32	-0.2	0.0	0.0	212	212	212	211	210	209	0.1	0.3	0.4	538	539	540	539	539	539	-0.1	0.0	0.1
7-1	32	32	32	33	34	34	-0.2	-0.4	-0.4	212	212	212	210	210	210	0.3	0.3	0.3	543	544	544	544	545	544	-0.1	-0.1	0.0
8-3	32	32	32	32	33	32	0.0	-0.2	0.0	212	212	212	210	212	213	0.3	0.0	-0.1	545	546	545	543	543	543	0.2	0.3	0.2

Note: If absolute temperature values of the reference thermometer being calibrated and the stack temperature sensors agree within 1.5 percent at each of the three calibration p` no correction is needed.

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

4/26/05

Horizon Air
996 Lawrence Dr Ste 108
Newbury Park, CA
USA 91320

Attention: Deborah Vacherst

Praxair Order No. **81725000** Product Lot/Batch No. **109507309**
Customer PO No. **8595** Praxair Part No. **EV NICDOXP1-AS**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon dioxide	**7 %**	**7.00 %**	**V**	**±0.02 % abs.**
Oxygen	**12 %**	**12.00 %**		**±0.02 % abs.**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Mettler~ID5~Gravimetric**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **148 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC 101707**

Filling Method: **Gravimetric**
Date of Fill: **3/14/05**
Expiration Date: **4/26/08**

Analyst: **Jack Fu**

QA Reviewer: **Ty Triplett**

The gas calibration cylinder standard prepared by Praxair Distribution is c .sidered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Reference Materials which are either epared by weights traceable to the National Institute of Standards and Technology (NIST) or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phas , by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Gas Chromatography with Ultrasonic Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	Proprietary	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	Photoionization
Y	Pulsed Fluoroescence	Z	UV Spectrometry				

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles. CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

6/24/2005

Horizon Air
996 Lawrence Dr Ste 108
Newbury Park, CA
USA 91320

Attention: Deborah Vacherst

Praxair Order No. **34872400**
Customer Reference No.

Product Lot/Batch No. **109413307**
Praxair Part No. **NI CDOXP80-AS**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon dioxide	**12 %**	**12.01 %**	**V**	**±0.02 % abs.**
Oxygen	**20 %**	**20.12 %**		**±0.02 % abs.**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Mettler~ID5~Gravimetric**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **152 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC 186563**

Filling Method: **Gravimetric**
Date of Fill: **5/12/2004**
Expiration Date: **12/31/2008**

Analyst: **Jack Fu**

QA Reviewer: **Helena Tran**

The gas calibration cylinder standard prepared by Praxair Distribution is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST) or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
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I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Gas Chromatography with Ultrasonic Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	Proprietary	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	Photoionization
Y	Pulsed Fluoroescence	Z	UV Spectrometry				

IMPORTANT
The information contained herein has been prepared at your request by personnel within Praxair Distribution. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

APPENDIX G - Process Data

Tuesday March 21, 2006

0600 roll call
0715 on site
1030 offsite
1300 [illegible]

0500 roll call
3/22/06 0615 on site

Flare Process Data, AVLF

Time	Temp, °F	Fuel Flow, scfm	Cond. Inj, gpm
0900	1477	780	0.38
0910	1478	726	0.30
0920	1490	761	0.39
0930	1483	788	0.39
0952	1468	757	0.39
1002	1488	781	0.38
1012	1491	777	0.38
	1481	768	0.38
Run 2			
1105	1482	765	0.39
1115	1479	769	0.39
1125	1469	775	0.39
1135	1472	776	0.39
1146	1481	775	0.38
1156	1477	762	0.38
	1477	770	0.39

Run 3

Time	Temp, °F	Fuel Flow, scfm	Cond, ppm
1215	1479	760	0.38
1230	1471	764	0.38
1235	1468	764	0.39
1245	1488	760	0.38
1255	1476	760	0.37
1305	1491	762	0.38
1315	1475	726	0.39
	1478	754	0.38

Offsite 1345
abm an
Horizon 1600

APPENDIX E - Strip Chart Recordings

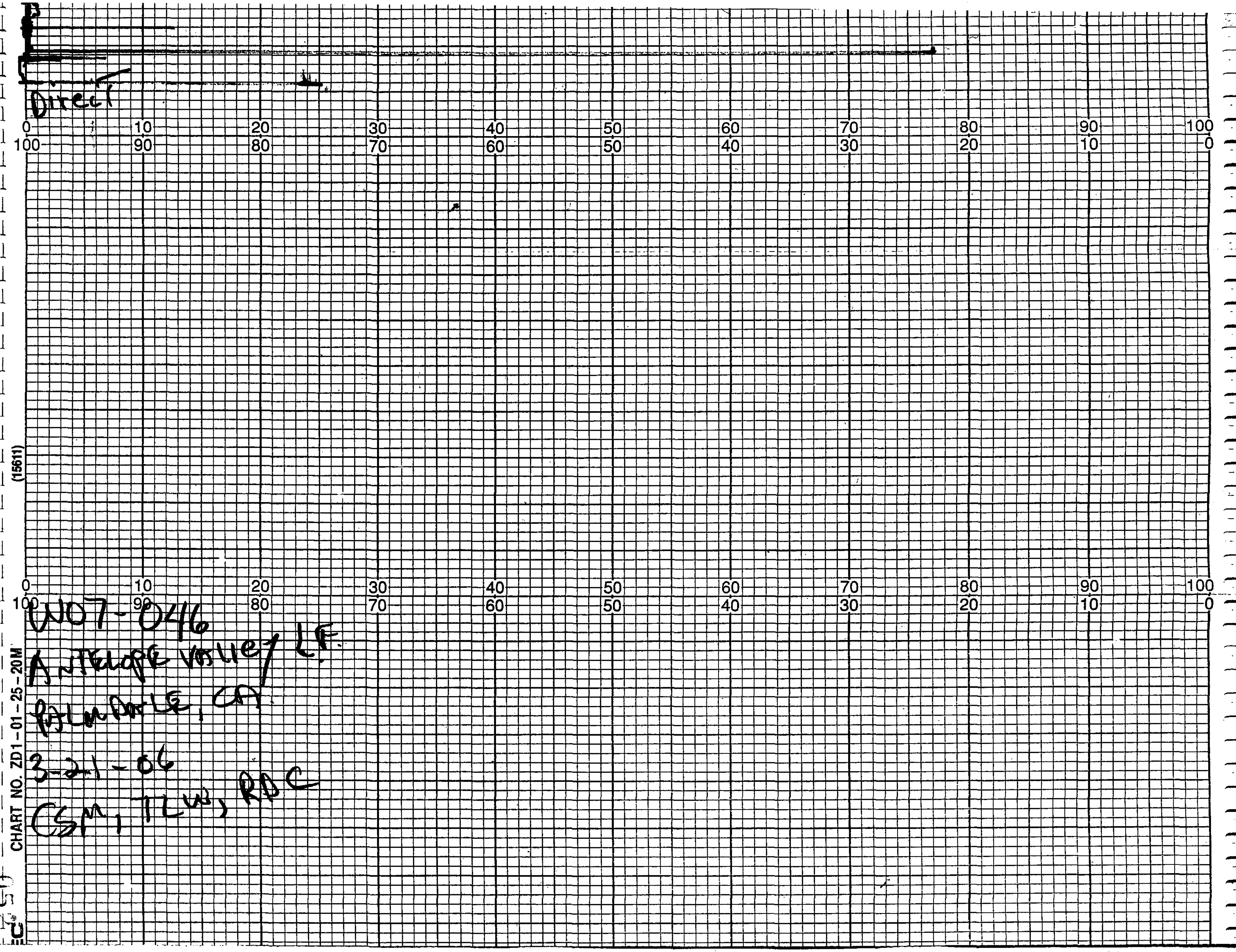
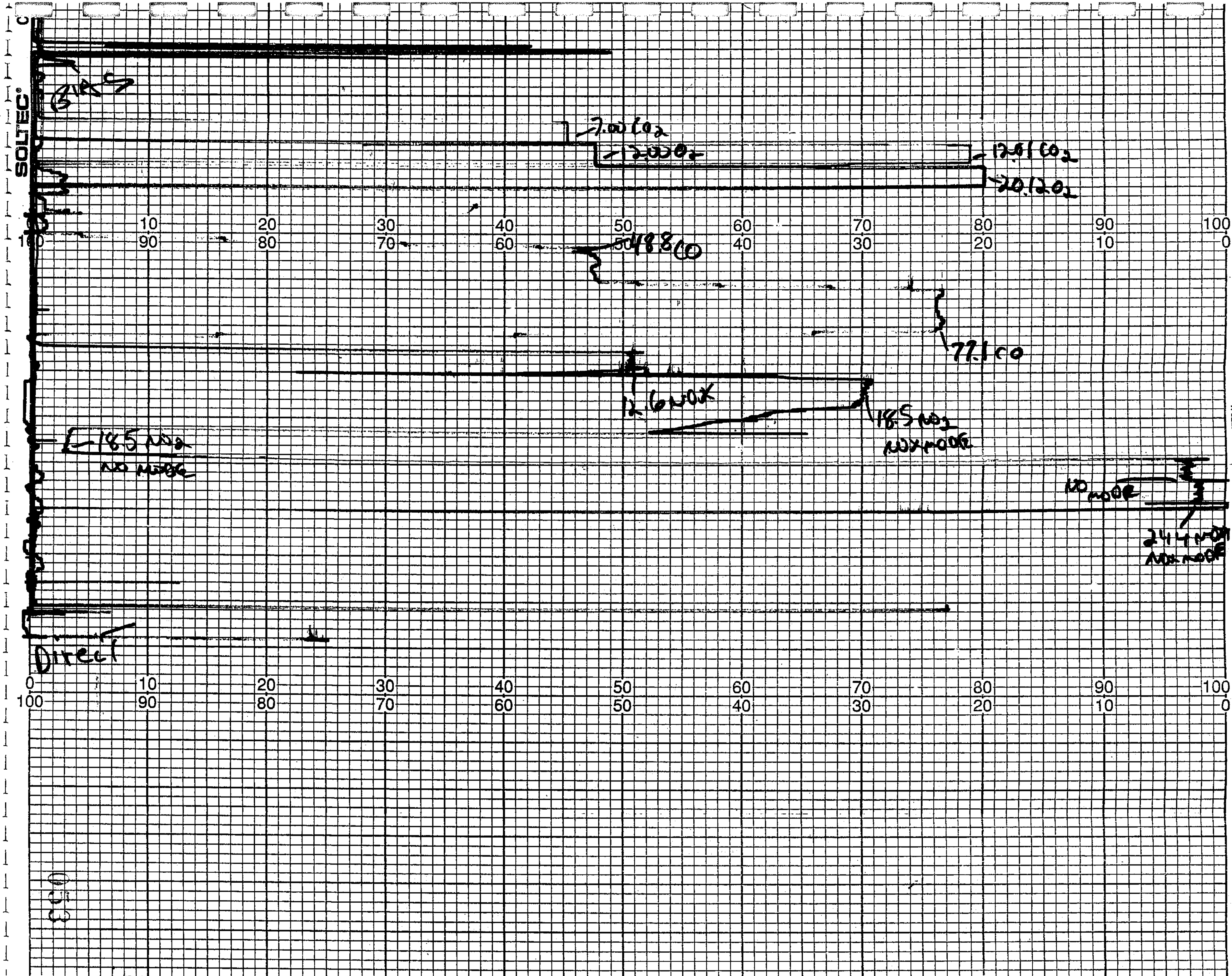
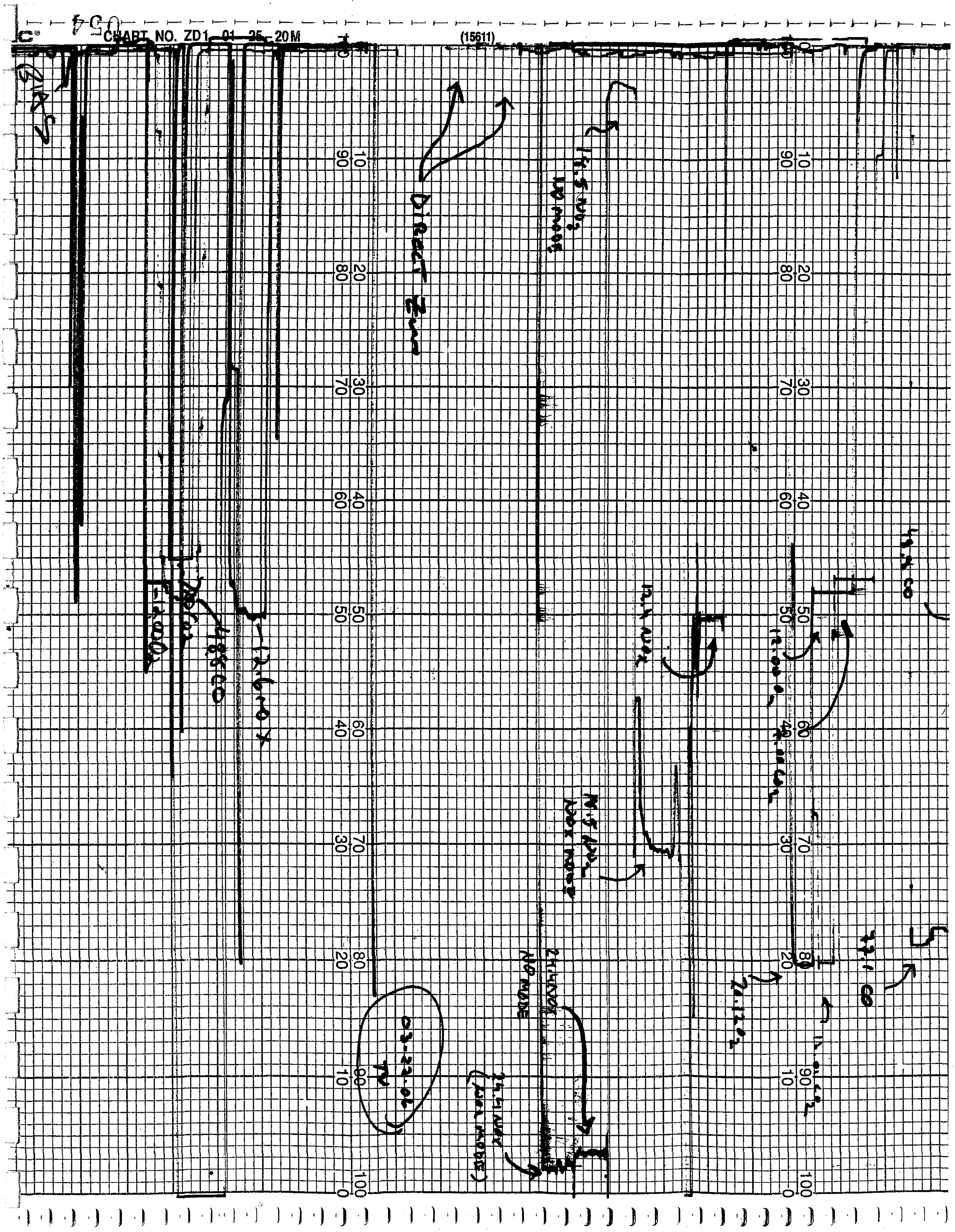


CHART NO. ZD1-01-25-20M
(15611)
Direct
W07-046
Antelope Valley LF.
Palmdale, CA
3-21-06
CSM, TLW, RDC



SOLTEC
Direct
4775 K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(15611)
DIRECT Zero
NO MODE
TV

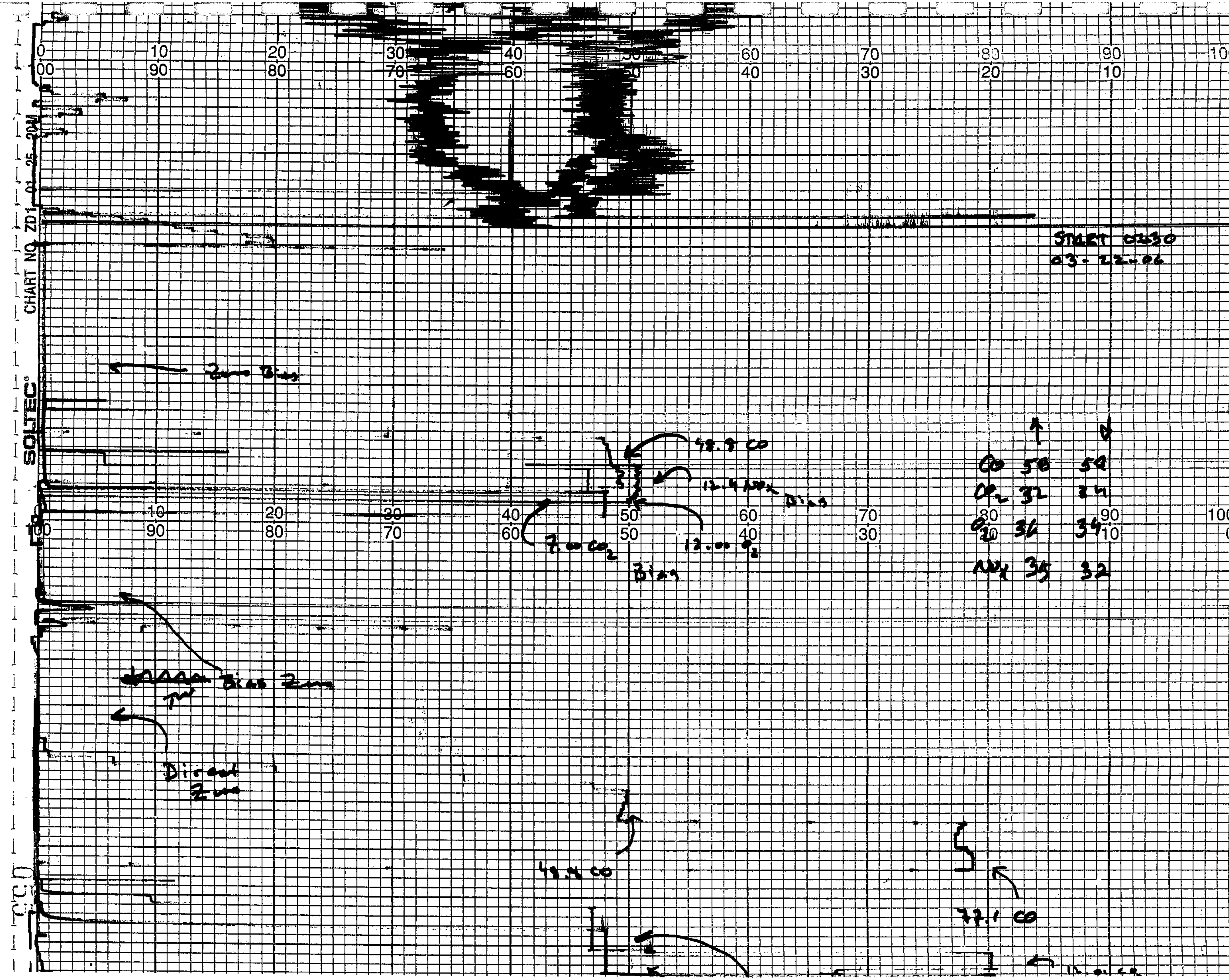
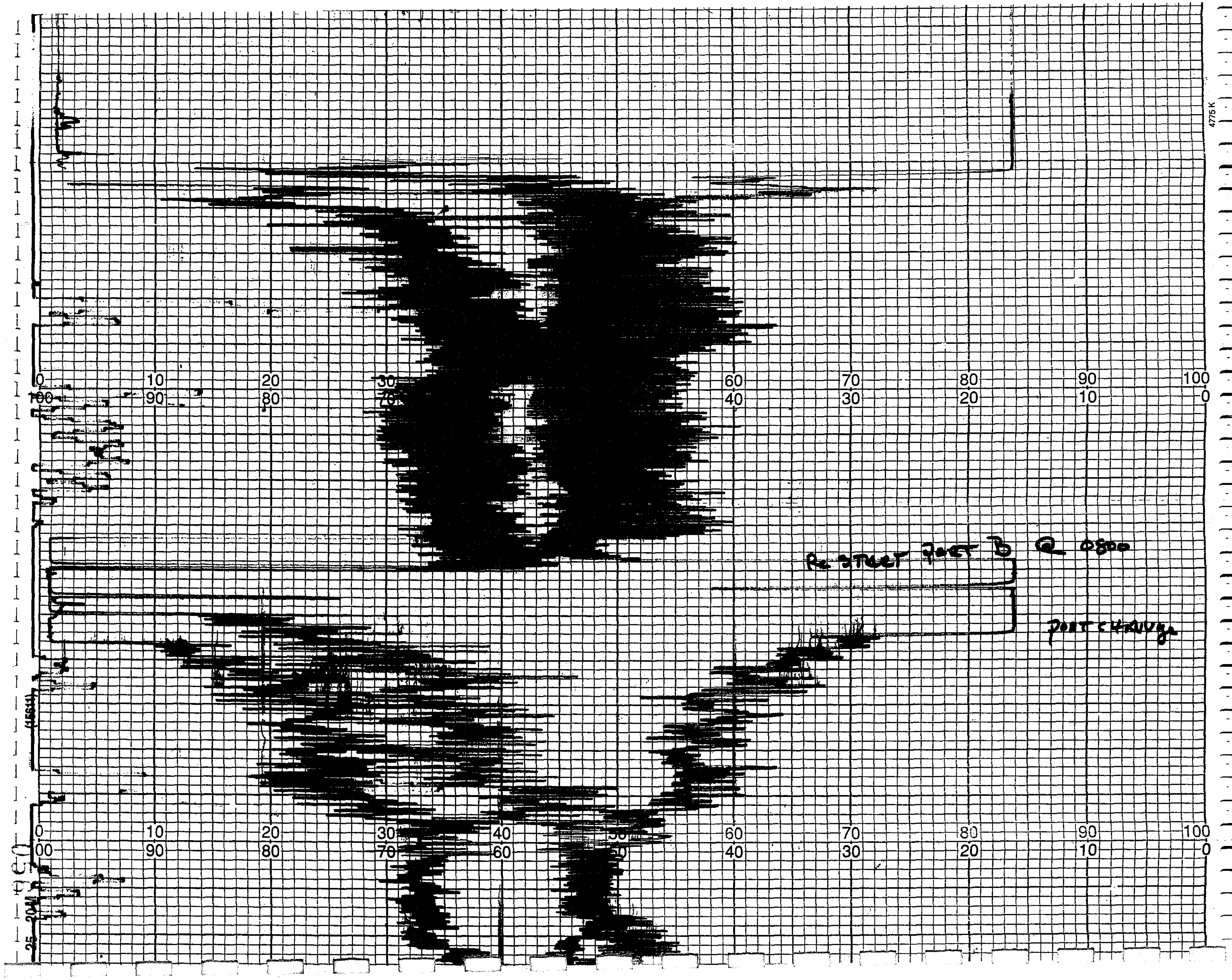
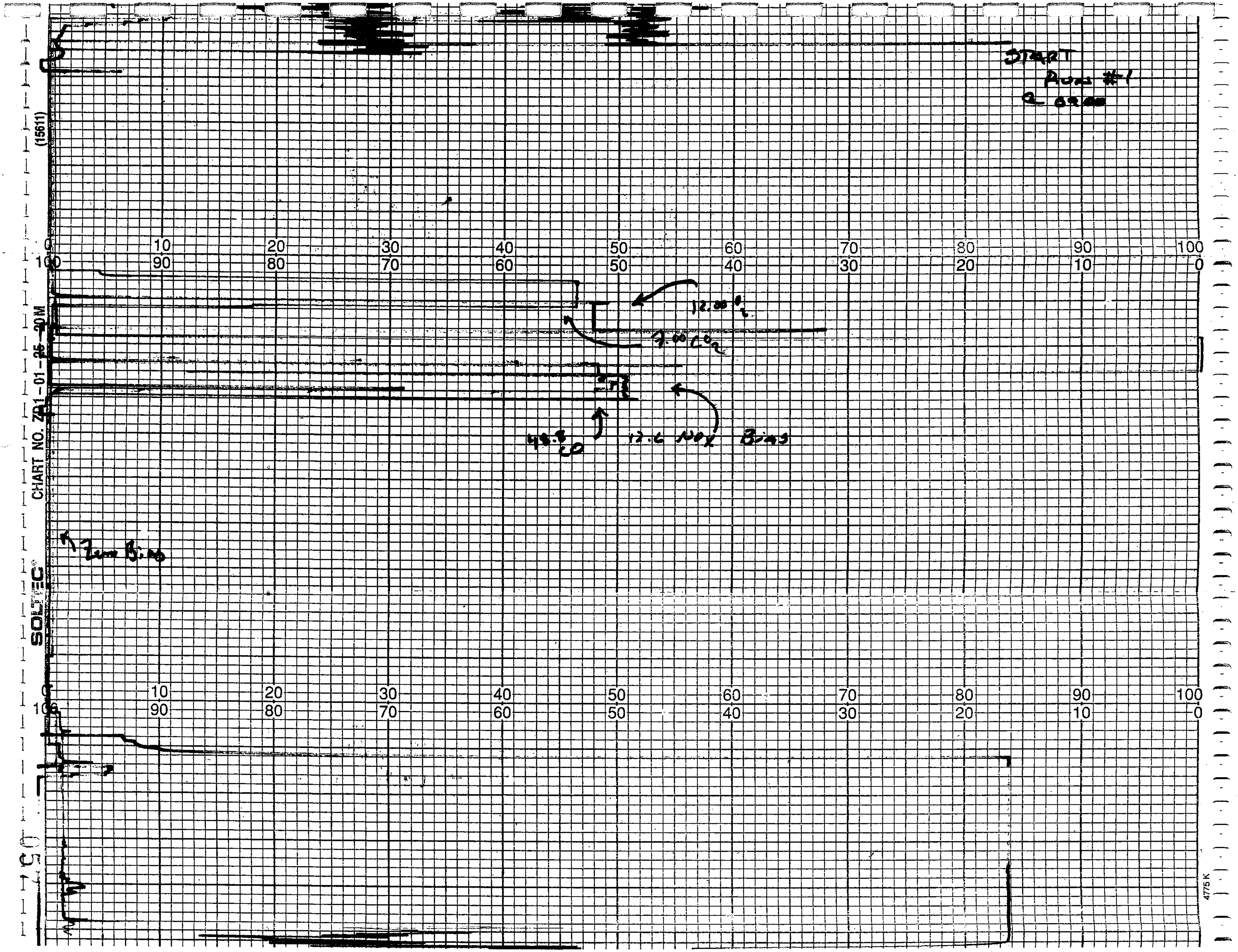
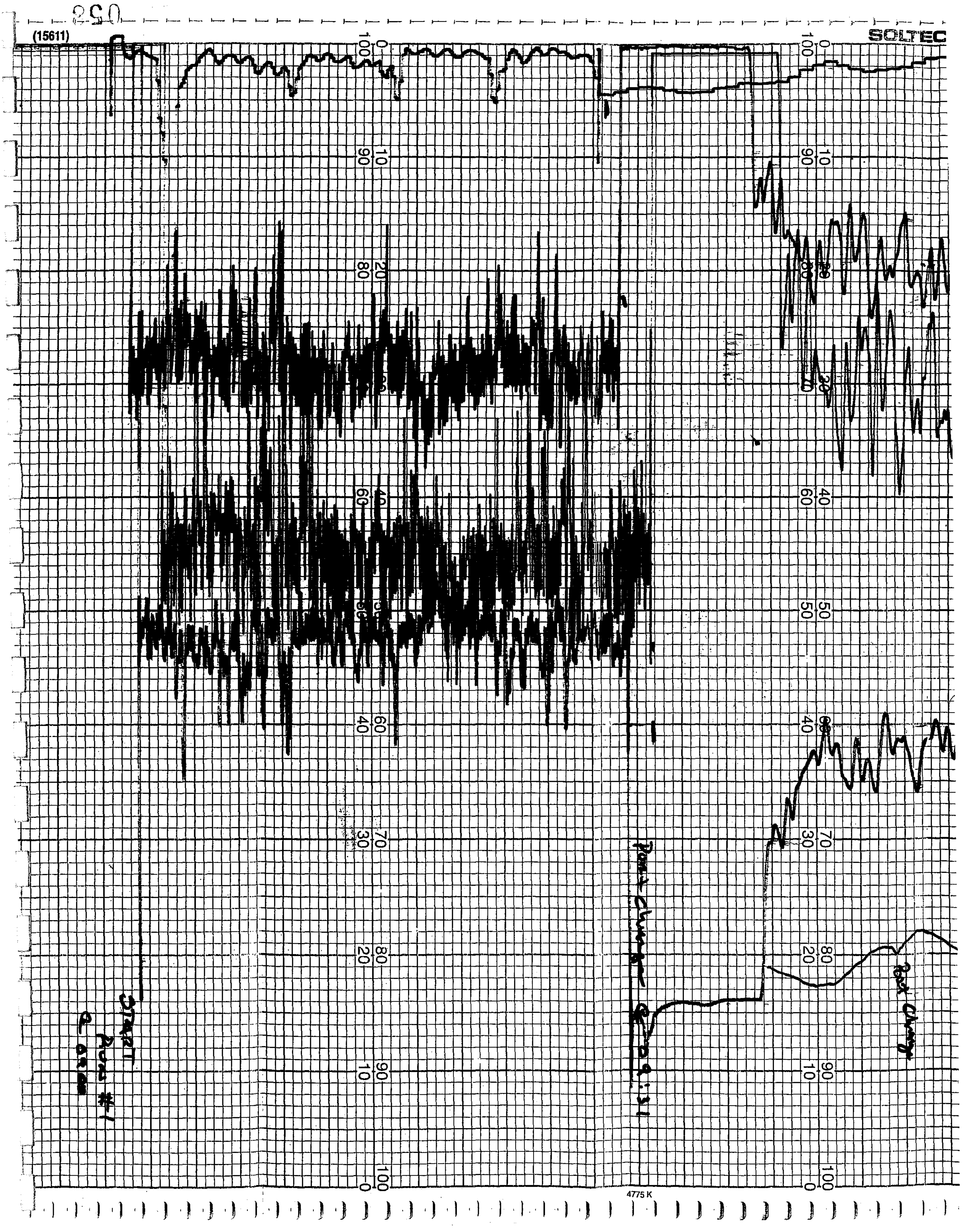


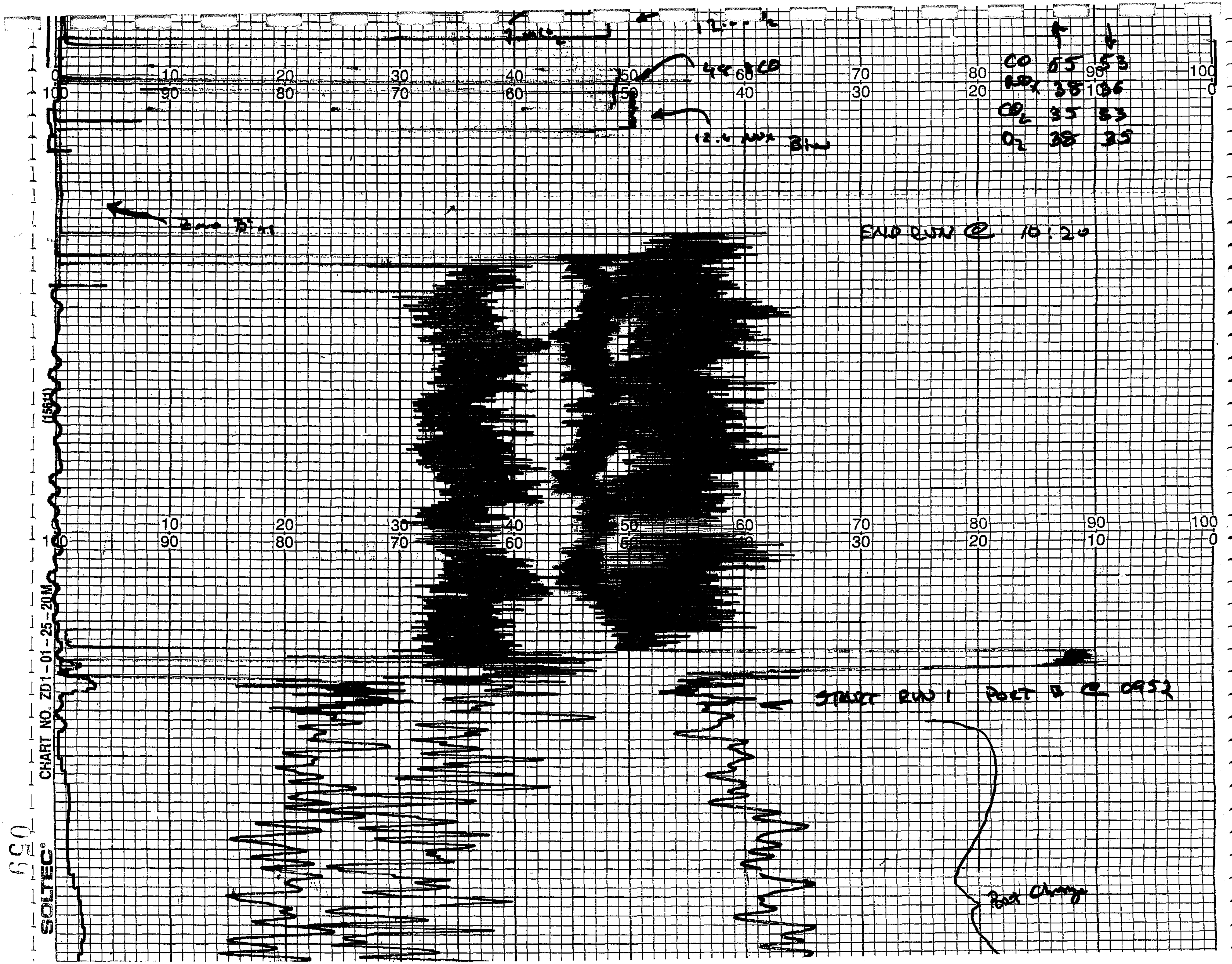
CHART NO. ZD1 01 25 20M
SOLTEC®
START 0830
03-22-06
Zero Bias
48.9 CO
12.4 NOx Bias
7.00 CO2
12.00 O2
Bias
CO 58 54
O2 32 34
O2 36 34
NOx 35 32
Bias Zero
Direct Zero
48.4 CO
77.1 CO
4775 K

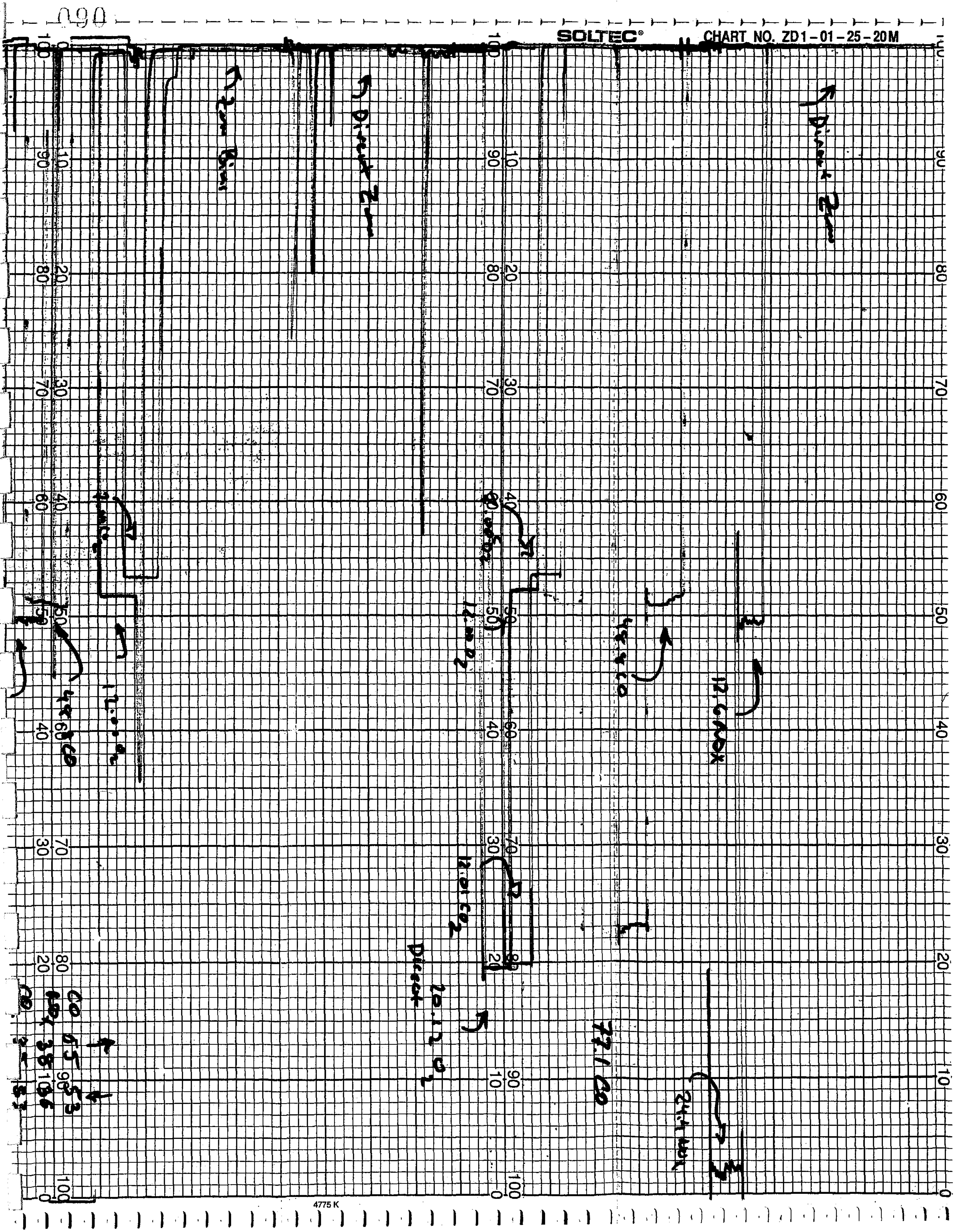

4775 K
0 10 20 30 60 70 80 90 100
100 90 80 70 40 30 20 10 0
B @ 0800
0 10 20 30 40 60 70 80 90 100
00 90 80 70 60 40 30 20 10 0


START
Run #1
12.00 O2
7.00 CO2
48.8 CO
12.6 NOx Bias
Zero Bias
(1561)
CHART NO. ZR1-01-25-20M
SOLTEC
4775 K

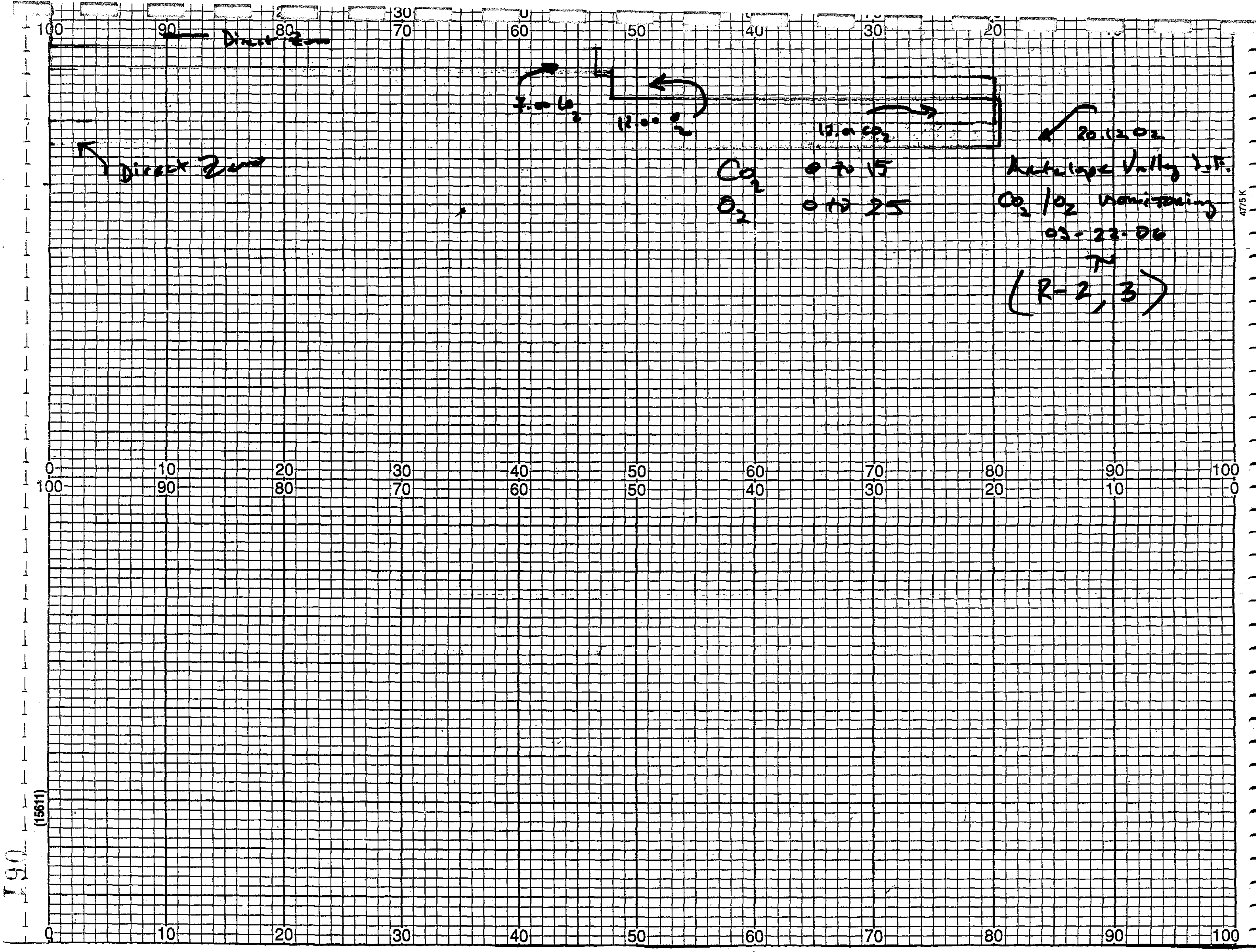


(15611)
SOLTEC
START
Run #1
Power Change
4775 K

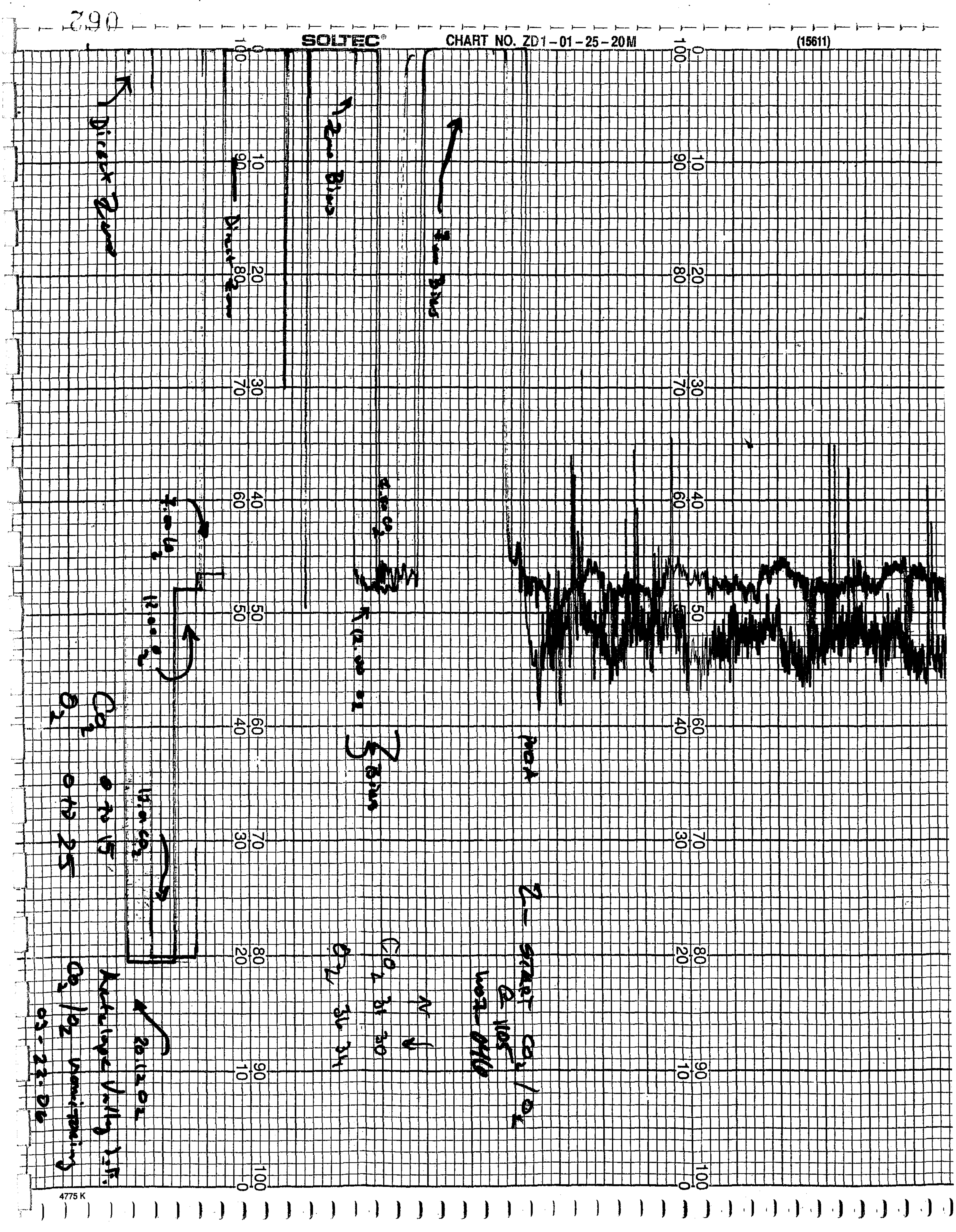

CO 55 53
NOx 38 106
CO2 35 53
O2 38 35
Zero Bias
END RUN @ 10:20
START RUN 1 PORT B @ 0952
Port Change
CHART NO. ZD1-01-25-20M
(15611)
SOLTEC

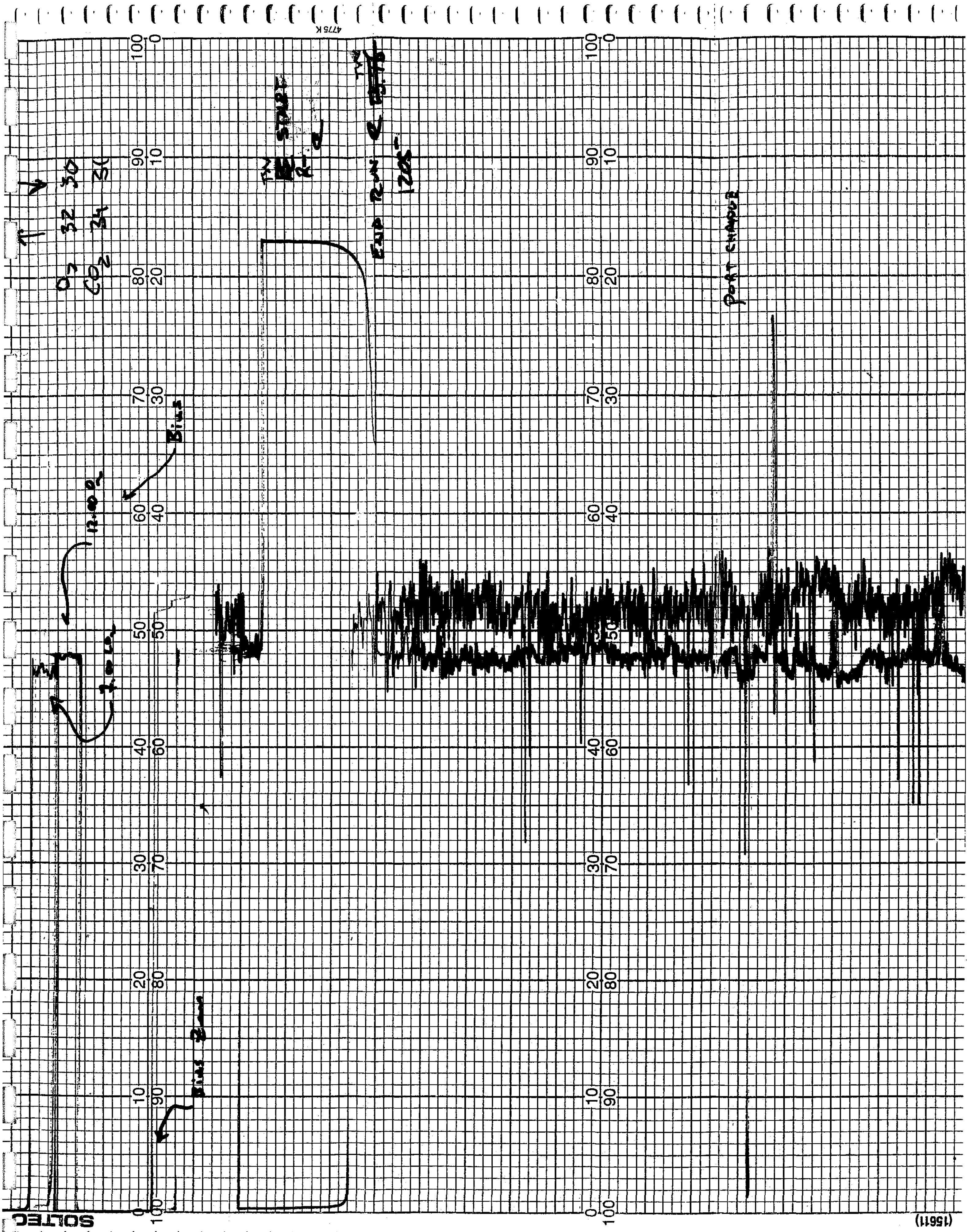


090
SOLTEC®
CHART NO. ZD1-01-25-20M
Zero Bias
Direct Zero
Direct Zero
44.60 CO
12.00 O2
44.4 CO
12.6 NOx
12.01 CO2
Direct
20.12 O2
77.1 CO
24.4 NOx
4775 K

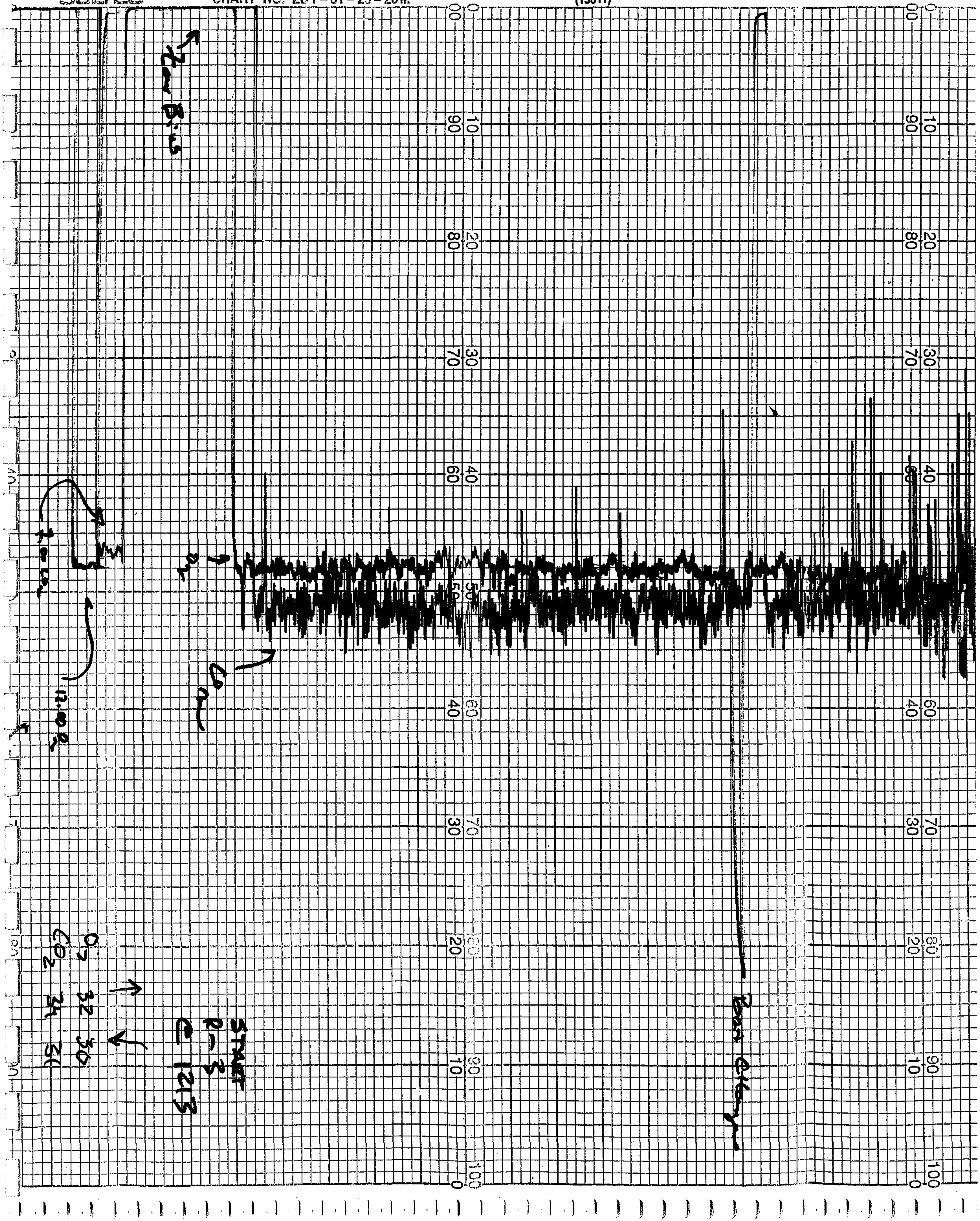


Direct Zero
7:00 CO_2
12:00 O_2
15:00 CO_2
20.12 O_2
Direct Zero
CO_2 0 to 15
O_2 0 to 25
Antelope Valley J.F.
CO_2 / O_2 Monitoring
03-22-06
(R-2, 3)
4775 K
(15611)
190


SOLTEC®
CHART NO. ZD1-01-25-20M
(15611)
4775 K


SOLTEC
(15611)
4775 K
Bias
PORT CHANGE

SOLTEC® CHART NO. ZD1-01-25-20M (15611)



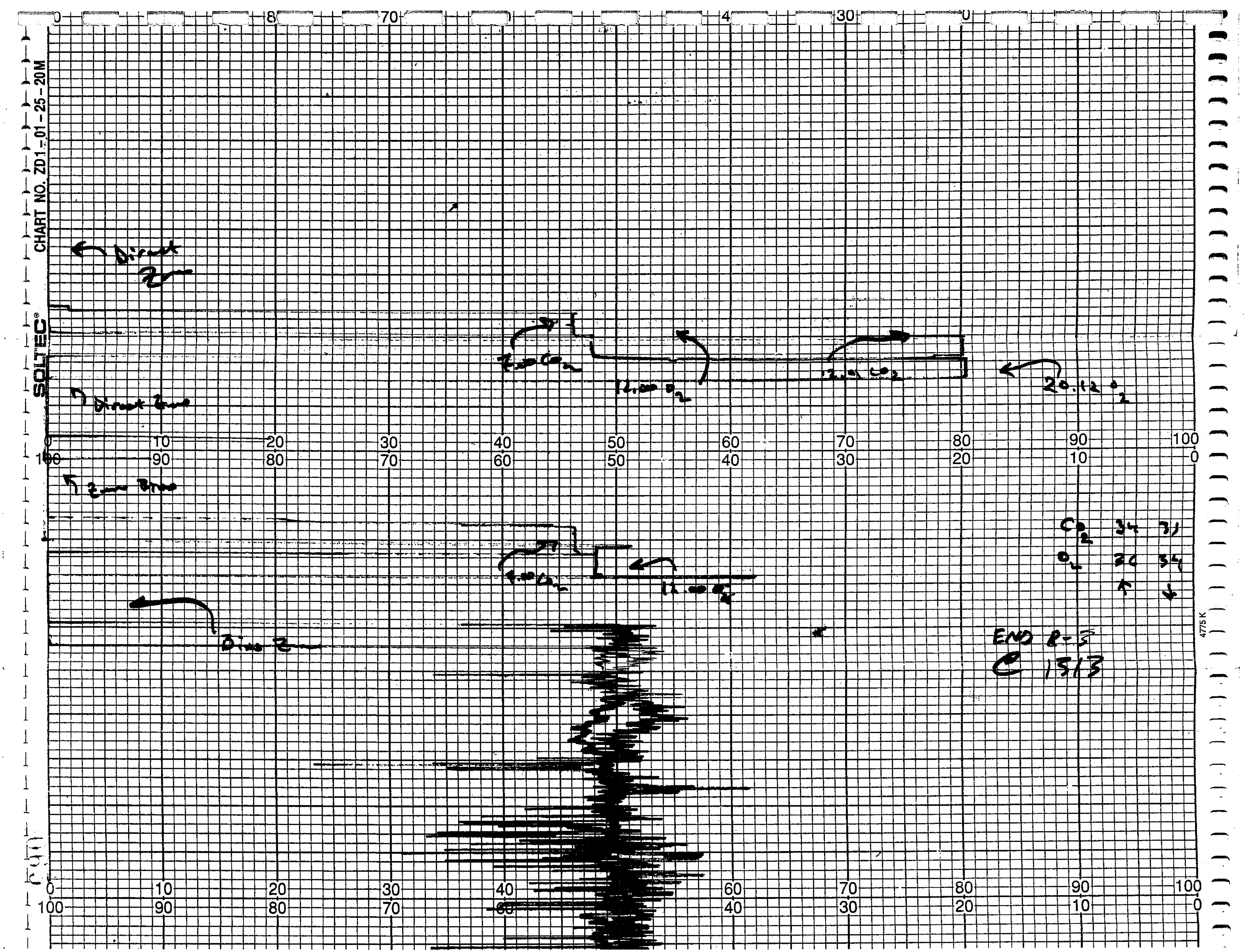


CHART NO. ZD1-01-25-20M
SOLTEC
7.00 CO2
12.00 O2
12.01 CO2
20.12 O2
END R-3