TEST REPORT
on
EXHAUST EMISSIONS

from a
GENERAL ELECTRIC PG7241FA
NATURAL GAS FIRED SIMPLE CYCLE POWER TURBINE

at the
POLK POWER STATION

located in
POLK COUNTY, FLORIDA

Prepared for

TAMPA ELECTRIC COMPANY

September, 2000

Cubix Job No. 5906

Prepared by


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INTRODUCTION

Emission testing was conducted on a simple cycle combustion turbine manufactured by General Electric (GE). The unit, used to generate power, was recently installed at the Polk Power Station located in Mulberry, Polk County, Florida. Tampa Electric Company (TECO) owns and operates this facility. This report documents the testing of the turbine engine while firing with natural gas. A separate report will be provided for the testing of this unit while fueled with No. 2 Fuel Oil. The testing was conducted by Cubix Corporation.

The purpose of this testing was to determine the status of compliance for turbine engine emissions with the permit limits set forth by the Florida Department of Environmental Protection (FDEP), Permit Number PSD-FL-263. Additionally, the emissions were measured to determine compliance with the Environmental Protection Agency (EPA) regulation entitled "Standards of Performance for Stationary Gas Turbines", 40 CFR 60, Subpart GG. The tests followed the procedures set forth in 40 CFR 60, Appendix A, Methods 1, 2, 3a, 9, 10, 19, 20, and 25a.

Turbine exhaust was analyzed for oxides of nitrogen (NO_X), carbon monoxide (CO), total unburned hydrocarbons (UHC), oxygen (O_2), and carbon dioxide (CO_2) using continuous instrumental monitors. Volatile organic compounds (VOC) were determined from the product of UHC and the fraction of non-methane/non-ethane hydrocarbons contained in the exhaust. Gaseous analyses were performed on a dry basis for all compounds except hydrocarbons. Laboratory analyses were conducted on samples of the natural gas fired during the testing schedule. Table 1 provides background data pertinent to these tests.

This test report has been reviewed and approved for submittal to the Florida Department of Environmental Protection (FDEP) by the following representatives:

Tampa Electric Company

Cubix Corporation

TABLE 1
BACKGROUND DATA

Owner/Operator:	**Tampa Electric Company** 702 N Franklin Street Tampa, Florida 33602 (813) 228-1111, ext. 39109 TEL (863) 428-5927 FAX Attn: Mike Perkins
Testing Organization:	**Cubix Corporation, Headquarters** 9225 U.S. Highway 183 South Austin, Texas 78747 (512) 243-0202 TEL (512) 243-0222 FAX Attn: Jim Barufaldi
Test Participants:	**Tampa Electric Company** David Smith **Cubix Corporation** Juan Ramirez Sid Cason
Test Dates:	October 7, 2000
Facility Location:	Polk County Power Station 9995 Sate Road 37 South Mulberry, Florida 33860
Process Description:	One simple cycle combustion turbine is used to generate electrical power. The unit, GE Model PG7241FA, consists of a single shaft gas turbine directly connected to a 60 Hz power generator. The turbine is fueled on either distillate oil or natural gas.

Regulatory Application:	State of Florida, Department of Environmental Protection (FDEP) Permit No. PSD-FL-263 and EPA New Source Performance Standards (NSPS) 40 CFR 60, Subpart GG.
Sampling Location:	The exhaust stack is a circular stack 114' tall with a diameter of 18'. Four 4" sample ports were located 90° from each other at 106' above grade. Access to the sample ports was provided with a permanently mounted steel grate service platform equipped with a caged safety ladder.
Test Methods:	EPA Method 1 for O_2 and particulate matter traverse point locations.
	EPA Method 2 for stack gas pressure head measurements.
	EPA Method 3a for CO_2 concentrations.
	EPA Method 9 for opacity observations.
	EPA Method 10 for CO concentrations.
	EPA Method 19 for the calculation of volumetric flow and pollutant mass emission rates.
	EPA Method 20 for NO_X and O_2 concentrations.
	EPA Method 25a for UHC concentrations.

SUMMARY OF RESULTS

Exhaust emissions from a GE PG7241FA combustion turbine (CT) were tested to determine the quantity of emissions being vented to the atmosphere. Testing was conducted on the unit while fired with natural gas. Tests were performed at four different combustion turbine loads: approximately 80 MW generator output, ~112 MW generator output, ~ 136 MW generator output, and full capacity 160 MW generator output.

The first step in the test matrix consisted of conducting the initial O_2-traverse of the exhaust stack. The turbine was set to 80 MW with the water injection system operating. O_2 concentrations were measured at 48 traverse points within the stack to determine the eight points of lowest O_2 concentration. No stratification was found at any of the 48 points; therefore, all subsequent tests were conducted at the eight most convenient traverse points.

Following the O_2-traverse, Cubix conducted three test runs at four load conditions across the operational range of the CT (~80 MW, ~112 MW, ~136 MW, and capacity at ~160 MW). Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Capacity is defined as 90 to 100% of the maximum permitted capacity, expressed as heat input, defined from the GE performance curve for the unit. NO_X, CO_2, O_2, and UHC were continuously monitored at all load conditions. Additional base load measurements included opacity. The base load test runs were 1 hour in duration for all constituents. Opacity results can be found in Appendix G of this report.

The executive summary, Table 2, signifies the performance of the unit during the full load testing. This performance is an average of the three full load test runs. These emissions are compared to FDEP Permit No. PSD-FL-263. These conditions include the maximum allowable emissions from the combustion turbine firing natural gas. Based upon the FDEP permit, the maximum allowable NO_X emissions at 15% O_2 were 9 ppmv, dry basis.

TABLE 2
Executive Summary
Base Load Conditions

Parameter	Gas Turbine Emissions	NSPS/FDEP Permit Limits
NO_X @ 15% O_2 (ppmv dry basis)	7.58	9
NO_X (lbs/hr)	27.1	59
CO @ 15% O_2 (ppmv dry basis)	0.24	12
CO (lbs/hr)	0.5	38
VOC @ 15% O_2 (ppmv dry basis)	0.11	1.4
VOC (lbs/hr)	0.134	2.8
SO_2 (gr S/100 ft^3)	0.054	2 gr S/100 ft^3
SO_2 (lbs/hr)	0.08	9.2
Visible Emissions (% Opacity)	0	10%

Table 3 represents the reduced load test results for the combustion turbine testing. This tabular summary contains all pertinent operational parameters, ambient conditions, Cubix measurements, the calculated emission rates, and corrected concentrations. NO_X emissions are reported in terms of ppmvd (dry basis), ppmvd at 15% O_2, and lbs/hr. CO emissions are reported as ppmvd and lbs/hr. SO_2 emission units are reported in % weight, ppmvd @ 15% O_2, lbs/hr and lbs/MMBtu of fuel burned. VOC emissions are reported in terms of lbs/hr and lbs/MMBtu of fuel burned.

Table 4 summarizes the results of the base load test on the combustion turbine. This table provides the same data as Table 3 with the addition of the opacity measurements.

Appendix A contains all field data sheets used during these tests. Appendix B contains examples of all calculations necessary for the reduction of the data presented in this section of the report. Appendix F contains the strip charts used to record the NO_X, CO, VOC, O_2, and CO_2 concentrations. A data logger was also utilized during the tests for quick, convenient checks of concentrations; however, the strip chart records provided the data used for presentation of the results included in this report. Appendix H contains the operational data provided by General Electric during the test runs. The operational data was recorded in the control room on computer printouts at 20-minute intervals during each test run. The operational data reported in the summary tables is an average of the readings recorded during the gaseous test period of each run. Appendix G contains all VE readings.

TABLE 3: Summary of Results Reduced Load

Test Number	C-1	C-2	C-3		C-4	C-5	C-6		C-7	C-8	C-9	
Date:	10/7/2000	10/7/2000	10/7/2000		10/7/2000	10/7/2000	10/7/2000		10/7/2000	10/7/2000	10/7/2000	
Start Time	3:11	5:18	5:38		6:06	6:31	6:55		10:42	11:05	11:27	
Stop Time	4:47	5:34	5:54		6:22	6:48	7:11		10:58	11:21	11:43	
Operations	50% Load	50% Load	50% Load		70% Load	70% Load	70% Load		85% Load	85% Load	85% Load	
Turbine Load (MW)	94.6	94.8	95.2		114.8	115.8	115.3		134.3	134.5	134.4	
Ambient Conditions												
Temperature (°F wet)	73	74	75		75	75	75		76	76	77	
Temperature (°F dry)	75	76	77		77	77	77		87	87	87	
Barometer (in. Hg)	29.83	29.84	29.84		29.85	29.85	29.85		29.91	29.91	29.91	
Humidity (lbs/lb of air)	0.0167	0.0173	0.0179		0.0179	0.0179	0.0179		0.0163	0.0163	0.0172	
Fuel Stoichiometric Data												
Fuel Flow (lbs/sec)	8.50	8.51	8.53		9.47	9.53	9.51		10.47	10.49	10.48	
Fuel Flow (MMBtu/hr)	707.36	707.96	709.75		788.00	792.85	791.09		871.23	872.76	872.21	
Fuel Heating Value (BTU/lb-HHV)	23108	23108	23108		23108	23108	23108		23108	23108	23108	
Fuel O2 F-Factor (DSCF/MMBTU)	8637	8637	8637		8637	8637	8637		8637	8637	8637	
Fuel CO2 F-Factor (DSCF/MMBTU)	1025	1025	1025		1025	1025	1025		1025	1025	1025	
Combustion Moisture (vol % @ 0% O2)	18.92	18.92	18.92		18.92	18.92	18.92		18.92	18.92	18.92	
Moisture Content (vol % at stack)	9.56	9.06	9.16		9.26	9.24	9.25		9.02	9.03	9.17	
Fo Factor	1.88	1.72	1.73		1.71	1.71	1.72		1.71	1.71	1.71	
Stack Flow Rates (Dry SCFH)				AVG.				AVG.				AVG.
O2 Stoichiometry	1.68E+07	1.84E+07	1.85E+07	**1.79E+07**	2.01E+07	2.04E+07	2.03E+07	**2.03E+07**	2.23E+07	2.23E+07	2.22E+07	**2.23E+07**
CO2 Stoichiometry	1.79E+07	1.80E+07	1.81E+07	**1.80E+07**	1.96E+07	1.98E+07	1.98E+07	**1.98E+07**	2.16E+07	2.16E+07	2.15E+07	**2.16E+07**
Measured Emissions												
NOx (ppmv)	6.90	6.20	6.20	**6.43**	7.50	7.60	7.60	**7.57**	7.50	7.40	7.30	**7.40**
NOx (ppm @ 15% O2)	5.36	5.27	5.27	**5.30**	6.27	6.38	6.36	**6.34**	6.27	6.18	6.08	**6.18**
CO (ppmvd)	1.00	2.00	1.70	**1.57**	0.30	0.50	0.70	**0.50**	0.30	0.40	0.40	**0.37**
CO (ppmvd @ 15% O2)	0.78	1.70	1.45	**1.31**	0.25	0.42	0.59	**0.42**	0.25	0.33	0.33	**0.31**
O2 (%)	13.30	13.96	13.96	**13.74**	13.84	13.87	13.85	**13.85**	13.84	13.83	13.82	**13.83**
CO2 (%)	4.05	4.03	4.02	**4.03**	4.12	4.10	4.09	**4.10**	4.13	4.14	4.15	**4.14**
VOC (ppmv dry as C1 by M-25a)	0.50	0.40	0.60	**0.50**	0.40	0.50	0.30	**0.40**	0.30	0.10	0.20	**0.20**
VOC (ppmvd @ 15% O2)	0.39	0.34	0.51	**0.41**	0.33	0.42	0.25	**0.33**	0.25	0.08	0.17	**0.17**
Mass Emissions												
NOx (lbs/hr)	13.8	13.6	13.7	**13.7**	18.0	18.5	18.4	**18.3**	20.0	19.7	19.4	**19.7**
NOx (lbs/MMBTU)	0.020	0.019	0.019	**0.019**	0.023	0.023	0.023	**0.023**	0.023	0.023	0.022	**0.023**
CO (lbs/hr)	1.2	2.7	2.3	**2.1**	0.4	0.7	1.0	**0.7**	0.5	0.6	0.6	**0.6**
CO (lbs/MMBTU)	0.002	0.004	0.003	**0.0029**	0.001	0.001	0.001	**0.0009**	0.001	0.001	0.001	**0.0007**
SO2 (lbs/hr)	0.06	0.06	0.06	**0.06**	0.07	0.07	0.07	**0.07**	0.08	0.08	0.08	**0.08**
SO2 (lbs/MMBtu)	0.00009	0.00009	0.00009	**0.00009**	0.00009	0.00009	0.00009	**0.00009**	0.00009	0.00009	0.00009	**0.00009**
VOC (lbs/MMBTU as C1)	0.0005	0.0004	0.0006	**0.0005**	0.0004	0.0005	0.0003	**0.0004**	0.0003	0.0001	0.0002	**0.0002**
VOC (lbs/hr as C1)	0.349	0.306	0.460	**0.372**	0.335	0.423	0.252	**0.337**	0.278	0.093	0.185	**0.185**

TABLE 4: Summary of Results Base Load

Test Number	C-10	C-11	C-12	
Date:	10/7/2000	10/7/2000	10/7/2000	
Start Time	12:16	13:30	14:37	
Stop Time	13:16	14:30	15:37	
Operation	100% Load	100% Load	100% Load	
Turbine Load (MW)	154.6	155.0	155.6	
Ambient Conditions				
Temperature (°F wet)	78	78	78	
Temperature (°F dry)	88	90	90	
Barometer (in. Hg)	29.88	29.86	29.85	
Humidity (lbs/lb of air)	0.0179	0.0174	0.0174	
Fuel Stoichiometric Data				
Fuel Flow (lbs/sec)	11.72	11.76	11.81	
Fuel Flow (MMBtu/hr)	975.33	978.32	982.56	
Fuel Heating Value (BTU/lb-HHV)	23108	23108	23108	
Fuel O2 F-Factor (DSCF/MMBTU)	8637	8637	8637	
Fuel CO2 F-Factor (DSCF/MMBTU)	1025	1025	1025	
Combustion Moisture (vol % @ 0% O2)	18.84	18.92	18.92	
Moisture Content (vol % at stack)	9.46	9.42	9.46	
Fo Factor	1.71	1.72	1.72	
Stack Flow Rates (Dry SCFH)				**AVG.**
O2 Stoichiometry	2.41E+07	2.42E+07	2.41E+07	**2.41E+07**
CO2 Stoichiometry	2.34E+07	2.37E+07	2.35E+07	**2.35E+07**
Measured Emissions				
NOx (ppmv)	8.79	9.27	10.19	**9.42**
NOx (ppm @ 15% O2)	7.10	7.48	8.17	**7.58**
CO (ppmvd)	0.40	0.20	0.30	**0.30**
CO (ppmvd @ 15% O2)	0.32	0.16	0.24	**0.24**
O2 (%)	13.60	13.59	13.54	**13.58**
CO2 (%)	4.27	4.24	4.29	**4.27**
VOC (ppmv dry as C1 by M-25a)	0.10	0.20	0.10	**0.13**
VOC (ppmvd @ 15% O2)	0.08	0.16	0.08	**0.11**
Mass Emissions				
NOx (lbs/hr)	25.3	26.7	29.3	**27.1**
NOx (lbs/MMBTU)	0.026	0.027	0.030	**0.028**
CO (lbs/hr)	0.7	0.4	0.5	**0.5**
CO (lbs/MMBTU)	0.001	0.000	0.001	**0.0005**
SO2 (lbs/hr)	0.08	0.08	0.09	**0.08**
SO2 (lbs/MMBtu)	0.00009	0.00009	0.00009	**0.00009**
VOC (lbs/MMBTU as C1)	0.0001	0.0002	0.0001	**0.0001**
VOC (lbs/hr as C1)	0.100	0.201	0.100	**0.134**

PROCESS DESCRIPTION

Tampa Electric Company is the owner of the Polk Power Station which is located in Mulberry, Polk County, Florida. This station contains a simple cycle gas turbine manufactured by General Electric. This unit was installed to provide electrical power to Tampa, Florida and surrounding areas. Emission testing was conducted on the simple cycle unit to determine its compliance status with state and federal regulations. This section of the emission test report provides a brief description of the unit.

The unit is a GE Model PG7241FA 165 MW simple cycle combustion turbine. The main body consists of a single shaft combustion turbine directly coupled to a 60 Hz generator. The facility is designed to provide two fuels to the combustion turbine: distillate oil and natural gas. During natural gas operation, NO_x emissions are controlled through the use of dry low NO_x combustors. While firing natural gas, the CT has a base load rating of 165 MW at site conditions of 59°F inlet air temperature, 60% relative humidity, 14.7 psia atmospheric pressure. The FDEP permit has defined the base load of the unit at a heat input of 1600 MMBtu/hr at 59°F while firing natural gas.

The circular CT/HRSG exhaust stack was utilized for exhaust emission measurements of the turbine testing. The exhaust stack dimensions are depicted in the stack diagram of Appendix A. Four four-inch diameter sample ports are spaced perpendicular to each other. The stack is 114 ft tall and has a diameter of 18 ft. These ports are located 8 ft from the top of the stack (106 ft above ground level). Metal grate service platforms, a caged safety ladder, and a metal grate stairway were installed to provide access to the sample ports.

ANALYTICAL TECHNIQUES

The sampling and analysis procedures used during these tests conformed with those outlined in The Code of Federal Regulations, 40 CFR 60, Appendix A, Methods 1, 2, 3a, 4, 5B, 8 (modified), 9, 10, 18, 19, 20, and 25a. This section of the report describes the analytical techniques and procedures used during these tests.

Samples of the natural gas fuel were collected on a daily basis during the test schedule. The natural gas samples were analyzed for composition, specific gravity, both higher and lower heat value, and total sulfur content. All sample procedures were submitted to FDEP in Cubix's emission test plan. These procedures were approved by FDEP prior to analysis of the gas samples. Results of these analyses along with chain-of-custody forms are in Appendix C of this report.

The turbine was tested at four load conditions. Measurements of NO_X, CO, VOC, opacity, CO_2, and O_2 were performed during base load tests. At reduced loads, NO_X, CO, VOC, CO_2, and O_2 were measured. Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Three 60 minute test runs were conducted at base load for all components. All compounds were measured on a dry basis except hydrocarbons.

Provisions were made to introduce the calibration gases to the instrumental monitors via two paths: 1) directly to the instruments via the sample manifold quick-connects and rotometers, and 2) through the complete sampling system including the sample probe, filter, heat trace, condenser, manifold, and rotometers. The former method was used for quick, convenient calibration checks. The latter method was used to demonstrate that the sample was not altered due to leakage, reactions, or adsorption within the sampling system (sample system bias check). A NO_X standard calibration gas was introduced into the NO_X analyzer directly. Then the response from the NO_X analyzer was noted as the calibration gas was introduced at the probe. Any difference between the two responses in the instrument was attributed to the bias of the sample system. Following the span gas bias check, a zero gas bias check was performed on the NO_X analyzer using nitrogen to check for any zero bias of the sample system. In accordance with EPA Methods 3a, 20, and 25a, this span and zero bias check procedure was repeated for the CO_2, O_2, and UHC analyzers.

As shown in Figure 1, a 1" stainless steel probe was inserted into the sample port of the stack. The gas sample was continuously pulled through the probe and transported via $^3/_8$" heat-traced Teflon® tubing to the mobile laboratory through Teflon® tubing via a stainless steel/Teflon® diaphragm pump and into a heated sample manifold. From the heated manifold, the sample was partitioned to the hydrocarbon analyzers through heated lines. The bulk of the gas stream then passed to a stainless steel minimum contact condenser to dry the sample stream and into the (dry) sample manifold. From the manifold, the sample was partitioned to the analyzers through glass and stainless steel rotometers for flow control of the sample.

All instruments were housed in an air conditioned trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NO_X calibration gases).

EPA Method 1 procedures were used to determine the O_2-traverse point locations for sampling per the requirements of EPA Method 20. The location of the sample ports and the traverse point distances for the turbine are described by the stack diagram located in Appendix A.

The stack gas analyses for CO_2 concentrations were performed in accordance with procedures set forth in EPA Method 3a. Instrumental analyses are usually used by Cubix in lieu of an Orsat or a Fyrite procedure due to the greater accuracy and precision provided by the instruments. The CO_2 analyzer is based on the principle of infrared absorption.

The F_o calculation of EPA Method 3b (Section 3.4.1.1) was used to verify that the ratio of O_2 to CO_2 were within an acceptable range during all runs. In all cases, the F_o fell within the expected values for natural gas.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose. This analyzer was equipped with a gas correlation filter which eliminates any interference from moisture, CO_2, or other combustion products.

EPA Method 20 was used to determine concentrations of NO_X (via chemiluminescence) and O_2 (via a micro-fuel cell). An initial O_2-traverse was conducted in the CT/HRSG stack; 48 total points were sampled. This test was performed to identify the 8 sample points of lowest O_2 concentration among the sample traverse points. EPA Method 1 was used to determine the location of

these traverse points. No identifiable differences in the O_2 emission concentrations were found during the sampling traverse of the gas turbine's exhaust. After this initial determination of a well mixed exhaust, all subsequent sampling was performed at eight randomly selected points in the stack.

NO_X concentrations were reported in parts per million by volume on a dry basis corrected to 15% O_2. The example calculations can be found in Appendix B. This O_2 correction was made in accordance with the formula published in 40 CFR 60, Method 20.

Total hydrocarbons (THC) concentrations were quantified during the testing using Method 25a. Total hydrocarbons were continuously measured throughout each test run using a flame ionization detector (FID). The THC continuous analyzer was calibrated on methane standards in an air matrix. Thus, the results included in this report are presented on a methane basis. Having the calibration standards in an air basis (i.e. 20.9% O_2) more closely matches the background matrix of the engine exhaust and helps to reduce the effect of O_2 synergism on flame ionization detectors.

The stoichiometric calculations of EPA Method 19 were used to calculate the stack volumetric flow rates and mass emission rates. These calculations are based on the heating value and the O_2 and CO_2 "F-factors" (DSCF of exhaust per MMBtu of fuel burned) for natural gas. Method 19 flow rate determinations are also based on the excess air (as measured from the exhaust diluent concentrations) and the fuel flow rates. EPA Method 19 was used as the stack flow rate measurement technique for all gaseous testing. Fuel samples were analyzed by Adirondack Environmental Services. The results of these analysis can be found in Appendix C of this report. Appendix C also contains Cubix's fuel calculations for the O_2 "F-factor" and gross heating value reported by the laboratory.

Table 5 lists the instruments and detection principals used for gaseous analyses. All data from the continuous monitoring instruments were recorded on two synchronized 3-pen strip chart recorders (Soltec Model 1243). These recorders were operated at a chart speed of 30 centimeters/hour and record over a 25-centimeter width. Strip chart records may be found in Appendix F of this report. A data logger with a computer generated display screen was also used as a convenient means of monitoring the emission concentrations, but the results included in this report were obtained from the strip chart records.

Cubix personnel collected ambient absolute pressure, temperature, and humidity data during each test run. A continuous battery-operated psychrometer utilizing a wet/dry bulb was used to determine temperature and humidity

conditions. An aircraft-type aneroid barometer (altimeter) was used to measure absolute atmospheric pressure.

All emission calculations were conducted by a computer spreadsheet as shown in Tables 3 and 4 of this report. Example calculations were performed manually using a hand-held calculator in order to verify the formulas used in the spreadsheet. Example calculations are located in Appendix B of this report.

The printouts of the operational data are included in Appendix H of this report. The tabular summaries in Summary of Results include the averages for all of the above operational parameters during each test run.

ANALYTICAL INSTRUMENTATION

Parameter	Model and Manufacturer	Common Use Ranges	Sensitivity	Response Time (sec.)	Detection Principle
NOx	TECO 10AR TECO 42H TECO 42C	0-10 ppm 0-25 ppm 0-100 ppm 0-300 ppm 0-500 ppm 0-1,000 ppm 0-5,000 ppm	0.2 ppmv	1.7	Thermal reduction of NO_2 to NO. Chemiluminescence of reaction of NO with O_3. Detection by PMT. Inherently linear for listed ranges.
CO	TECO 48 TECO 48C	0-10 ppm 0-30 ppm 0-100 ppm 0-300 ppm 0-1000 ppmv	0.1 ppmv	10.0	Infrared absorption, gas filter correlation detector, microprocessor based linearization.
CO_2	Servomex 1400	0-5% 0-25%	0.02%	5.0	Infrared absorption, analog linearization.
O_2	Servomex 1400	0-5% 0-25%	0.10%	15.0	Paramagnetic cell, inherently linear.
UHC	JUM Model 3-300	0-30, 0-100, 0-1000, 0-10000 0-100000 ppm	0.5 ppm	5.0	Flame ionization of hydrocarbons inherently linear over 2 orders of magnitude.
Temperature	Omega HH-26K	-120 to 2000 °F	0.1 °F	n/a	Chromel-alumel, K-type thermocouple with digital thermometer. Response time based on thermocouple design.

Cubix reserves the right to subtitute equivalent model analyzers that meet the specifications of the test methods.
Higher ranges availible by sample diution
Other ranges available via signal attenuation. Operating range is defined by the calibration gases used duirng the test.

TABLE 5
Analytical Instrumentation

GASEOUS SAMPLING AND ANAYLSIS DIAGRAM

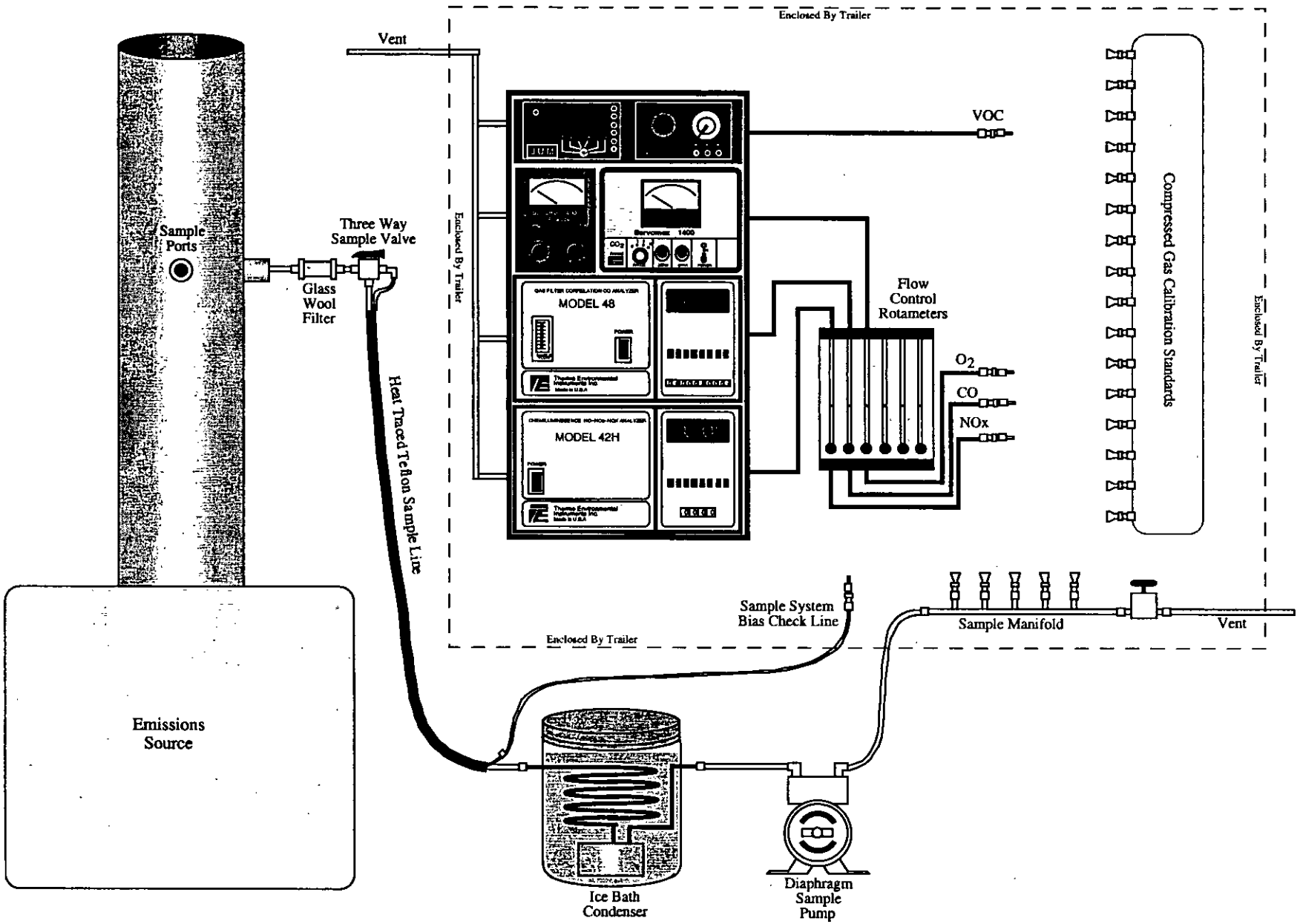


FIGURE 1
Instrumental Sample System Diagram

QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendices D and E describe each of those activities.

A multi-point calibration was performed for each instrument in the field prior to the collection of data. The instrument's linearity was checked by first adjusting the instrument's zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration. The instrument's response was accepted as being linear if the response of the other calibration gases agree within ± 2 percent of range from the predicted values. (The response of the infrared absorption type CO and CO_2 analyzers is electronically linearized.)

System bias checks were performed both before and after the sampling system was used for emissions testing. The sampling system's integrity was tested by comparing the responses of the NO_X analyzer to a calibration gas (and a zero gas) introduced via two paths as previously described in the *Analytical Techniques* section of this report. This system bias test was performed to assure that no alteration of the sample had occurred during the test due to leakage, reactions, or absorption. Similarly, system bias checks were performed with UHC, O_2, and CO_2 for added assurance of sample system integrity. The results of the system bias checks are available in Appendix D.

Before and after each test run, the analyzers were checked for zero and span drift. This allows each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift no more than ±2 or ±3 percent of the full scale response, depending on the applicable constituent's EPA method. Appendix D contains quality assurance tables which summarize the zero and span checks that were performed for each test run. No drift in excess of each gas constituents calibration requirement was found.

Vacuum leak checks were performed before and after the sampling system was used for emissions testing (i.e. each time the sampling system was set up). Additionally, a vacuum leak check was performed after the sample system was partially disassembled or moved. The sampling system was leak checked by demonstrating that it could hold a vacuum greater than 10" Hg (~23 "Hg actual)

for at least 1 minute with a decline of less than 1" Hg. No leakage was detected at any time during the day of testing. The results of the vacuum leak checks are presented in Appendix D.

The efficiency of the NO_2 to NO converter housed in the NO_X analyzer was checked by having the analyzer sample a mixture of NO in nitrogen standard gas and ambient air from a Tedlar® bag. When this bag is mixed and exposed to sunlight, the NO is oxidized to NO_2 over approximately a 30 minute period. If the NO_X instrument's converter is 100% efficient, the NO_X response will not decline as the NO in the bag is converted to NO_2. The criterion for acceptability is a demonstrated NO_X converter efficiency greater than 90%. The strip charts show that the NO_X concentration remained steady throughout the 30 minute time period. The results of the converter efficiency test are available in Appendix D.

Interference response tests on the instruments were conducted by the instrument vendors and Cubix Corporation on the NO_X, CO, and O_2 analyzers. The sum of the interference responses for H_2O, C_3H_8, CO, CO_2 and O_2 is less than 2 percent of the applicable full scale span value. The instruments used for the tests meet the performance specifications for EPA Methods 3a, 7e, 10, and 20. The results of the interference tests are available in Appendix D of this report.

The residence time of the sampling and measurement system was estimated using the pump flow rate and the sampling system volume. The pump's rated flow rate is 0.8 SCFM at 5 psig. The sampling system volume was $\approx$ 0.21 SCF. Therefore, the minimum sample residence time is approximately 16 seconds.

The NO_X and O_2 sampling and analysis system was checked for response time per the procedures outlined in EPA's Method 20. The average NO_X analyzer's response times were 67.3 seconds upscale and 67.7 seconds down scale. The O_2 analyzer's response times were 60.7 seconds upscale and 65.0 seconds down scale. Method 20 requires a minimum sample time per traverse point of 1-minute plus the average sample system response time. Cubix chose to use 128 seconds per point for the initial O_2 traverses on the turbine and 128 seconds per point during the gaseous constituent compliance tests. The results of these response time tests are contained in Appendix E.

The calibration gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to within ±1% analytical accuracy. EPA Protocol No. 1 was used, where applicable, to assign the concentration values traceable to the National Institute of Standards and Technologies (formally the National Bureau of Standards). Calibration gas certifications may be found in Appendix E of this report.

Appendix E also contains other required additional certifications. The calibration of the altimeter/barometer used during this testing is included. Cubix employee, Dwight Dindial, was certified by the State of Florida to perform visual emission readings by EPA Method 9 procedures. This certification can be found with the observation forms in Appendix G of this report.

Cubix collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Cubix makes no warranty as to the suitability of the test methods. Cubix assumes no liability relating to the interpretation and use of the test data.

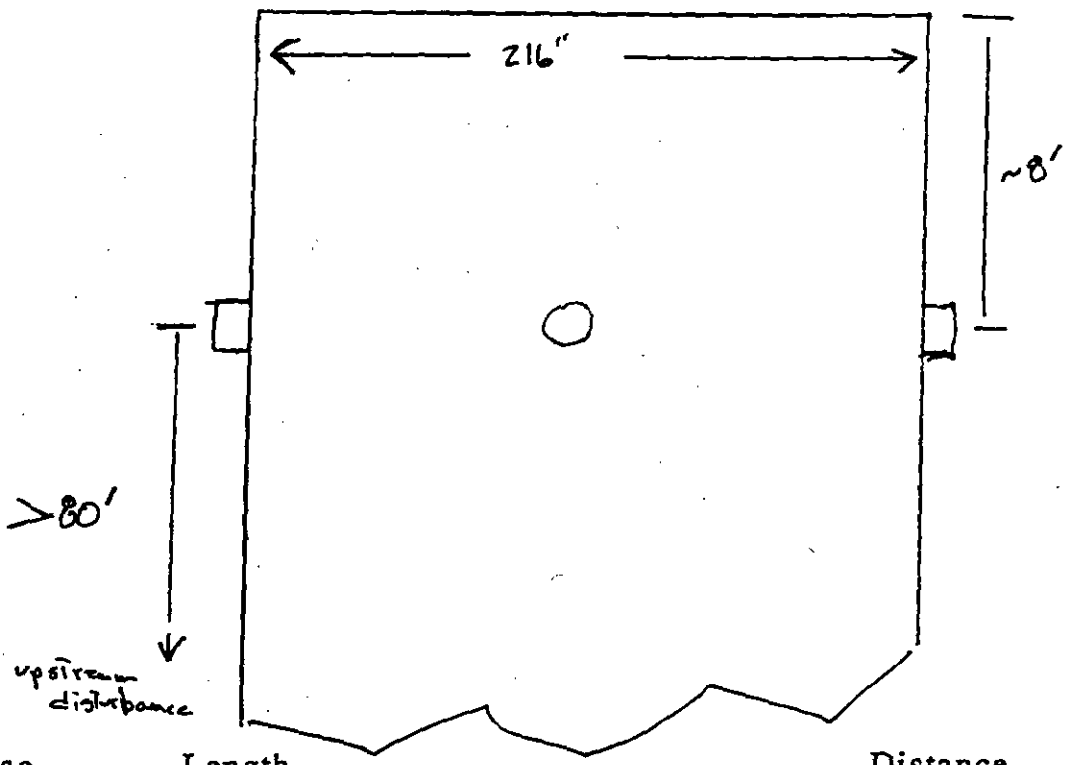
APPENDIX A:
FIELD DATA SHEETS

Circular Stack Sampling Traverse Point Layout
(EPA Method 1)

Date: 7/13/00
Plant: Polk City Power — Tampa Electric
Source: Unit #2
Technician(s) JB, JJ, NG

Port + Stack ID:: 227" in.
Port Extension 11" in.
Stack ID: 216" in.
Stack Area _____ ft²
Total Req'd Traverse Pts. 48
No. of Traverse Pts. 12 /diam.
No. of Traverse Pts. 6 /port

Stack Diagram (Side View showing major unit components, dimensions and nearest upstream & downstream flow disturbances)



Traverse Point Number	Length Factor (% of diameter) Number of traverse pts./diameter 4	6	8	12	24	Distance from Reference Point (inches)
1	6.7	4.4	3.2	2.1	1.1	2.4
2	25.0	14.6	10.5	8.2	3.2	6.9
3	75.0	29.6	19.4	11.8	5.5	11.9
4	93.3	70.4	32.3	17.7	7.9	17.1
5		85.4	67.7	25.0	10.5	22.7
6		95.6	80.6	35.6	13.2	28.5
7			89.5	64.4	16.1	34.8
8			96.8	75.0	19.4	41.9
9				82.3	23.0	49.7
10				88.2	27.2	58.8
11				93.3	32.3	69.8
12				97.9	39.8	86.0

APPENDIX B:
EXAMPLE CALCULATIONS

NOx, CO Correction to 15% O2
Refers to test Run C-10 Base Load for NOx

Measured NOx emissions (NOx Meas) = C_{gas} = 8.79 ppmv
Measured O_2 emissions (C_{O2}) = 13.60% (from analyzer)

$$NOx\ @\ 15\ \%\ O_2 = \frac{(NOx\ Meas \times (20.9 - 15.0))}{(20.9 - C_{O2})}$$

$$NOx\ @\ 15\ \%\ O_2 = \frac{(8.79 \times 5.9)}{(20.9 - 13.60)}$$

$NOx\ @\ 15\ \%\ O_2$ = 7.10 ppmv

Flow Rate in Stack by O2 F Factor (Qd)
Refers to test Run C-10 Base Load for NOx

Fg = Fuel flow rate.
Fg = 11.72 lbs/sec

Htg = heating value of fuel from fuel analysis calculations
Htg = 23108 BTU/lb = 0.023108 MMBTU/lb

H = heat rate of turbine = Fg x Htg = 11.72 x 3600 x 0.023108
H = 975.33 MMBTU/hr

For this fuel the products of combustion (i.e. based on combustion stoichiometry) were determined to be 8637 dry SCF/MMBTU of fuel burned

O2f = O2 F-factor = 8637 DSCF/MMBTU

O2 = O2 concentration in stack (from O2 analyzer) = 13.60 vol%

O2 in ambient air = 20.9 vol %

Qd = Flow rate in stack = H x O2f x 20.9 / (20.9 - O2)
Qd = 975.33 x 8637 x 20.9 / (20.9 – 13.60)
Qd = 2.41 x 10^7 DSCF/hr

NOx, CO, VOC Mass Emission Rate
Refers to test Run C-10 Base Load for NOx

E_{NOx} = NOx mass emission rate

NOx = NOx concentration (drift corrected only) = 8.79 ppmvd

Qd = stack flow rate = 2.41 x 10^7 DSCFH

MW = molecular weight of NOx = 46.01 lb/lb-mole

R = ideal gas constant = 385.15 SCF/lb/mole

E_{NOx} = NOx mass emission rate
E_{NOx} = (NOx / 1000000) x Qd x MW / R
E_{NOx} = (8.79 / 1000000) x 2.41 x 10^7 x 46.01 / 385.15
E_{NOx} = 25.3 lbs/hr

SO_2 Emission Rate Calculation (E_{SO2})
Refers to gas fuel analysis for turbine #2 and run C-10 Base Load

Sw = Sulfur content of fuel (from fuel analysis)
Sw = 0.0002 % by weight of sulfur

Fg = Fuel flow to turbine (averaged Mark V data for run T2-FO-1)
Fg = 11.72 lbs/sec

MWso2 = molecular weight of SO2 = 64 lb/lb-mole

MWs = molecular weight of sulfur = 32 lb/lb-mole

E_{SO2} = SO_2 Emission Rate (lbs/hr)
E_{SO2} = (Sw / 100) x Fg x MWso2 / MWs
E_{SO2} = (0.0002 / 100) x 11.72 x 3600 x 64 / 32
E_{SO2} = 0.08 lbs/hr

APPENDIX C:
FUEL ANALYSIS

Gas Fuel F Factor & Heating Value Calculation

Client TECO
Sample ID
Time
Date 10/7/2000

CALCULATION OF DENSITY AND HEATING VALUE @ 60°F and 30 in Hg

Component	% Volume	Molecular Wt.	Density (lb/ft3)	% volume x Density	weight %	Component Gross Btu/lb	Weight Fract. Btu	Gross Heating Value (Btu/SCF)	Volume Fract. Btu
Hydrogen		2.016	0.0053	0.00000	0.0000	61100	0.00	325.0	0
Oxygen		32.000	0.0846	0.00000	0.0000	0	0.00	0.0	0
Nitrogen	0.2890	28.016	0.0744	0.00022	0.4845	0	0.00	0.0	0
CO2	0.8920	44.010	0.1170	0.00104	2.3518	0	0.00	0.0	0
CO		28.010	0.0740	0.00000	0.0000	4347	0.00	322.0	0
Methane	96.5070	16.041	0.0424	0.04092	92.2084	23879	22018.45	1013.0	977.616
Ethane	1.7850	30.067	0.0803	0.00143	3.2300	22320	720.93	1792.0	31.9872
Ethylene		28.051	0.0746	0.00000	0.0000	21644	0.00	1614.0	0
Propane	0.3000	44.092	0.1196	0.00036	0.8085	21661	175.14	2590.0	7.77
propylene		42.077	0.1110	0.00000	0.0000	21041	0.00	2336.0	0
Isobutane	0.0700	58.118	0.1582	0.00011	0.2495	21257	53.05	3363.0	2.3541
n-butane	0.0640	58.118	0.1582	0.00010	0.2282	21308	48.62	3370.0	2.1568
Isobutene		56.102	0.1480	0.00000	0.0000	20730	0.00	3068.0	0
Isopentane	0.0280	72.144	0.1904	0.00005	0.1201	21052	25.29	4008.0	1.12224
n-pentane	0.0170	72.144	0.1904	0.00003	0.0729	21091	15.38	4016.0	0.68272
n-hexane	0.0480	86.169	0.2274	0.00011	0.2460	20940	51.51	4762.0	2.28576
H2S		34.076	0.0911	0.00000	0.0000	7100	0.00	647.0	0
total	100.00				100.0000				

Average Density	0.04438
Specific Gravity	0.58009

Gross Heating Value		Gross Heating Value	
Btu/lb	23108	Btu/SCF	1026

CALCULATION OF F FACTORS

Component	Mol. Wt.	C Factor	H Factor	% volume	Fract. Wt.	Weight Percents Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur
Hydrogen	2.016	0	1	0.00	0.0000		0			
Oxygen	32.000	0	0	0.00	0.0000				0	
Nitrogen	28.016	0	0	0.29	8.0966			0.482663046		
CO2	44.010	0.272273	0	0.89	39.2569	0.63717815			1.70134	
CO	28.010	0.42587	0	0.00	0.0000	0			0	
Methane	16.041	0.75	0.25	96.51	1548.0688	69.213625	23.071208			
Ethane	30.067	0.8	0.2	1.79	53.6696	2.55951915	0.6398798			
Ethylene	28.051	0.85714	0.14286	0.00	0.0000	0	0			
Propane	44.092	0.81818	0.181818	0.30	13.2276	0.6451638	0.1433699			
Propene	42.077	0.85714	0.14286	0.00	0.0000	0	0			
Isobutane	58.118	0.82759	0.17247	0.07	4.0683	0.20070769	0.0418275			
n-butane	58.118	0.82759	0.17247	0.06	3.7196	0.18350417	0.0382423			
Isobutene	56.102	0.85714	0.14286	0.00	0.0000	0	0			
Isopentane	72.144	0.83333	0.16667	0.03	2.0200	0.10034953	0.0200704			
n-pentane	72.144	0.83333	0.16667	0.02	1.2264	0.0609265	0.0121856			
n-hexane	86.169	0.83721	0.16279	0.05	4.1361	0.20642713	0.0401384			
H2S	34.076	0	0.058692	0.00	0.0000	0	0			0
Totals				100.00000	1677.4899	73.8074012	24.01	0.482663046	1.70134	0

CALCULATED VALUES		
O2 F Factor (dry)	**8637**	DSCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
O2 F Factor (wet)	**10642**	SCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
Moisture F Factor	**2005**	SCF of Water/MM Btu of Fuel Burned @ 0% excess air
Combust. Moisture	**18.84**	volume % water in flue gas @ 0% excess air
CO2 F Factor	**1025**	DSCF of CO2/MM Btu of Fuel Burned @ 0% excess air
Carbon Dioxide	**11.87**	volume % CO2 in flue gas @ 0% O2
Predicted Fo Factor	**1.76**	EPA Method 3a Fo value
Fuel VOC % (non-C1)	**5.07%**	non-methane fuel VOC content
Fuel VOC % (non-C1,C2)	**1.78%**	non-methane non-ethane fuel VOC content

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 860-0901

CERTIFICATE OF ANALYSIS NO. 2000110038-001A

Station Name :	Cylinder #27
Project Name :	Natural Gas Analysis
Sample Of	Natural Gas
Sampled By	Cubix
Sample Date	10/07/2000
Sample Pressure :	150.00 Temp 75.00
Cylinder Number :	27
Comments :	NET BTU, DRY GAS, DRY AIR, AS REAL GAS = 920.4 NET BTU, WET GAS, DRY AIR, AS REAL GAS = 904.3

For :

Cubix Corporation
Jim Barufaldi
Austin , TX 78747-
USA

Test By G.C. GPA Method 2261 Factors From GPA-2145, Jan. 01, 2000

Analysis:	Mol %	Wt %	GPM at 14.650 psia
Nitrogen	0.289	0.482	
Carbon DiOxide	0.892	2.338	
Methane	96.507	92.234	
Ethane	1.785	3.197	0.475
Propane	0.300	0.788	0.082
Iso Butane	0.070	0.242	0.023
n-Butane	0.064	0.222	0.020
Iso Pentane	0.028	0.120	0.010
n-Pentane	0.017	0.073	0.006
Hexane	0.002	0.010	0.001
Heptane Plus	0.046	0.294	0.022
	100.000	100.000	0.639

Specific Gravity at 60F (air = 1)	Ideal Gas	0.5797
	Real Gas	0.5805
Calculated Molecular Weight		16.78
Deviation Factor		0.9979

Calculated Gross B.T.U / ft3 at 14.650 psia and 60 F

Ideal Gas	Dry Basis	1020
	Saturated Basis	1002
Real Gas	Dry Basis	1022
	Saturated Basis	1004

Southern Petroleum Laboratories, Inc.

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-0011080-01

Cubix Corporation
9225 US Hwy 183 South
Austin, TX 78747-3233
ATTN: Jim Barufaldi

P.O.# 2000568
11/07/00

PROJECT: Natural Gas Analysis
SITE:
SAMPLED BY: Cubix Corporation
SAMPLE ID: Cylinder #27

PROJECT NO:
MATRIX: NAT_GAS
DATE SAMPLED: 10/07/00 03:00:00
DATE RECEIVED: 11/06/00

ASTM D-3246

PARAMETER	RESULTS
Total Sulfur in ppm/Wt.	1.7
Total Sulfur in Wt. %	0.0002
Total Sulfur in gr/100 cu Ft.	0.054

ANALYZED BY: HR DATE ANALYZED: 11/06/00
METHOD: ASTM D-3246 Sulfur, Total by Dohrman
NOTES:

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with ASTM, UOP, or GPA guidelines for quality assurance.

Fred DeAngelo, Laboratory Manager

Pt

APPENDIX D:
QUALITY ASSURANCE ACTIVITIES

Linearity Check		NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %		30.00	25.00	25.00
Strip Chart Offset		2.00	10.00	2.00
Low Level Certified Value (PPM or %)		8.52	3.99	5.04
Mid Level Certified Value (PPM or %)		12.89	12.46	9.99
High Level Certified Value (PPM or %)		24.20	20.80	18.01
Zero Target (%Chart)		2.00	10.00	2.00
Low Level Target (%Chart)		30.40	25.96	22.16
Mid Level Target (%Chart)		44.97	59.84	41.96
High Level Target (%Chart)		82.67	93.20	74.04
Zero Observed (%Chart)		2.00	10.00	2.00
Low Level Observed (%Chart)		31.00	26.00	21.90
Mid Level Observed (%Chart)		45.00	59.80	41.50
High Level Observed (%Chart)		82.80	93.00	73.30
%Diff. From Zero to Target	<2%	0.00	0.00	0.00
%Diff. From Low to Target	<2%	0.60	0.04	-0.26
%Diff. From Mid to Target	<2%	0.03	-0.04	-0.46
%Diff. From High to Target	<2%	0.13	-0.20	-0.74

Run 1 Low		NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %		30.00	25.00	25.00
Span Gas Certified Value (ppm or %)		12.89	20.80	9.99
Strip Chart Offset		2.00	10.00	2.00
Target Span (Chart %)		44.97	93.20	41.96
Actual Zero from Linearity (Chart %)		2.00	10.00	2.00
Actual Span from Linearity (Chart %)		44.97	93.00	41.50
Initial Readings				
Zero (chart %)		2.00	10.00	2.00
Span (chart %)		44.00	92.80	41.00
Final Readings				
Zero (chart %)		2.10	10.10	2.00
Span (chart %)		44.40	92.80	41.00
Bias and Drift Calculations				
Zero Bias (% Chart) (Run-Direct Cal)	<5%	0.10	0.10	0.00
Span Bias (% Chart)	<5%	-0.57	-0.20	-0.50
Zero Drift (Chart %) (Run-Run)	<3%	0.10	0.10	0.00
Span Drift (Chart %)	<3%	0.40	0.00	0.00
Run Results				
Raw Results (chart %)		24.00	63.20	18.50
Corrected Results (ppmv) from Chart%		6.71	13.36	4.23

Run 2 Low	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.10**	**2.00**
Span (chart %)	**44.40**	**92.80**	**41.00**
Final Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.40**	**92.80**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.10	0.00	0.00
Span Bias (% Chart) **<5%**	-0.57	-0.20	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	0.00	-0.10	0.00
Span Drift (Chart %) **<3%**	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	**23.80**	**63.40**	**18.10**
Corrected Results (ppmv) from Chart%	**6.61**	**13.41**	**4.12**

Run 3 Low	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.40**	**92.80**	**41.00**
Final Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.40**	**92.80**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.10	0.00	0.00
Span Bias (% Chart) **<5%**	-0.57	-0.20	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	0.00	0.00	0.00
Span Drift (Chart %) **<3%**	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	**23.80**	**63.50**	**18.10**
Corrected Results (ppmv) from Chart%	**6.61**	**13.44**	**4.12**

Run 1 Mid	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.40**	**92.80**	**41.00**
Final Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.40**	**93.00**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.10	0.00	0.00
Span Bias (% Chart) **<5%**	-0.57	0.00	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	0.00	0.00	0.00
Span Drift (Chart %) **<3%**	0.00	0.20	0.00
Run Results			
Raw Results (chart %)	**25.00**	**63.50**	**18.40**
Corrected Results (ppmv) from Chart%	**6.98**	**13.42**	**4.20**

Run 2 Mid	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.40**	**93.00**	**41.00**
Final Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.10	0.00	0.00
Span Bias (% Chart) **<5%**	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	0.00	0.00	0.00
Span Drift (Chart %) **<3%**	0.10	0.00	0.00
Run Results			
Raw Results (chart %)	**25.00**	**63.60**	**18.20**
Corrected Results (ppmv) from Chart%	**6.97**	**13.43**	**4.15**

Run 3 Mid	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.00**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Final Readings			
Zero (chart %)	**2.10**	**10.20**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.10	0.20	0.00
Span Bias (% Chart) **<5%**	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	0.00	0.20	0.00
Span Drift (Chart %) **<3%**	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	**24.90**	**63.60**	**18.20**
Corrected Results (ppmv) from Chart%	**6.93**	**13.42**	**4.15**

Run 1 High	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.20**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Final Readings			
Zero (chart %)	**2.00**	**10.00**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.00	0.00	0.00
Span Bias (% Chart) **<5%**	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	-0.10	-0.20	0.00
Span Drift (Chart %) **<3%**	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	**23.60**	**63.40**	**18.20**
Corrected Results (ppmv) from Chart%	**6.54**	**13.37**	**4.15**

Run 2 High	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.00**	**10.00**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Final Readings			
Zero (chart %)	**2.10**	**10.20**	**2.00**
Span (chart %)	**44.80**	**93.00**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.10	0.20	0.00
Span Bias (% Chart) **<5%**	-0.17	0.00	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	0.10	0.20	0.00
Span Drift (Chart %) **<3%**	0.30	0.00	0.00
Run Results			
Raw Results (chart %)	**23.60**	**63.50**	**18.20**
Corrected Results (ppmv) from Chart%	**6.52**	**13.40**	**4.15**

Run 3 High	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	**12.89**	**20.80**	**9.99**
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	**44.97**	**93.20**	**41.96**
Actual Zero from Linearity (Chart %)	**2.00**	**10.00**	**2.00**
Actual Span from Linearity (Chart %)	**44.97**	**93.00**	**41.50**
Initial Readings			
Zero (chart %)	**2.10**	**10.20**	**2.00**
Span (chart %)	**44.80**	**93.00**	**41.00**
Final Readings			
Zero (chart %)	**2.00**	**10.00**	**2.00**
Span (chart %)	**44.50**	**93.00**	**41.00**
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) **<5%**	0.00	0.00	0.00
Span Bias (% Chart) **<5%**	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) **<3%**	-0.10	-0.20	0.00
Span Drift (Chart %) **<3%**	-0.30	0.00	0.00
Run Results			
Raw Results (chart %)	**23.80**	**63.50**	**18.20**
Corrected Results (ppmv) from Chart%	**6.58**	**13.40**	**4.15**

Linearity Check		NOx	CO	O2	CO2	THC
Analyzer Range (ppm), O2 & CO2 in %		30.00	50.00	25.00	25.00	50.00
Strip Chart Offset		2.00	5.00	10.00	2.00	5.00
Low Level Certified Value (PPM or %)		8.52	15.27	3.99	5.04	14.92
Mid Level Certified Value (PPM or %)		12.89	25.10	12.46	9.99	25.50
High Level Certified Value (PPM or %)		24.20	45.00	20.80	18.01	44.91
Zero Target (%Chart)		2.00	5.00	10.00	2.00	5.00
Low Level Target (%Chart)		30.40	35.54	25.96	22.16	34.84
Mid Level Target (%Chart)		44.97	55.20	59.84	41.96	56.00
High Level Target (%Chart)		82.67	95.00	93.20	74.04	94.82
Zero Observed (%Chart)		2.00	4.90	10.00	2.00	5.00
Low Level Observed (%Chart)		31.00	36.20	26.00	21.90	35.50
Mid Level Observed (%Chart)		45.00	55.50	59.80	41.50	56.70
High Level Observed (%Chart)		82.80	95.30	93.00	73.30	94.50
%Diff. From Zero to Target	<2%	0.00	-0.10	0.00	0.00	0.00
%Diff. From Low to Target	<2%	0.60	0.66	0.04	-0.26	0.66
%Diff. From Mid to Target	<2%	0.03	0.30	-0.04	-0.46	0.70
%Diff. From High to Target	<2%	0.13	0.30	-0.20	-0.74	-0.32
Run 1 Base		**NOx**	**CO**	**O2**	**CO2**	**THC**
Analyzer Range (ppm), O2 & CO2 in %		30.00	50.00	25.00	25.00	50.00
Span Gas Certified Value (ppm or %)		12.89	15.27	20.80	9.99	14.92
Strip Chart Offset		2.00	5.00	10.00	2.00	5.00
Target Span (Chart %)		44.97	35.54	93.20	41.96	34.84
Actual Zero from Linearity (Chart %)		2.00	4.90	10.00	2.00	5.00
Actual Span from Linearity (Chart %)		44.97	36.20	93.00	41.50	36.20
Initial Readings						
Zero (chart %)		2.00	4.50	10.10	2.00	5.10
Span (chart %)		44.50	36.00	93.00	41.00	35.20
Final Readings						
Zero (chart %)		2.00	4.30	10.00	2.00	5.50
Span (chart %)		44.30	36.00	92.80	41.00	36.20
Bias and Drift calculations						
Zero Bias (% Chart) (Run-Direct Cal)	<5%	0.00	-0.60	0.00	0.00	0.50
Span Bias (% Chart)	<5%	-0.67	-0.20	-0.20	-0.50	0.00
Zero Drift (Chart %) (Run-Run)	<3%	0.00	-0.20	-0.10	0.00	0.40
Span Drift (Chart %)	<3%	-0.20	0.00	-0.20	0.00	1.00
Run Result						
Raw Results (chart %)		30.90	7.00	63.90	18.10	6.90
Corrected Results (ppmv) from Chart%		8.79	1.26	13.52	4.12	0.79

Run 2 Base	NOx	CO	O2	CO2	THC
Analyzer Range (ppm), O2 & CO2 in %	30.00	50.00	25.00	25.00	50.00
Span Gas Certified Value (ppm or %)	**12.89**	**15.27**	**20.80**	**9.99**	**14.92**
Strip Chart Offset	2.00	5.00	10.00	2.00	5.00
Target Span (Chart %)	**44.97**	**35.54**	**93.20**	**41.96**	**34.84**
Actual Zero from Linearity (Chart %)	**2.00**	**4.90**	**10.00**	**2.00**	**5.00**
Actual Span from Linearity (Chart %)	**44.97**	**36.20**	**93.00**	**41.50**	**36.20**
Initial Readings					
Zero (chart %)	**2.00**	**4.30**	**10.00**	**2.00**	**5.50**
Span (chart %)	**44.30**	**36.00**	**92.80**	**41.00**	**36.20**
Final Readings					
Zero (chart %)	**2.00**	**4.90**	**10.00**	**2.00**	**5.50**
Span (chart %)	**44.00**	**36.00**	**92.80**	**41.00**	**34.00**
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	0.00	0.00	0.00	0.50
Span Bias (% Chart) <5%	-0.97	-0.20	-0.20	-0.50	-2.20
Zero Drift (Chart %) (Run-Run) <3%	0.00	0.60	0.00	0.00	0.00
Span Drift (Chart %) <3%	-0.30	0.00	0.00	0.00	-2.20
Run Results					
Raw Results (chart %)	**32.30**	**7.30**	**63.80**	**18.10**	**5.90**
Corrected Results (ppmv) from Chart%	**9.27**	**1.31**	**13.51**	**4.12**	**0.20**

Run 3 Base	NOx	CO	O2	CO2	THC
Analyzer Range (ppm), O2 & CO2 in %	30.00	50.00	25.00	25.00	50.00
Span Gas Certified Value (ppm or %)	**12.89**	**15.27**	**20.80**	**9.99**	**14.92**
Strip Chart Offset	2.00	5.00	10.00	2.00	5.00
Target Span (Chart %)	**44.97**	**35.54**	**93.20**	**41.96**	**34.84**
Actual Zero from Linearity (Chart %)	**2.00**	**4.90**	**10.00**	**2.00**	**5.00**
Actual Span from Linearity (Chart %)	**44.97**	**36.20**	**93.00**	**41.50**	**36.20**
Initial Readings					
Zero (chart %)	**2.00**	**4.90**	**10.00**	**2.00**	**5.50**
Span (chart %)	**44.00**	**36.00**	**92.80**	**41.00**	**34.00**
Final Readings					
Zero (chart %)	**2.00**	**6.00**	**10.00**	**2.00**	**5.00**
Span (chart %)	**44.00**	**35.50**	**92.80**	**41.00**	**32.50**
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	1.10	0.00	0.00	0.00
Span Bias (% Chart) <5%	-0.97	-0.70	-0.20	-0.50	-3.70
Zero Drift (Chart %) (Run-Run) <3%	0.00	1.10	0.00	0.00	-0.50
Span Drift (Chart %) <3%	0.00	-0.50	0.00	0.00	-1.50
Run Results					
Raw Results (chart %)	**35.20**	**6.90**	**63.20**	**18.20**	**5.80**
Corrected Results (ppmv) from Chart%	**10.19**	**0.73**	**13.36**	**4.15**	**0.29**

APPENDIX E:
CALIBRATION CERTIFICATIONS

T-5

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 149061
ITEM# : 1
P.O.# : 99404

CYLINDER # : CC68327
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 12/28/99
EXPIRATION DATE: 12/28/2001

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	12/21/99 12/28/99	24.09 ppm 24.12 ppm	24.1 ppm	+/- 1%
NOx			24.2 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC79982	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Chemi	12/15/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FP
FRED PIKULA

DATE: 12/28/99

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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 156176
ITEM# : 3
P.O.# : 2000301 T-5 Rick

CYLINDER # : CC117566
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 7/25/2000
EXPIRATION DATE: 7/25/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	7/18/2000 7/25/2000	12.83 ppm 12.84 ppm	12.84 ppm	+/- 1%
NOx			12.89 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC117561	20.16 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 42C	42C-64942-345	Chemi	7/12/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 7/25/2000

COMPLIANCE CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

6141 ROUTE 611,PLUMSTEADVILLE,PA 18934 Phone: 215-766-8861 Fax: 215-766-2009

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
6141 ROUTE 611
PLUMSTEADVILLE,PA 18934

P.O. No.: 99270
Project No.: 06-02000-003

Customer

CUBIX CORPORATION
KEVIN HERRING
9225 U.S. HWY 183 SOUTH
AUSTIN TX 78747

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; September, 1997.

Cylinder Number: AAL067485 **Certification Date:** 9/28/99 **Exp. Date:** 9/27/2001
Cylinder Pressure*:** 2000 PSIG **Prev Certification Date:** 9/21/99

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	8.52	PPM	+/- 2%	GMIS
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	8.59	PPM	+/- 2%	

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol procedures , September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
GMIS 10PPMNO	6/02/01	AAL067404	9.990 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
MONITOR LABS/9841A/2341	09/10/99	CHEMILUMINESCENCE

APPROVED BY: TOM SASSAMAN

SPECTRA GASES INC.
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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 156176
ITEM# : 4
P.O.# : 2000301 T-5 Rick

CYLINDER # : CC83913
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 7/26/2000
EXPIRATION DATE: 7/26/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	7/26/2000	20.8 %	20.8 %	+/- 1%
Carbon Dioxide	7/26/2000	5.04 %	5.04 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659x	CC83908	22.8 %
Carbon Dioxide	GMIS-1	CC91046	10.03 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	7/24/2000
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	7/6/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____
FRED PIKULA

DATE: 7/26/2000

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SPECTRA GASES INC.

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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146820
ITEM# : 1
P.O.# : 99304

CYLINDER # : CC106722
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 10/07/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/07/99	12.46 %	12.46 %	+/- 1%
Carbon Dioxide	10/07/99	9.99 %	9.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659X	CC83900	22.80 %
Carbon Dioxide	GMIS-1	CC57143	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	9/21/99
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	9/23/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 10/07/99

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SPECTRA GASES INC.

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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146038
ITEM# : 2
P.O.# : 99277

CYLINDER # : CC114045
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 580

CERTIFICATION DATE: 9/17/99
EXPIRATION DATE: 9/17/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Dioxide	9/17/99	18.01 %	18.01 %	+/- 1%
Oxygen	9/17/99	3.99 %	3.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Dioxide	NTRM-82745x	CC79944	20.00 %
Oxygen	GMIS-1	CC53245	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	8/20/99
Oxygen	Horiba MPA-510	570694081	PM	9/10/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 9/17/99

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SPECTRA GASES INC.

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T-B

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146620
ITEM# : 3
P.O.# : 99304

CYLINDER # : CC85002
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 9/30/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	9/29/99 10/07/99	24.96 ppm 25.17 ppm	25.1 ppm	+/- 1%
Methane	9/30/99	25.50 ppm	25.5 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88366	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ **DATE:** 10/07/99
FRED PIKULA

T-5

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146744
ITEM# : 1
P.O.# : 99316

CYLINDER # : CC110250
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/12/99
EXPIRATION DATE: 10/04/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	10/04/99 10/12/99	45.05 ppm 44.94 ppm	45.0 ppm	+/- 1%
Methane	10/04/99	44.9 ppm	44.9 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88366	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ **DATE:** 10/12/99
FRED PIKULA

T-5

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 140748
ITEM# : 5
P.O.# : 99049

CYLINDER # : CC106737
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 3/24/99
EXPIRATION DATE: 3/15/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	3/17/99 3/24/99	15.33 ppm 15.22 ppm	15.27 ppm	+/- 1%
Methane	3/15/99	14.92 ppm	14.92 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC38290	49.8 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

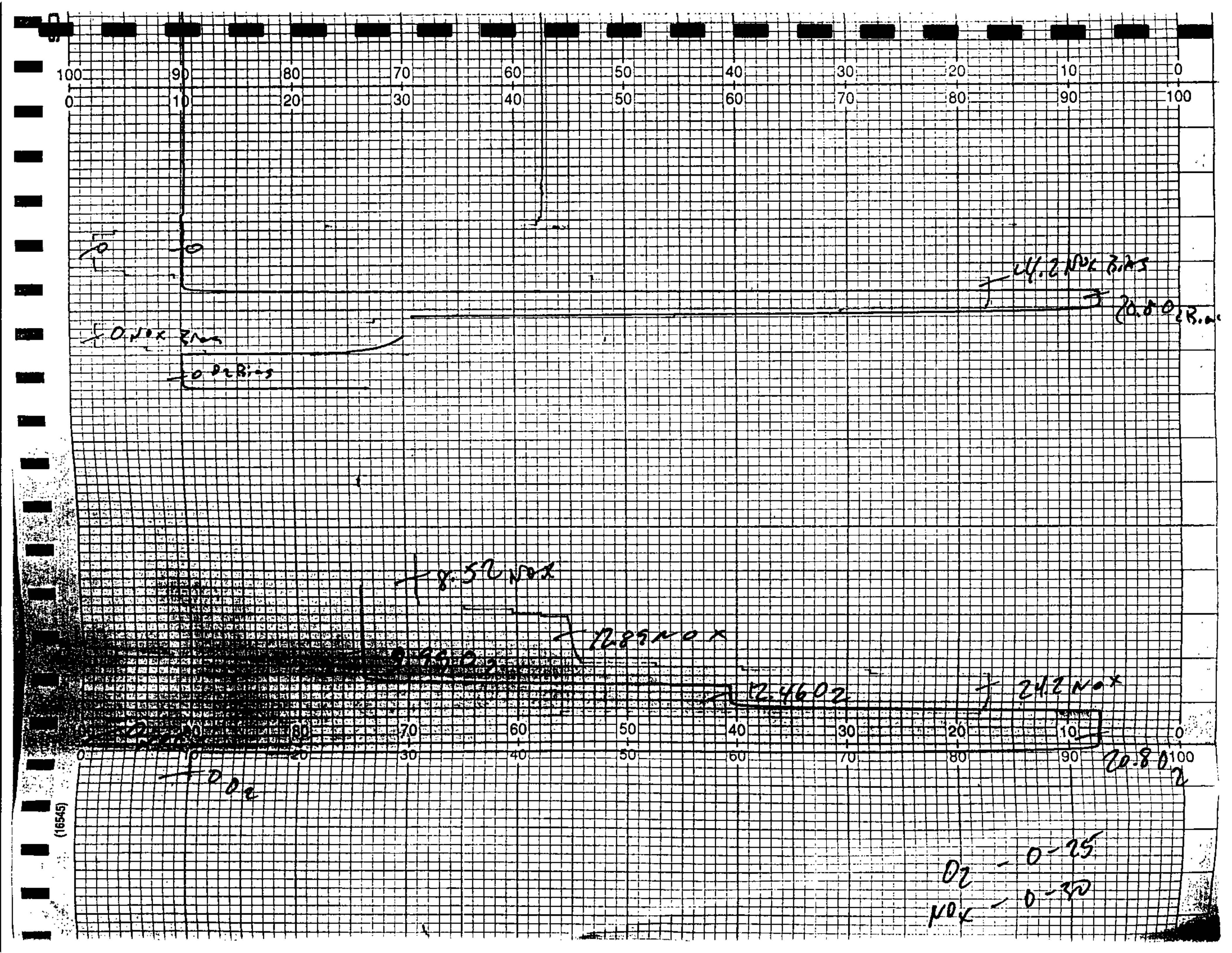
COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	3/17/99
Methane	H. Packard 6890	US00001434	GC - FID	3/9/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

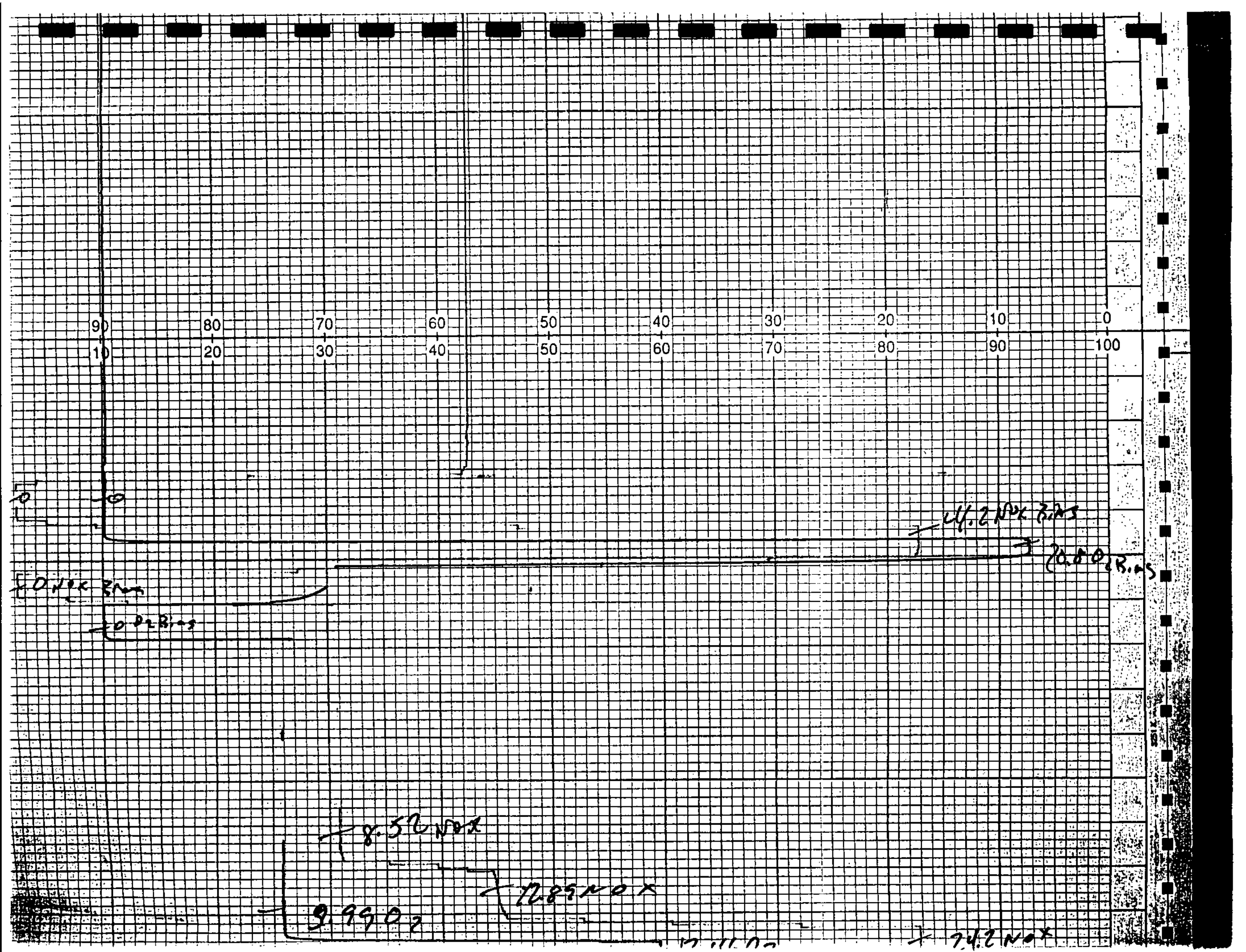
ANALYST: FRED PIKULA

DATE: 3/24/99

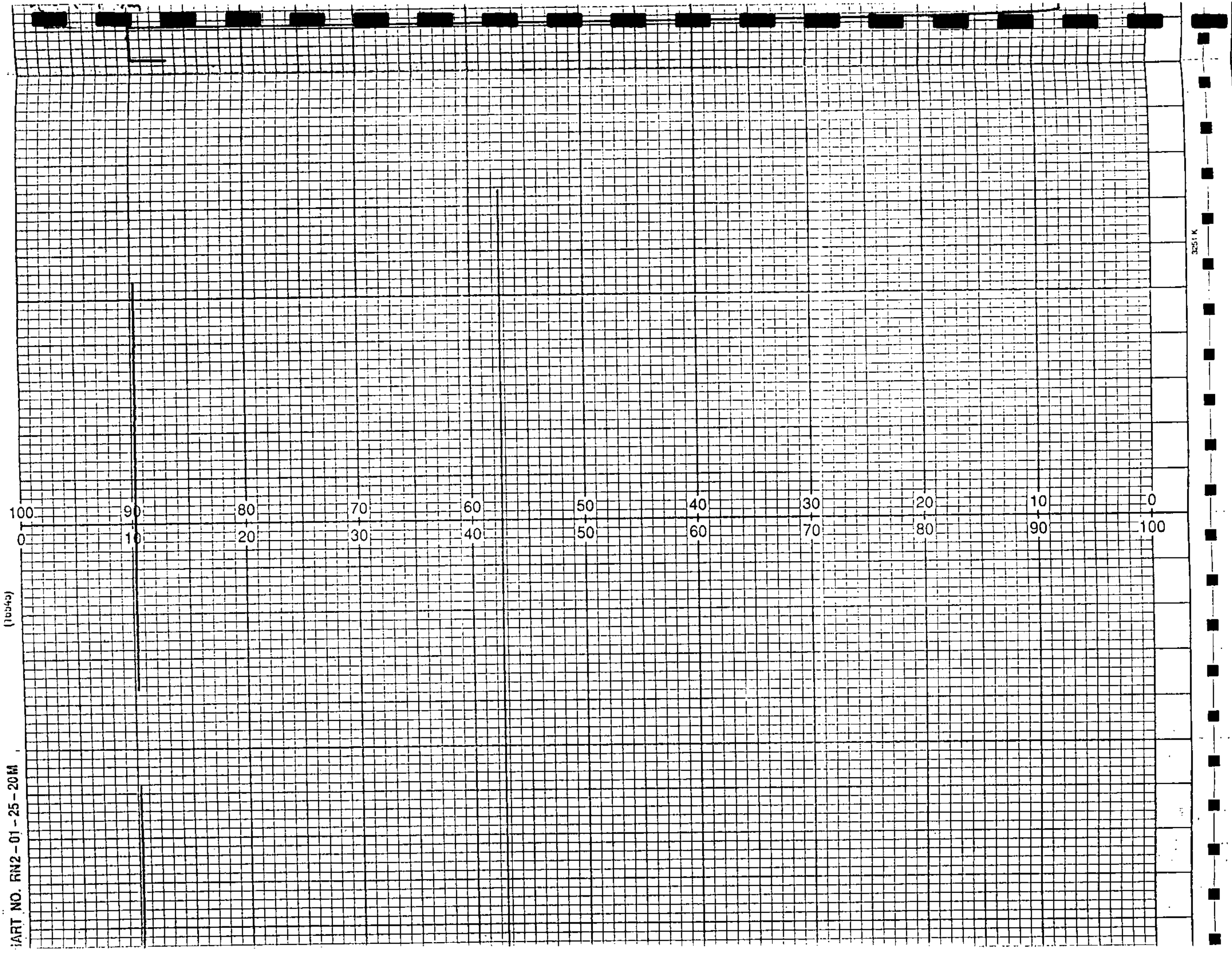
APPENDIX F:
STRIP CHART RECORDS

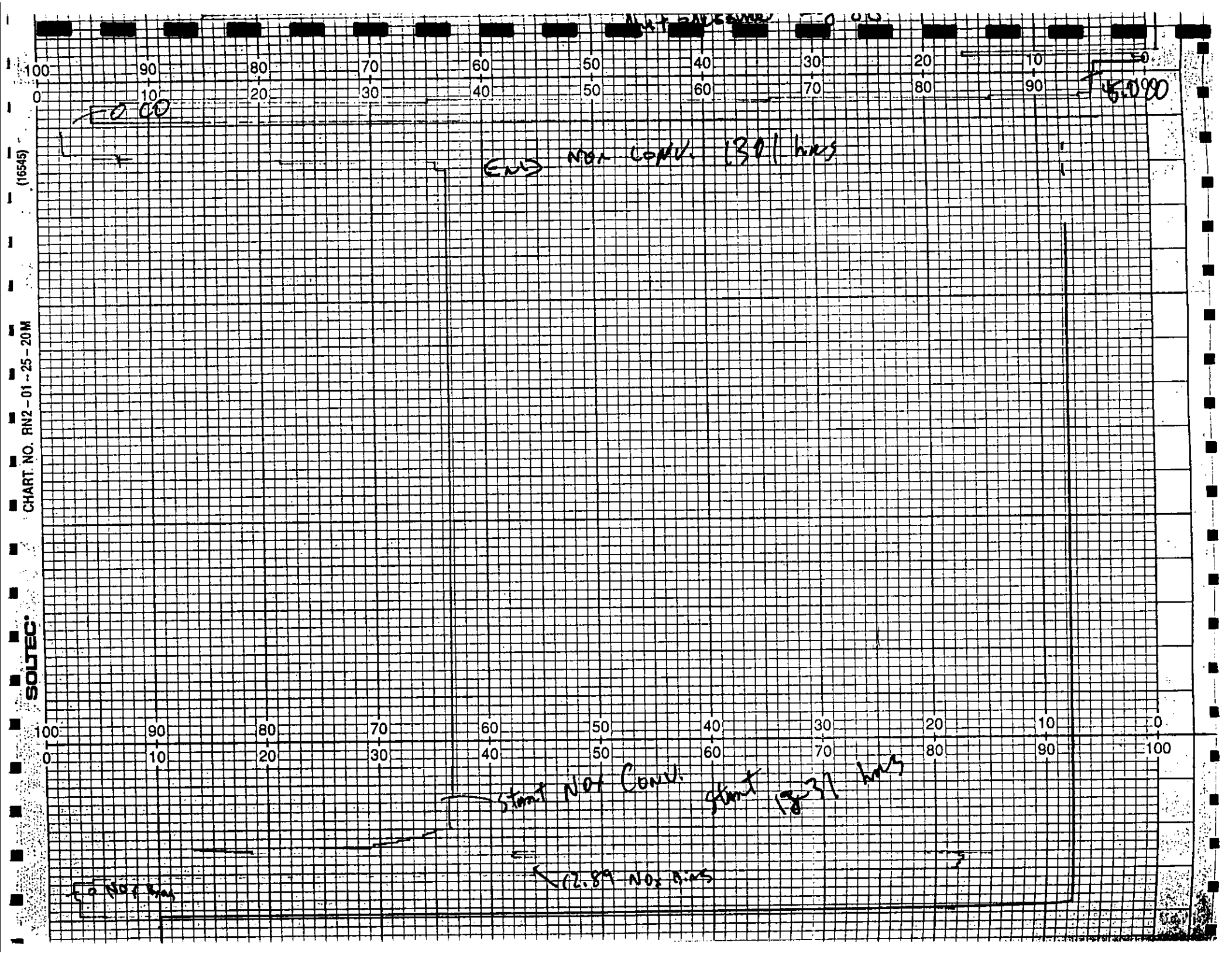


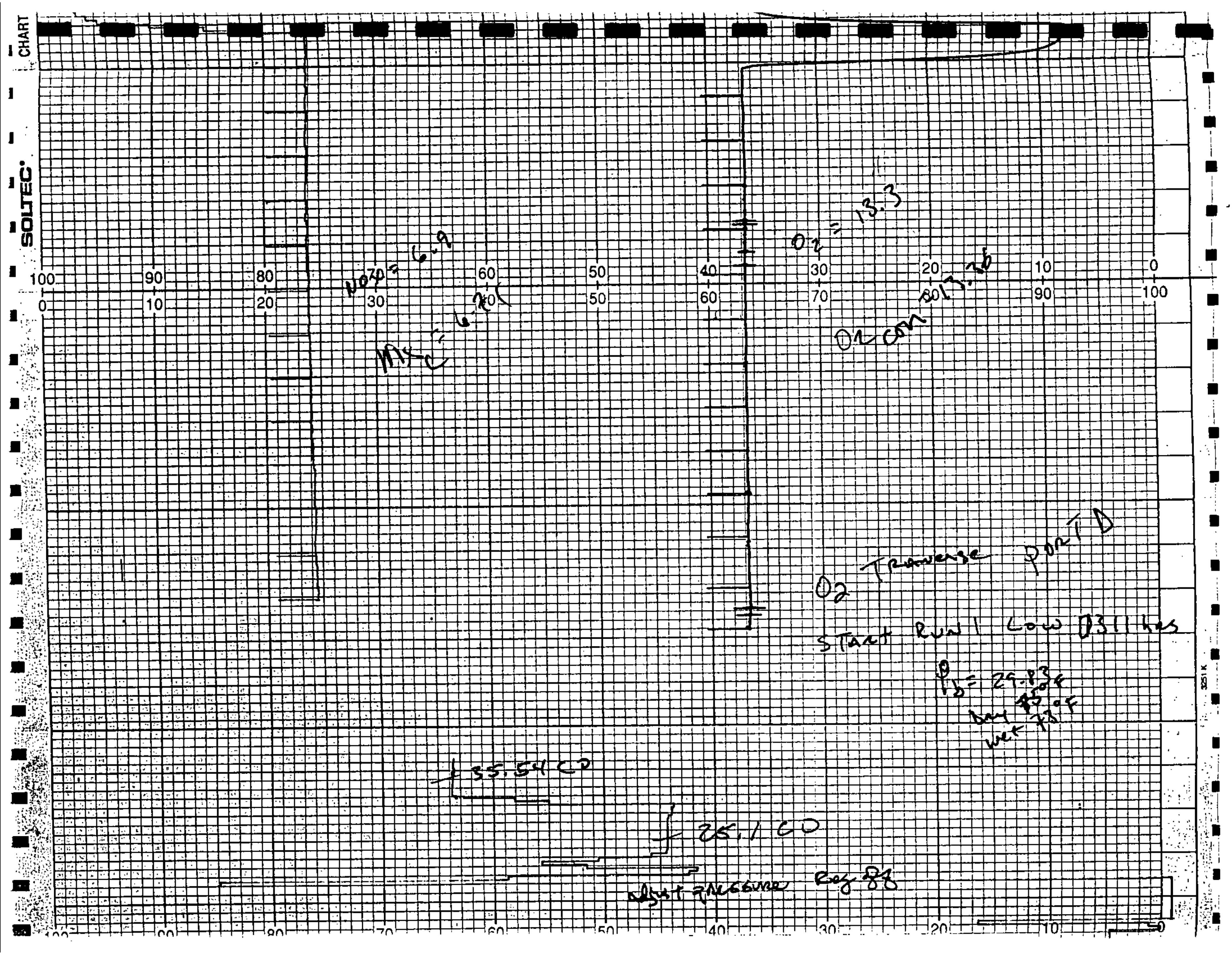
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
0 NOx Bias
0 O2 Bias
24.2 NOx Bias
20.8 O2 Bias
8.52 NOx
12.85 NOx
12.46 O2
24.2 NOx
20.8 O2
0 O2
O2 - 0-25
NOx - 0-30
(16545)

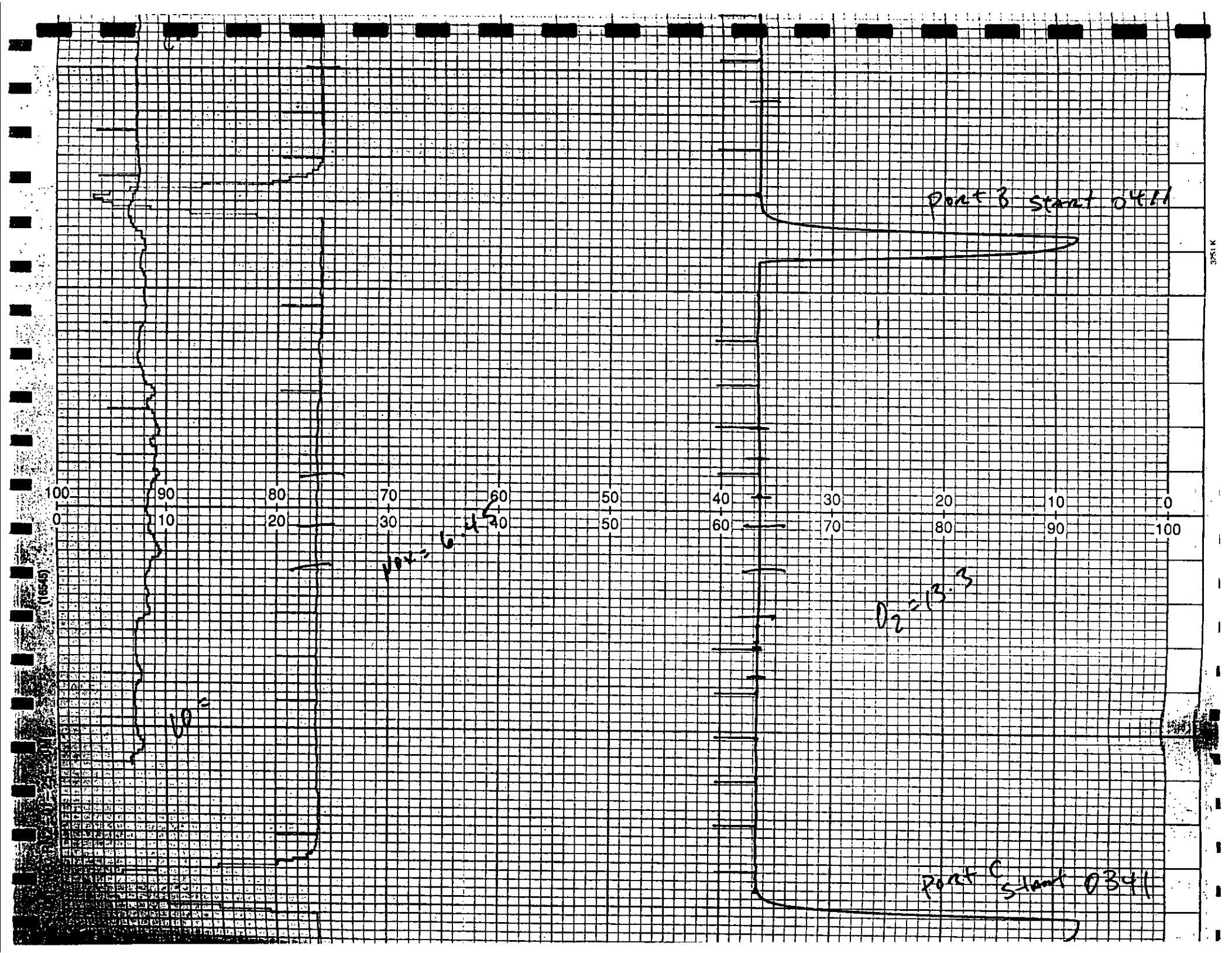


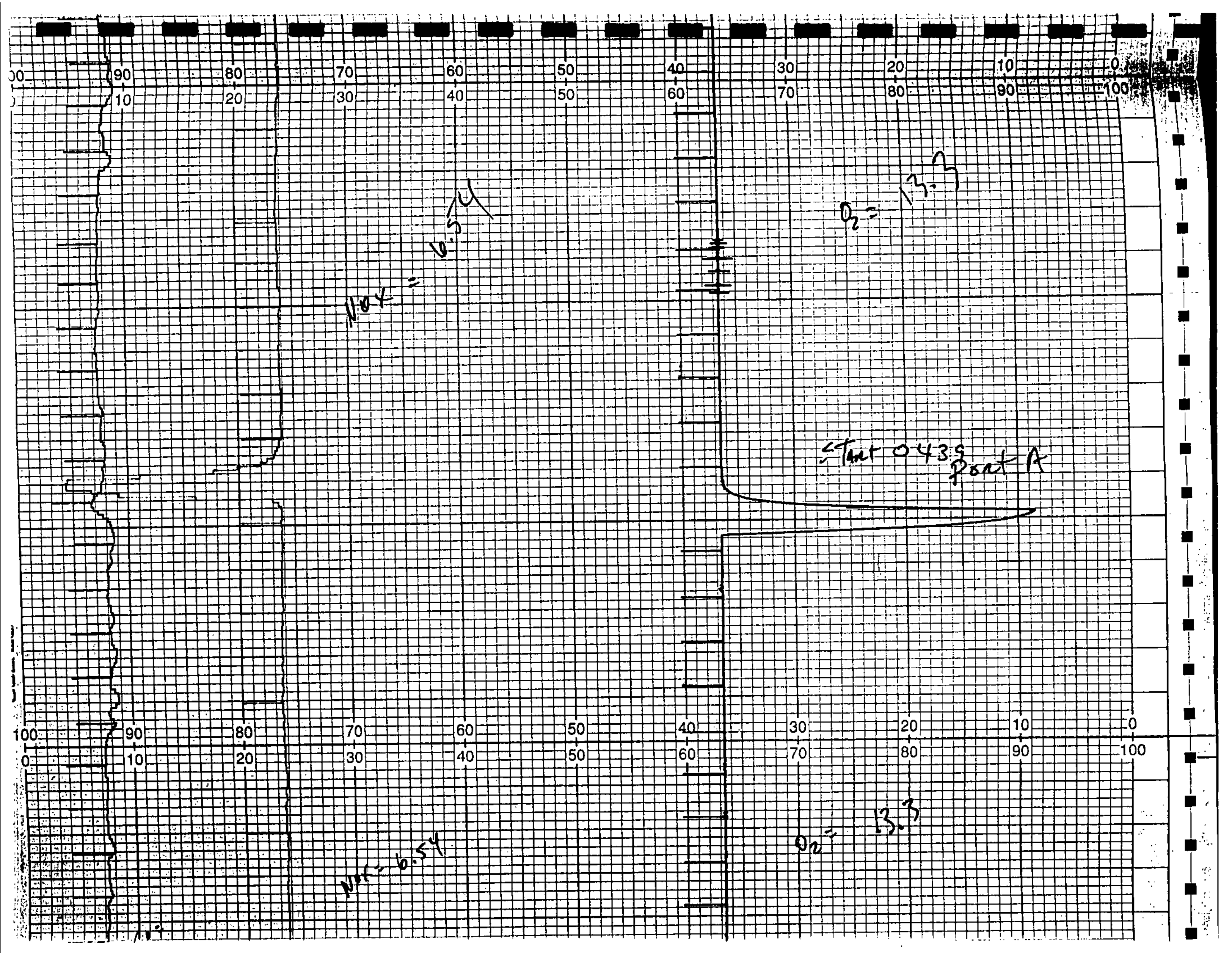
90 80 70 60 50 40 30 20 10 0
10 20 30 40 50 60 70 80 90 100
44.2 NOx Bias
20.8 O2 Bias
0 NOx Bias
0 O2 Bias
8.52 NOx
12.85 NOx
9.99 O2
24.2 NOx


100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
ART NO. RN2-01-25-20M

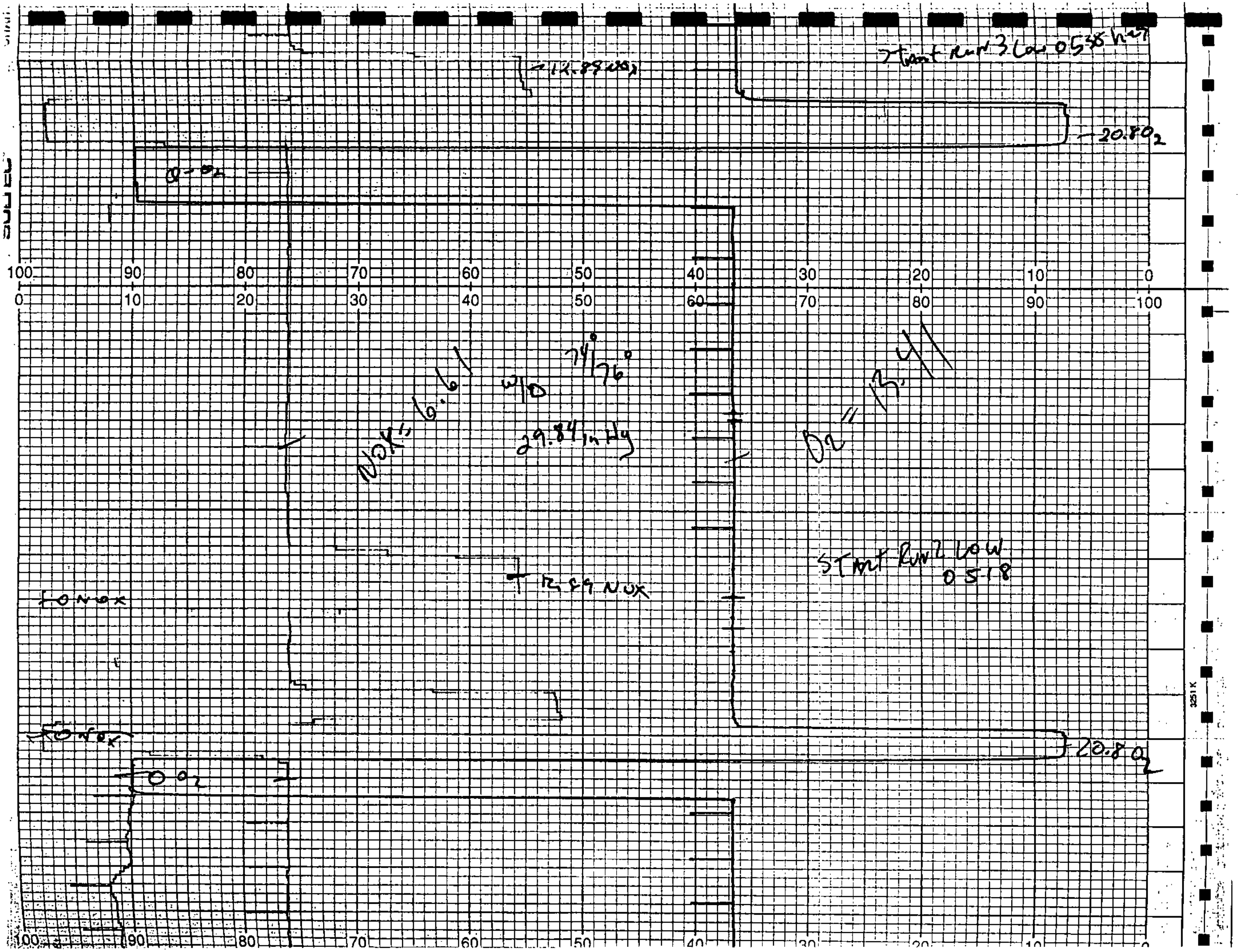

END NOx CONV. 1301 hrs
Start NOx Conv. 1837 hrs
12.89 NOx hrs
SOLTEC
CHART NO. RN2-01-25-20M
(16545)


SOLTEC CHART
NOx = 6.9
O2 = 13.3
O2 Traverse Port D
Start Run 1 Low 0311 hrs
Pb = 29.83
Wet 73°F
35.54 CO
25.1 CO

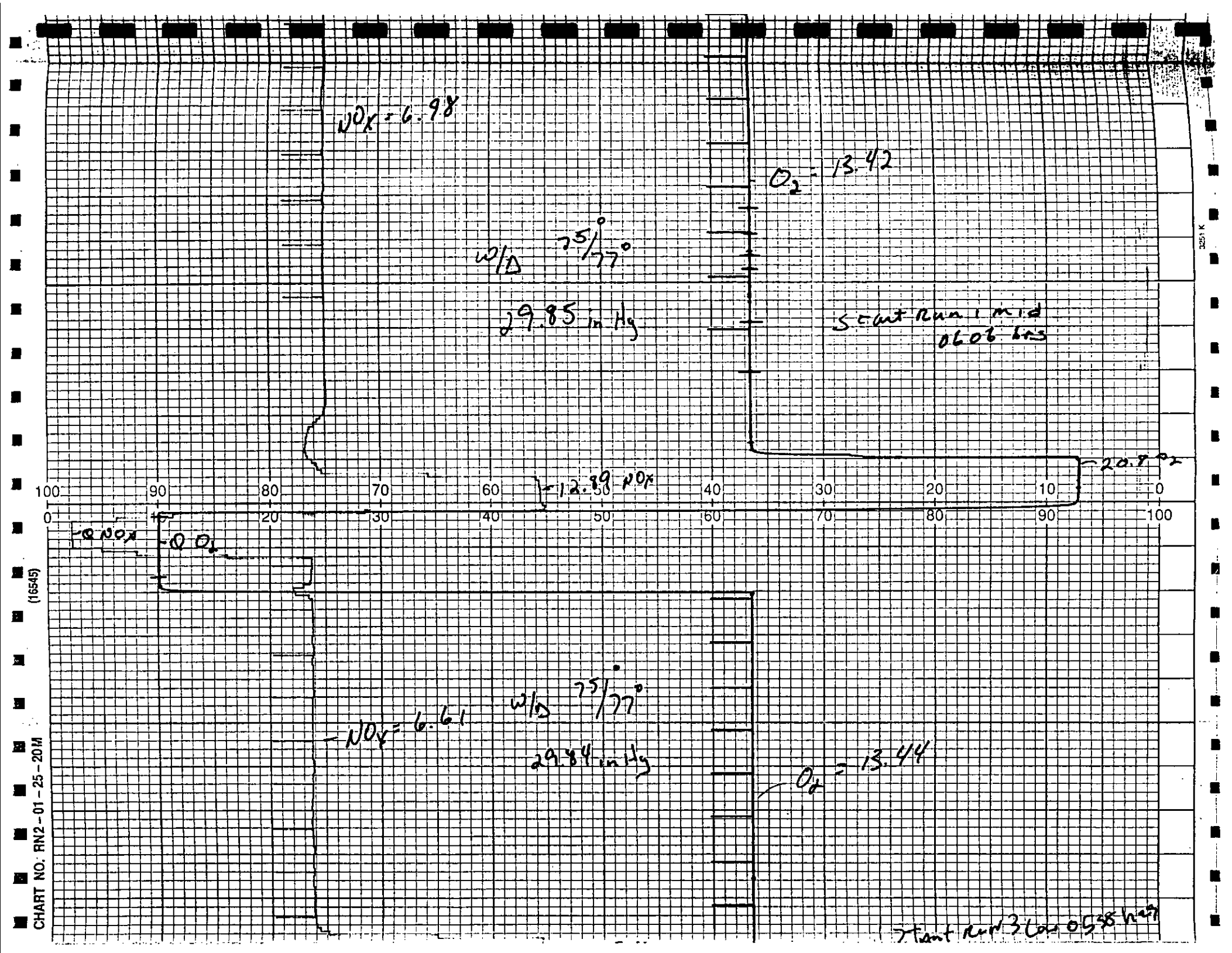

Port B start 0411
Port C start 0341
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

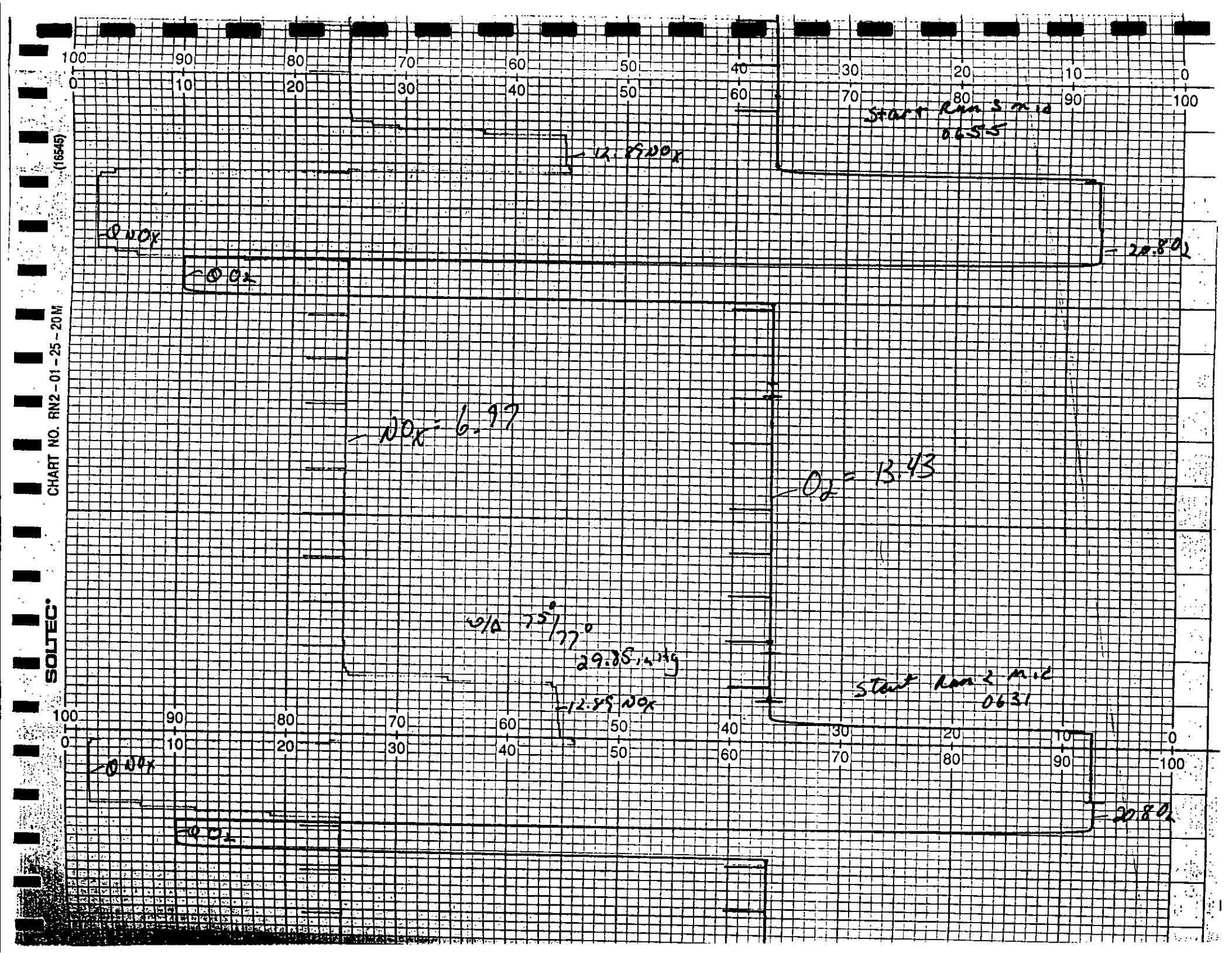


100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx = 6.54
O2 = 13.3
Start 0435 Port A
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx = 6.54
O2 = 13.3



Start Run 3 Low 0538
20.8 O2
0 O2
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOX
O2
w/D
74°/76°
29.84 in Hg
START RUN 2 LOW 0518
12.89 NOX
0 NOX
20.8 O2
0 O2
3251 K


NOx = 6.98
O2 = 13.42
W/D 75/77°
29.85 in Hg
Start Run 1 mid
0606 hrs
20.9 O2
12.89 NOx
100 90 80 70 60 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx
O2
NOx = 6.61
W/D 75/77°
29.84 in Hg
O2 = 13.44
Start Run 3 on 0538 hrs
(16545)
CHART NO. RN2-01-25-20M
3251 K


SOLTEC
CHART NO. RN2-01-25-20M
(16545)
Start Run 3 m.c
0655
12.89 NOx
20.8 O2
0 NOx
0 O2
NOx = 6.97
O2 = 13.43
3/A 75°/77°
29.85 inHg
12.95 NOx
Start Run 2 m.c
0631
0 NOx
0 O2
20.8 O2

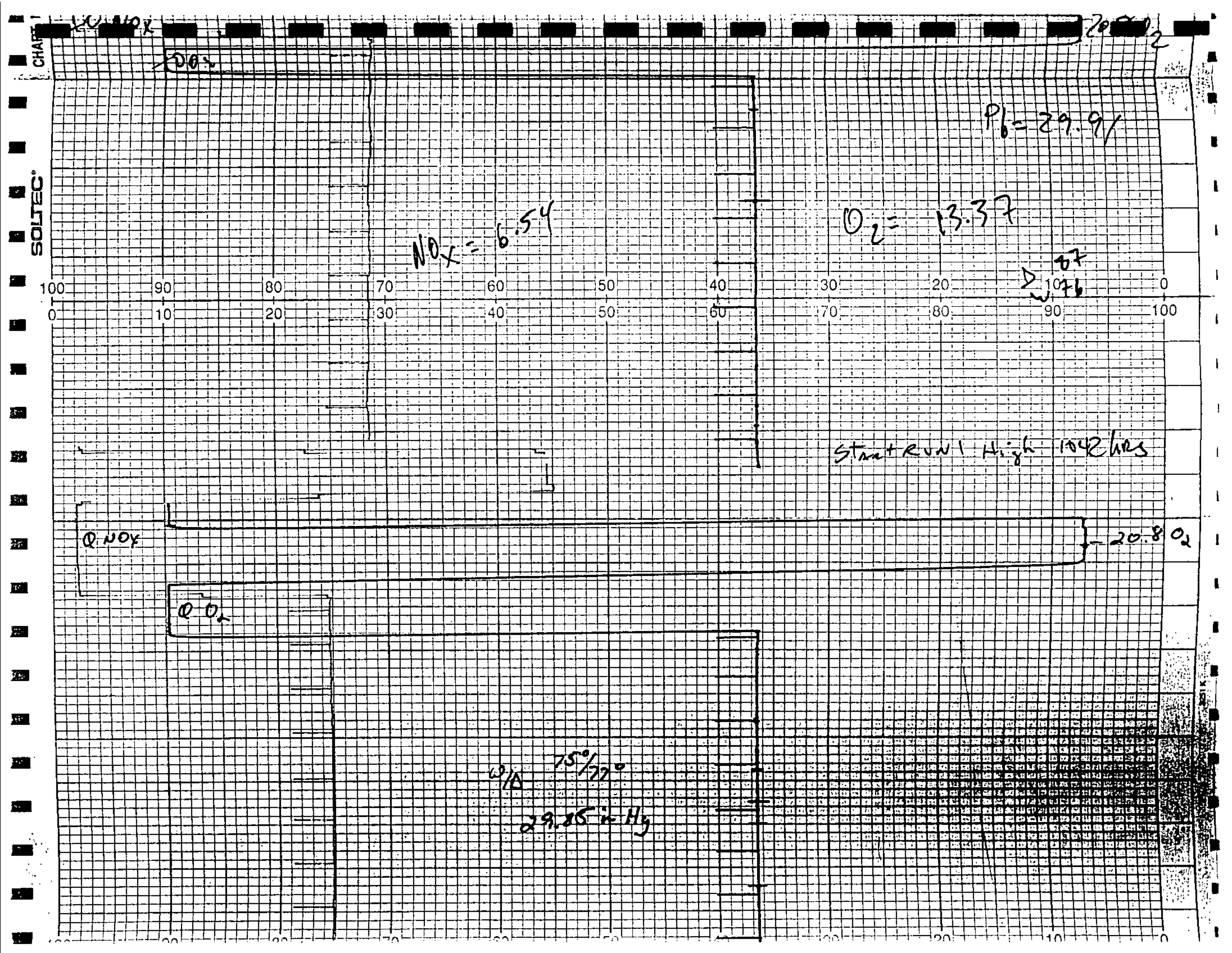
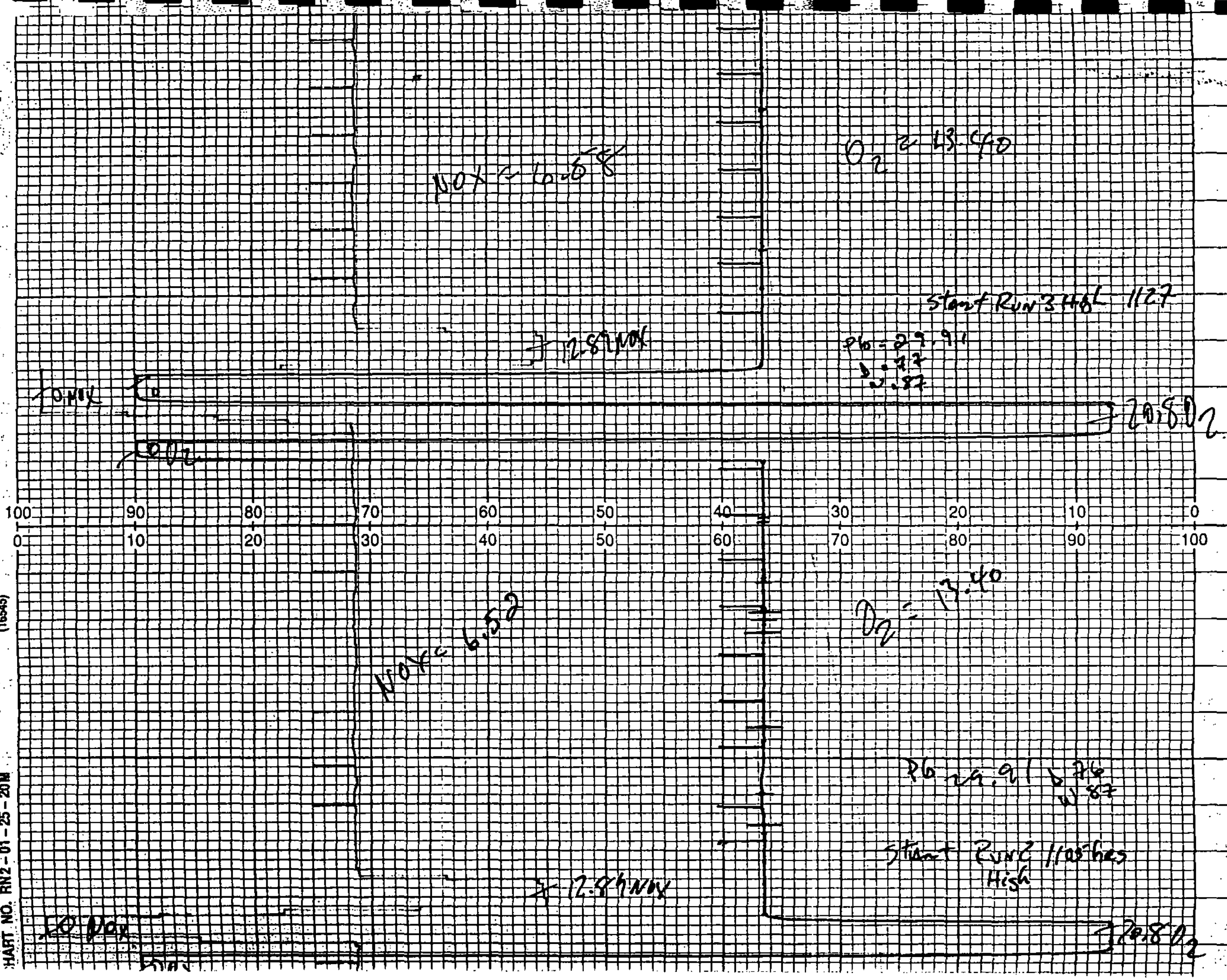
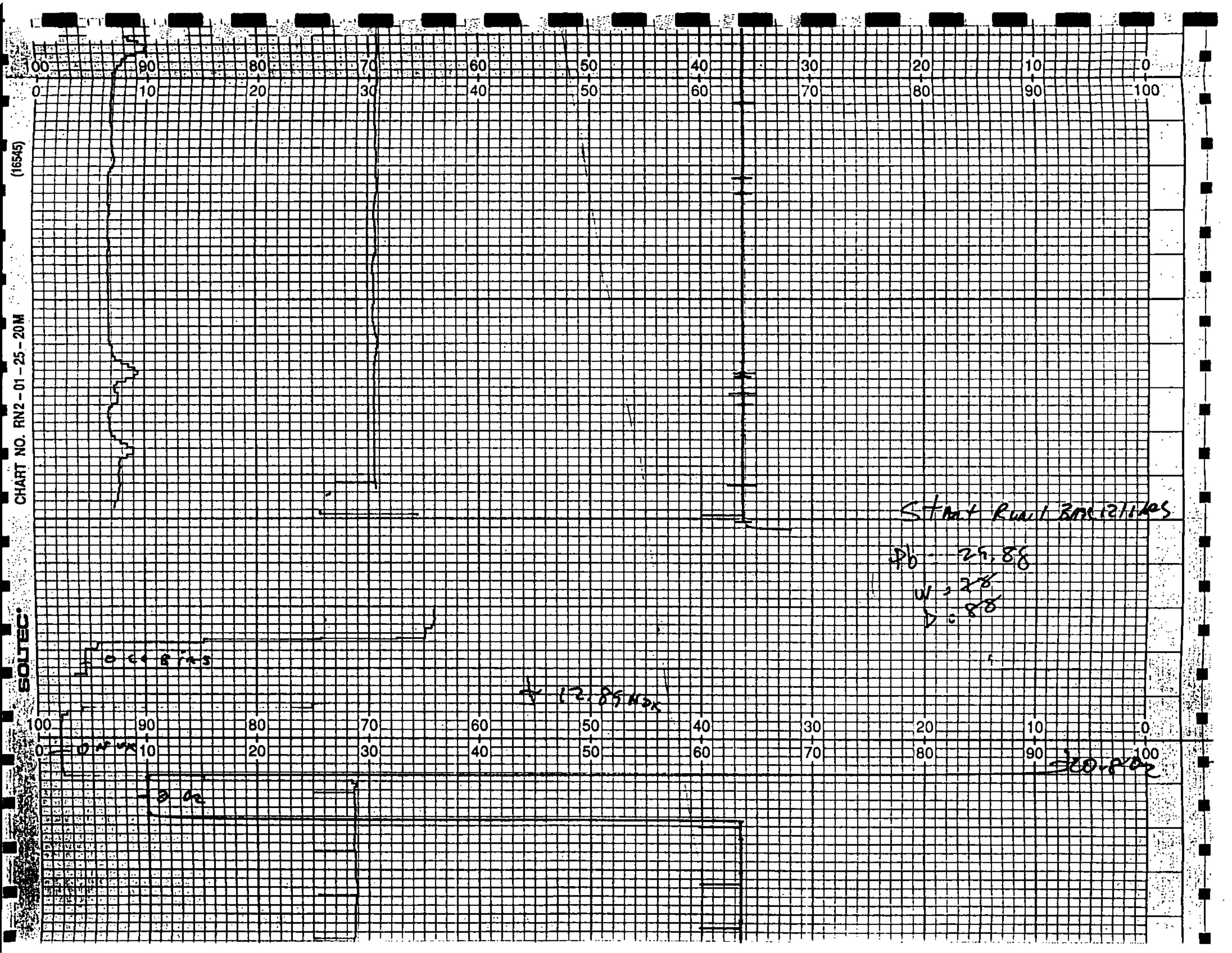


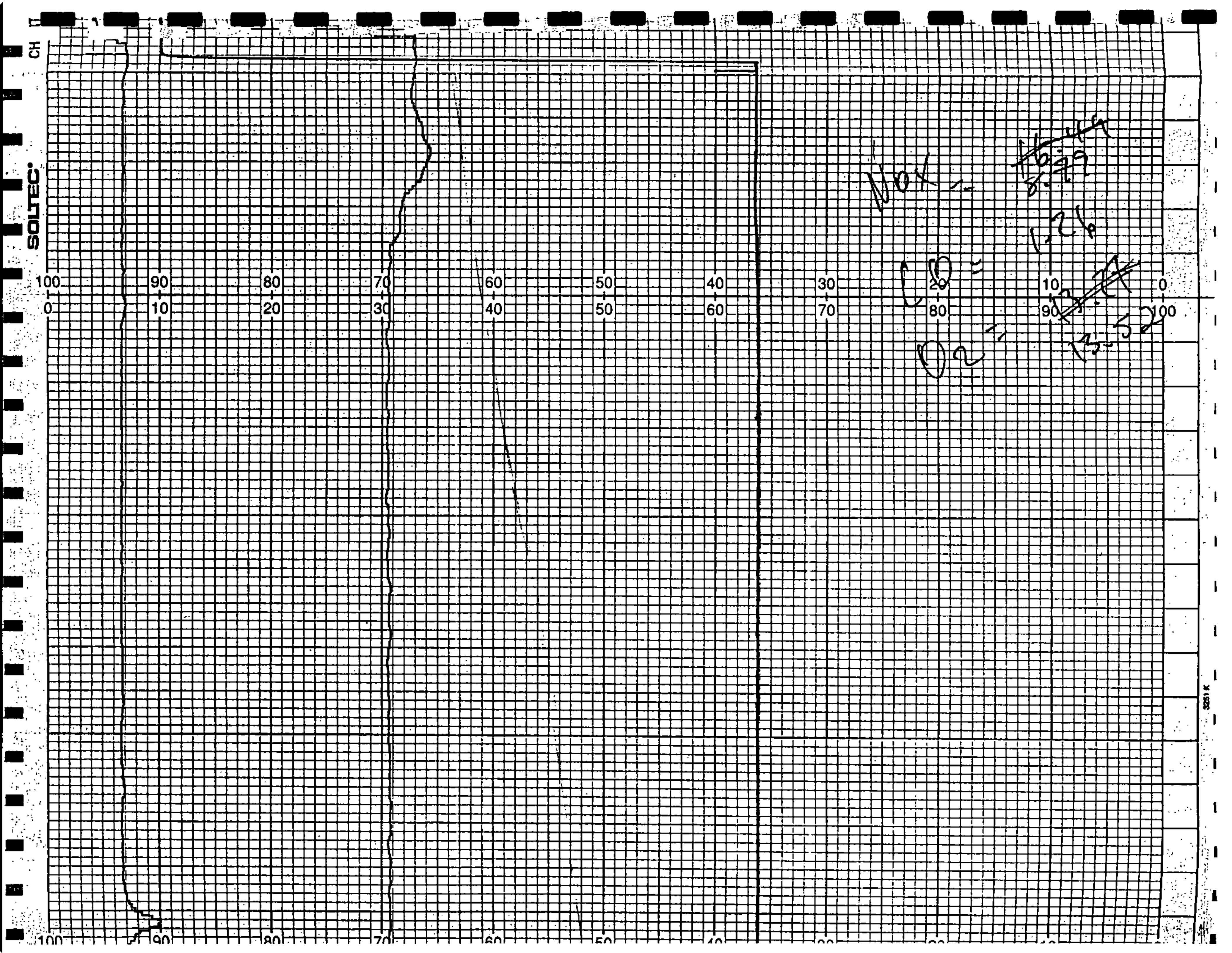
CHART
SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
Pb = 29.91
NOx = 6.54
O2 = 13.37
Start Run 1 High 1042 hrs
@ NOx
20.8 O2
@ O2
w/d 75°/72°
29.85 in Hg

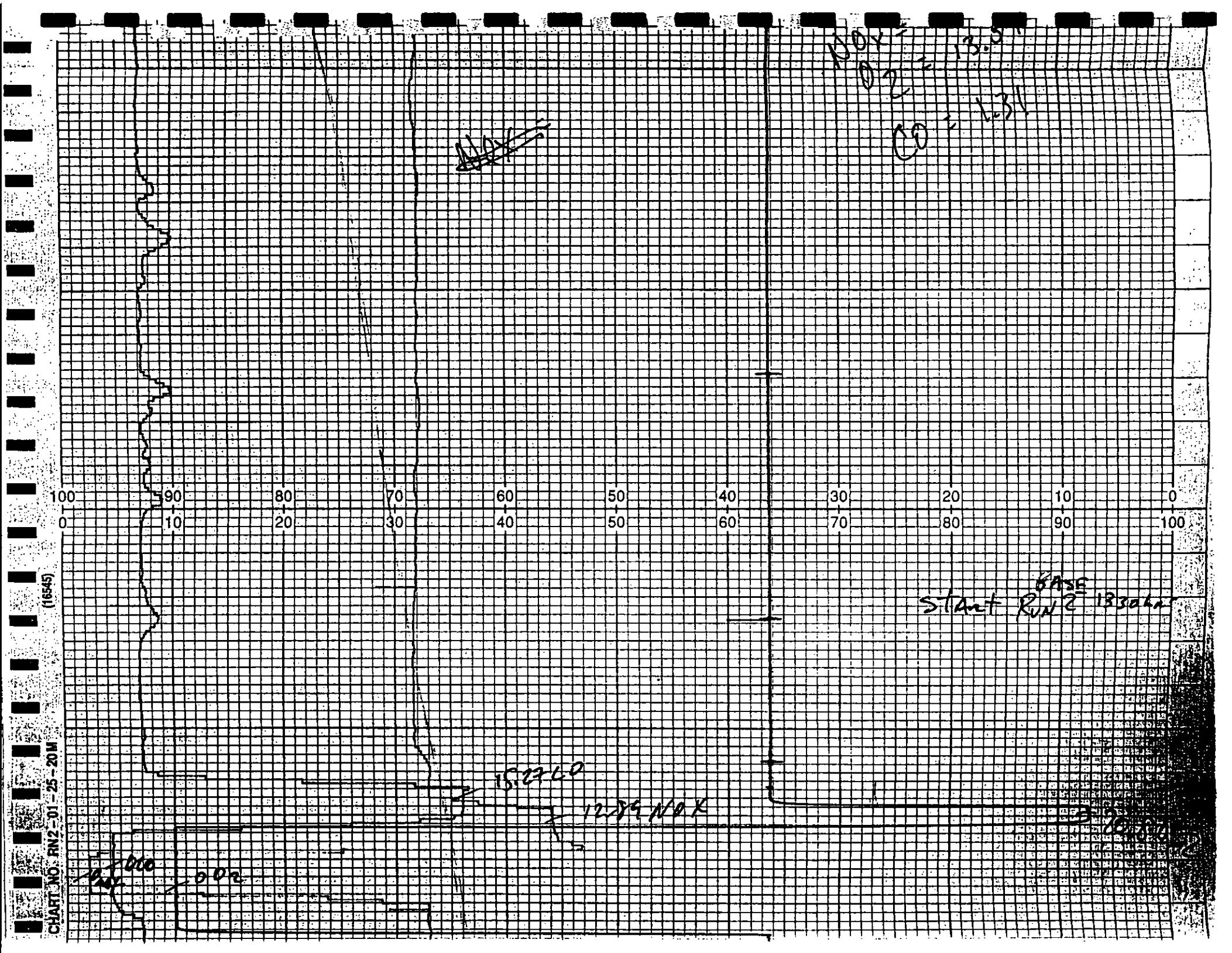


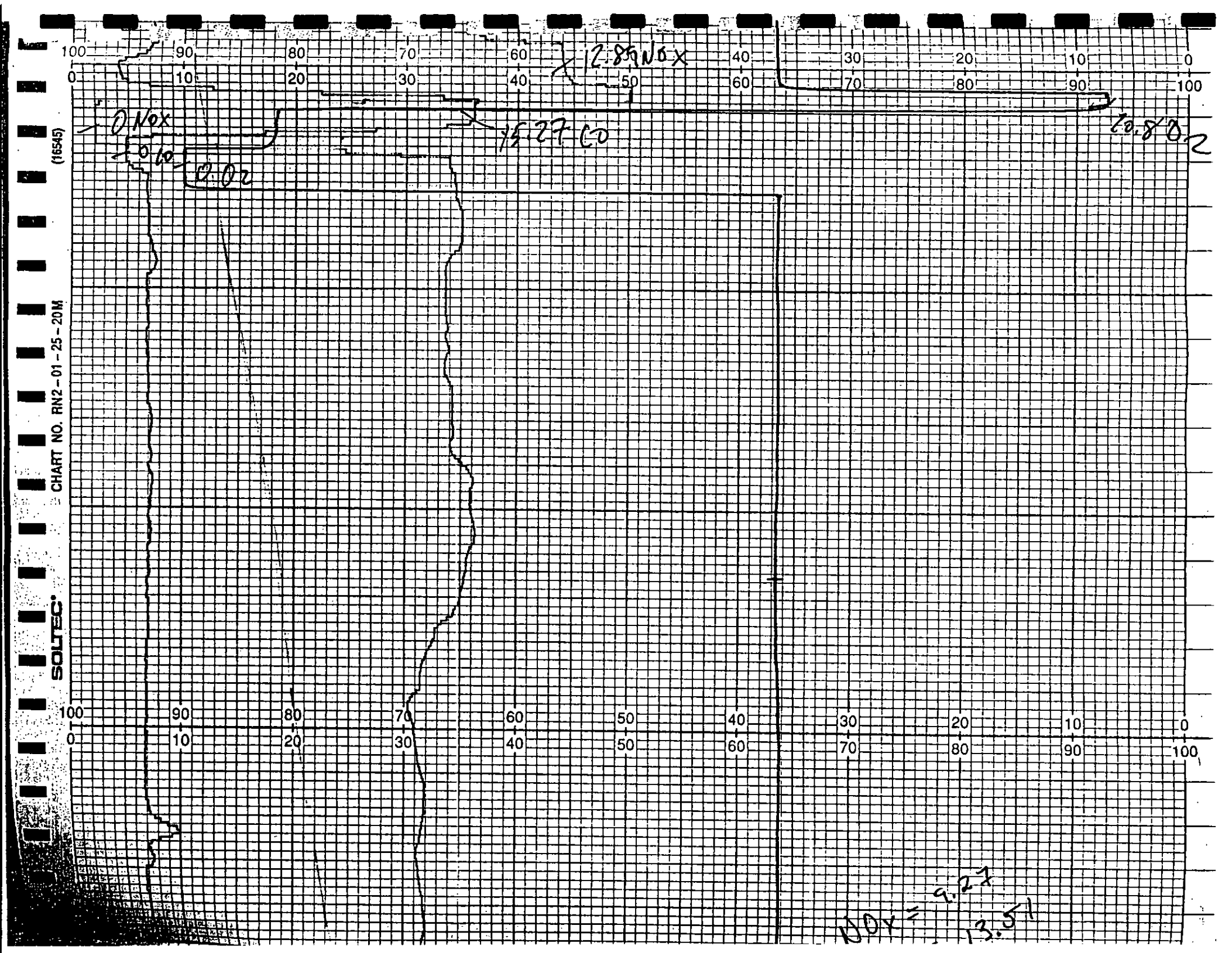
(16545)

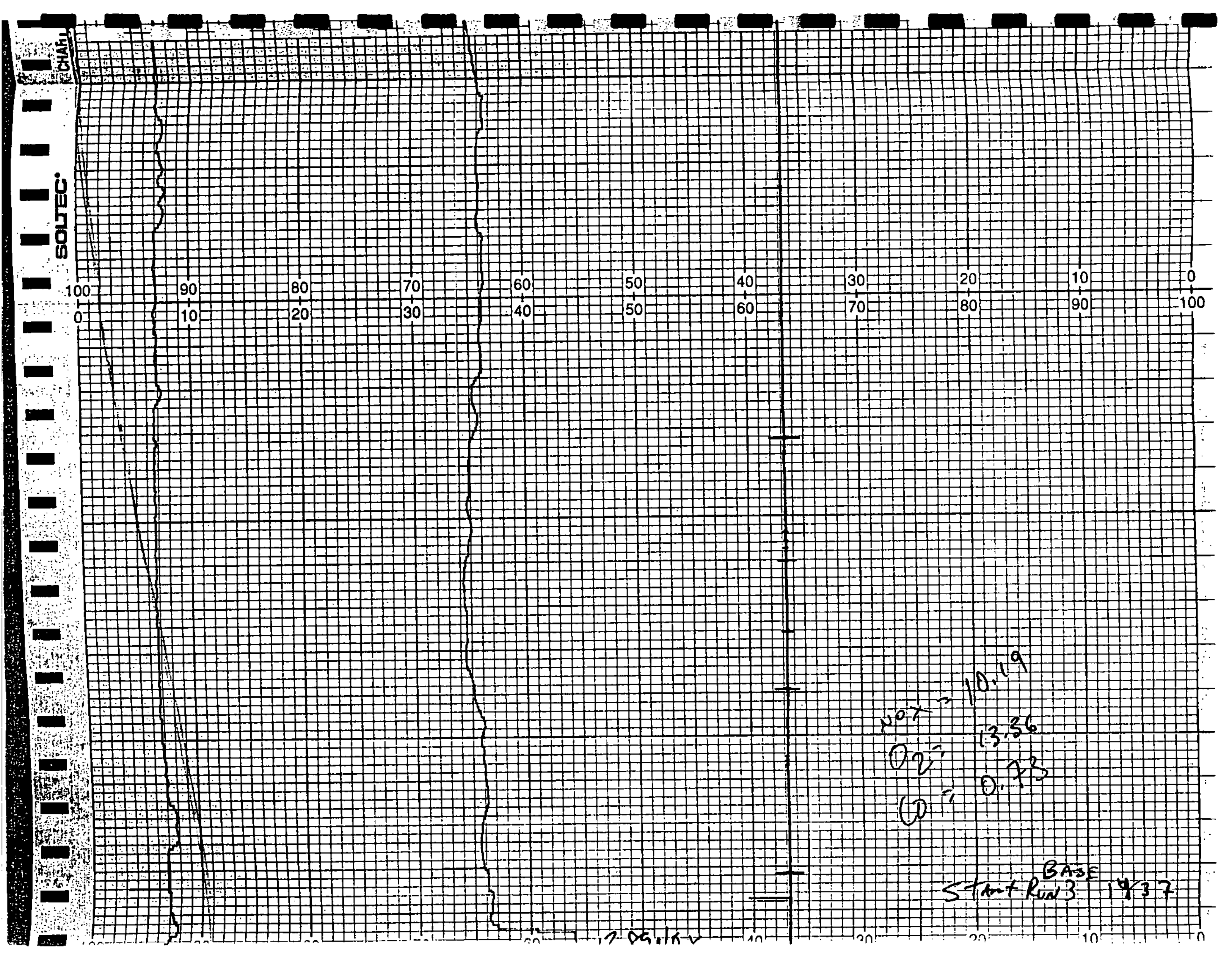
CHART NO. RN2-01-25-20M

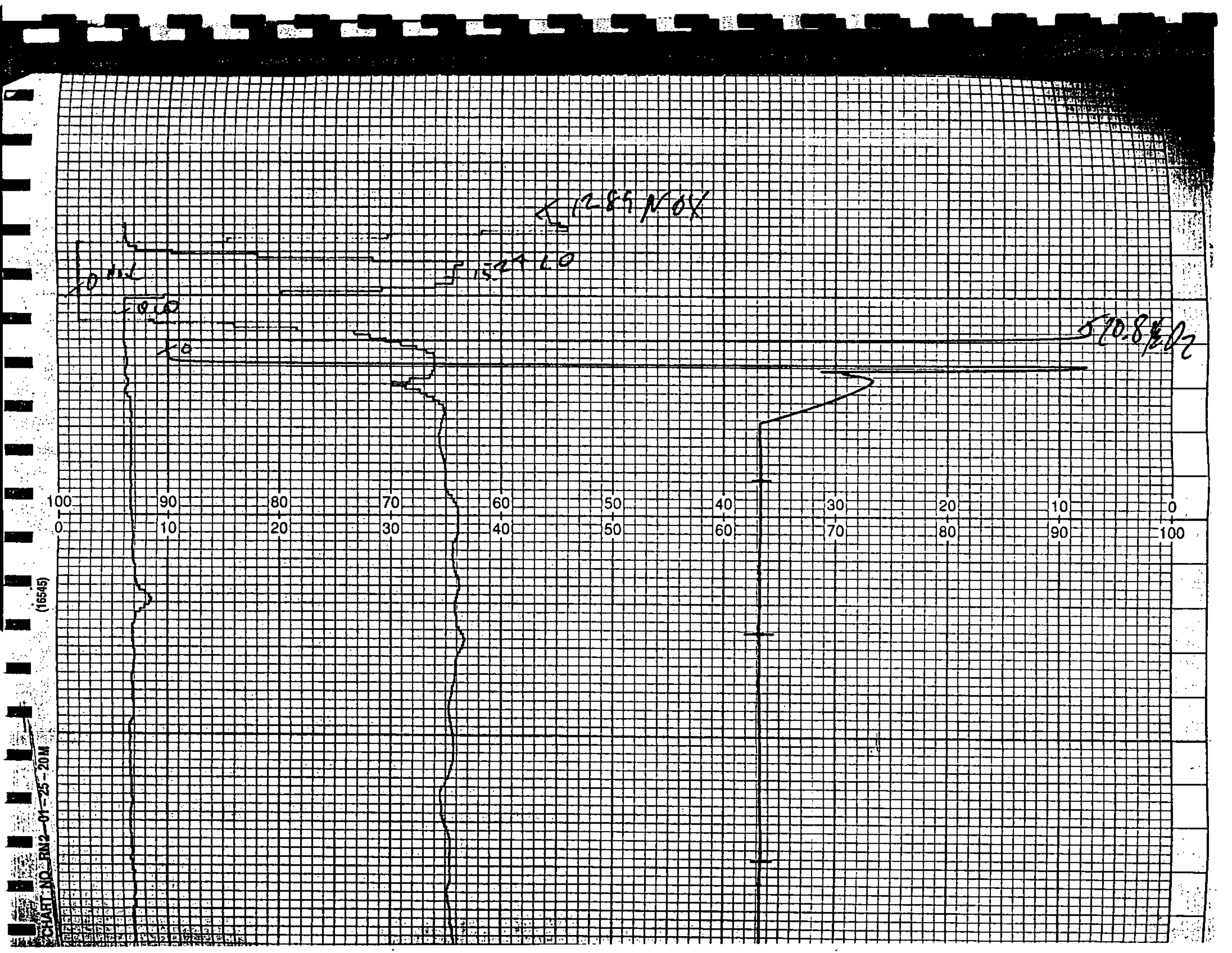

(16545)
CHART NO. RN2-01-25-20M
SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


CH
SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOX = 16.44 8.79
1.26
CO = 13.74
O2 = 13.52
3251 K

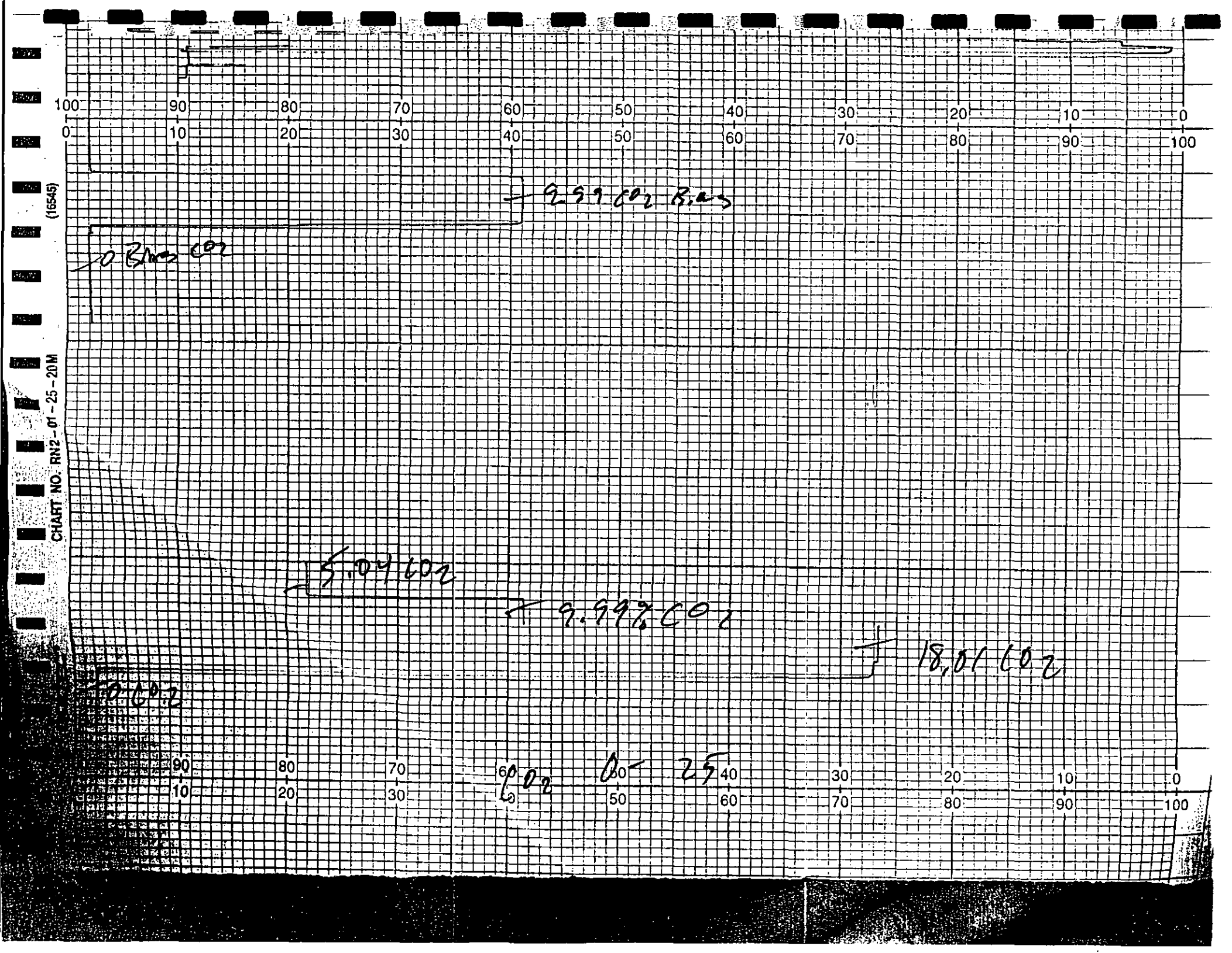

100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
70
80
90
100
CHART NO. RN2-01-25-20M
(16545)

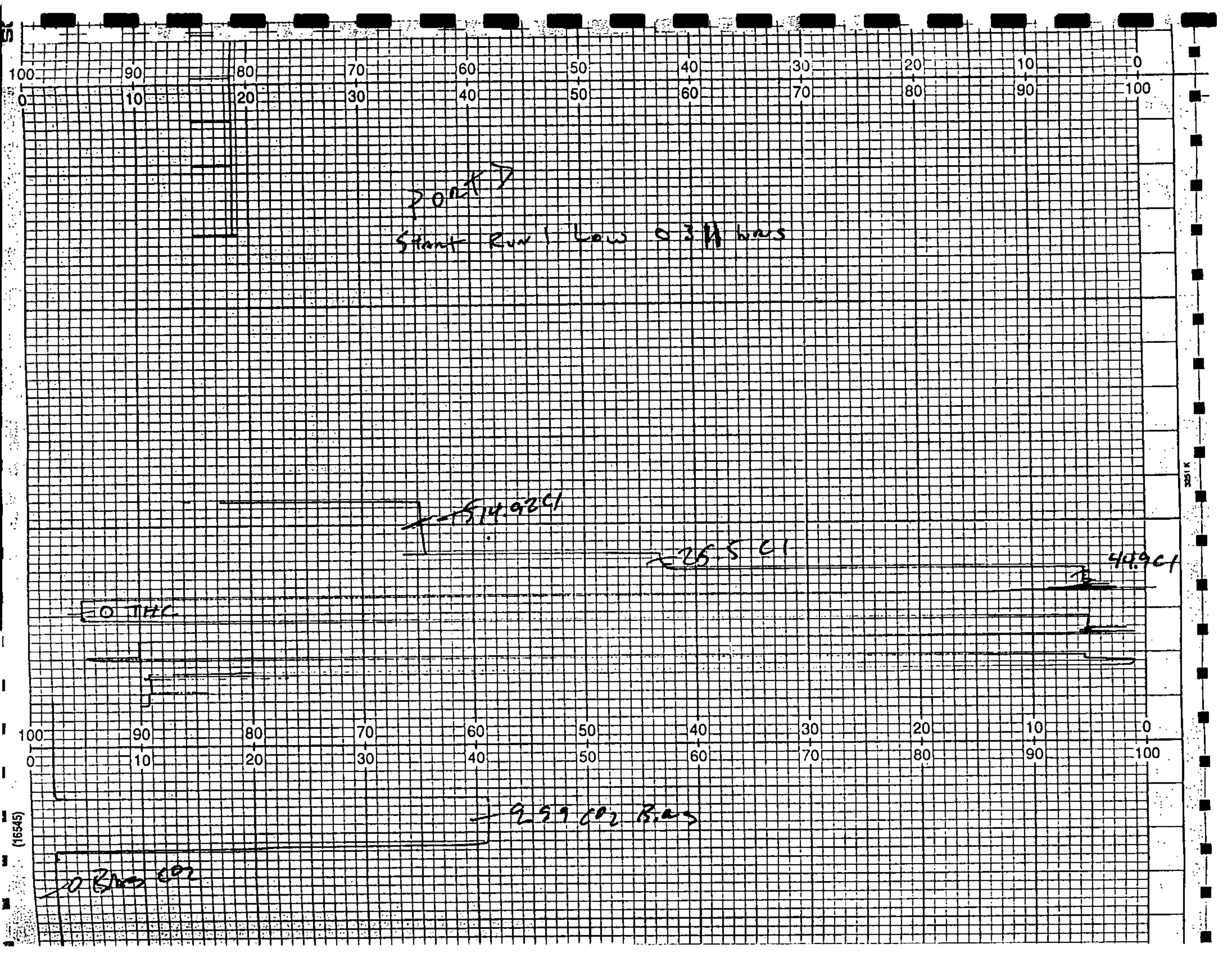

SOLTEC
CHART NO. RN2-01-25-20M
(16545)
12.85 NOx
15.27 CO
10.8 O2
0 NOx
0.0
0.0 O2
NOX = 9.27
13.51

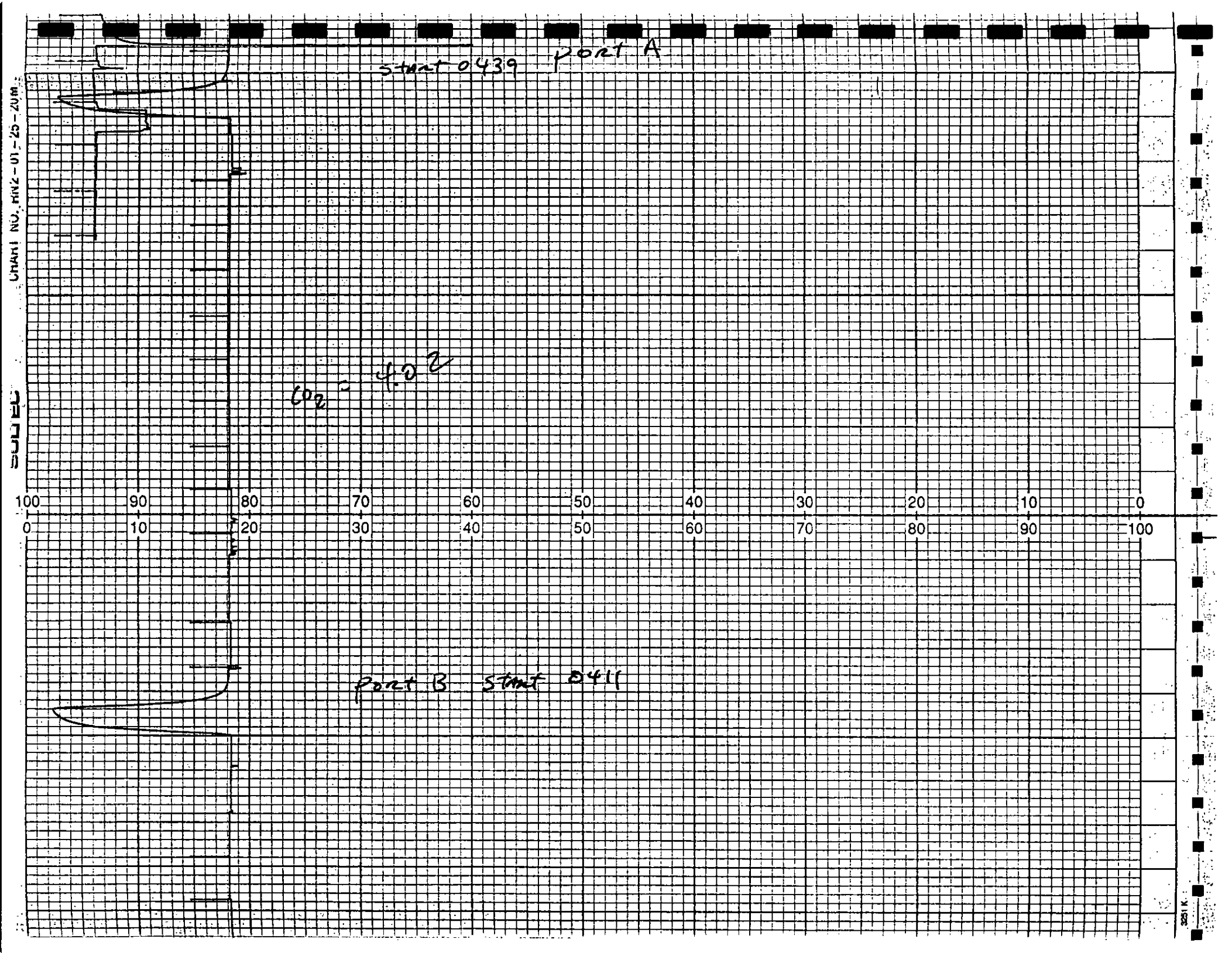

SOLTEC
CHART
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx = 10.19
O2 = 13.36
CO = 0.73
BASE
Start Run 3 1437

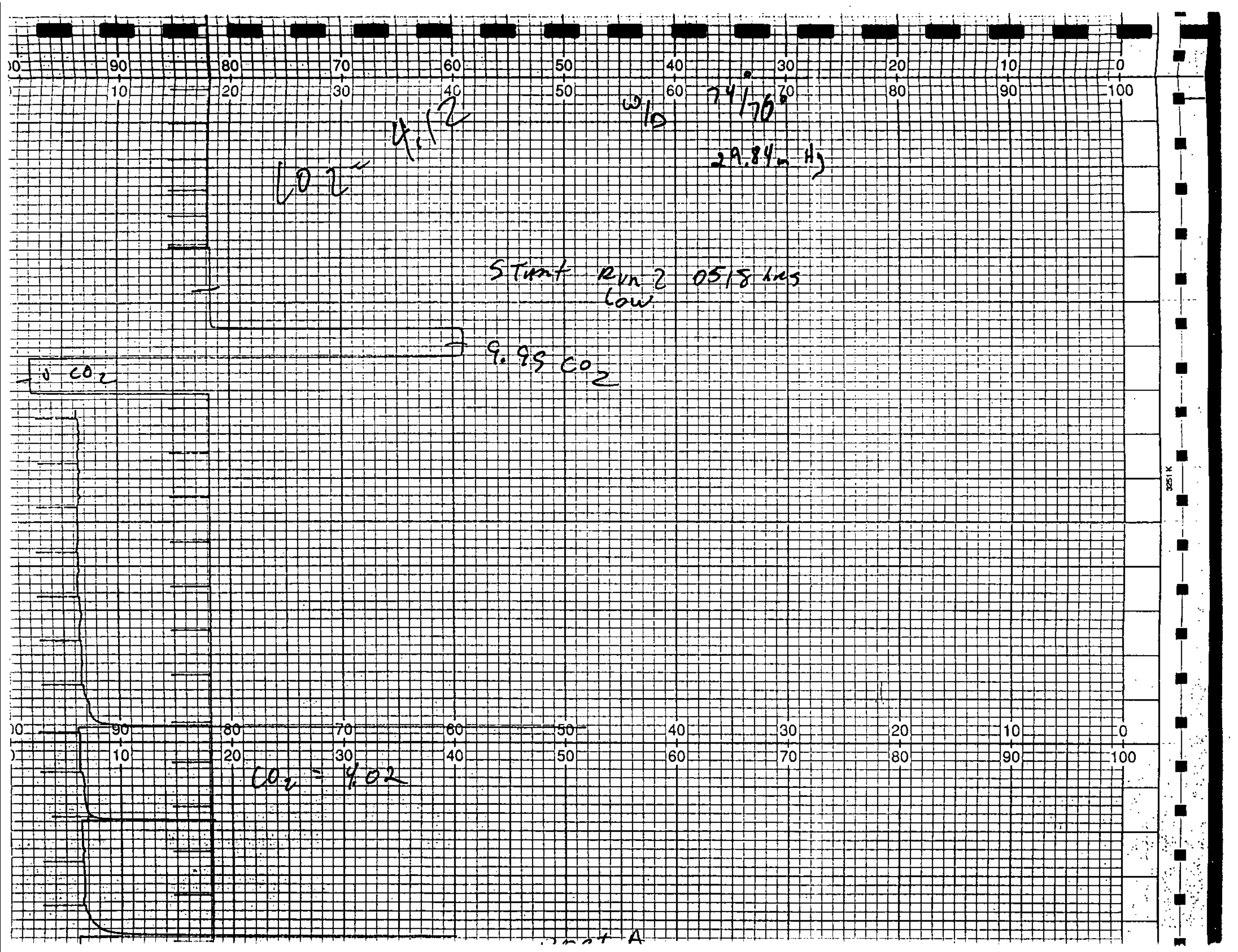


12.85 NOX
15.24 CO
20.8% O2
0 Hi
0.0
0
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
(16545)
CHART NO. RN2-01-25-20M

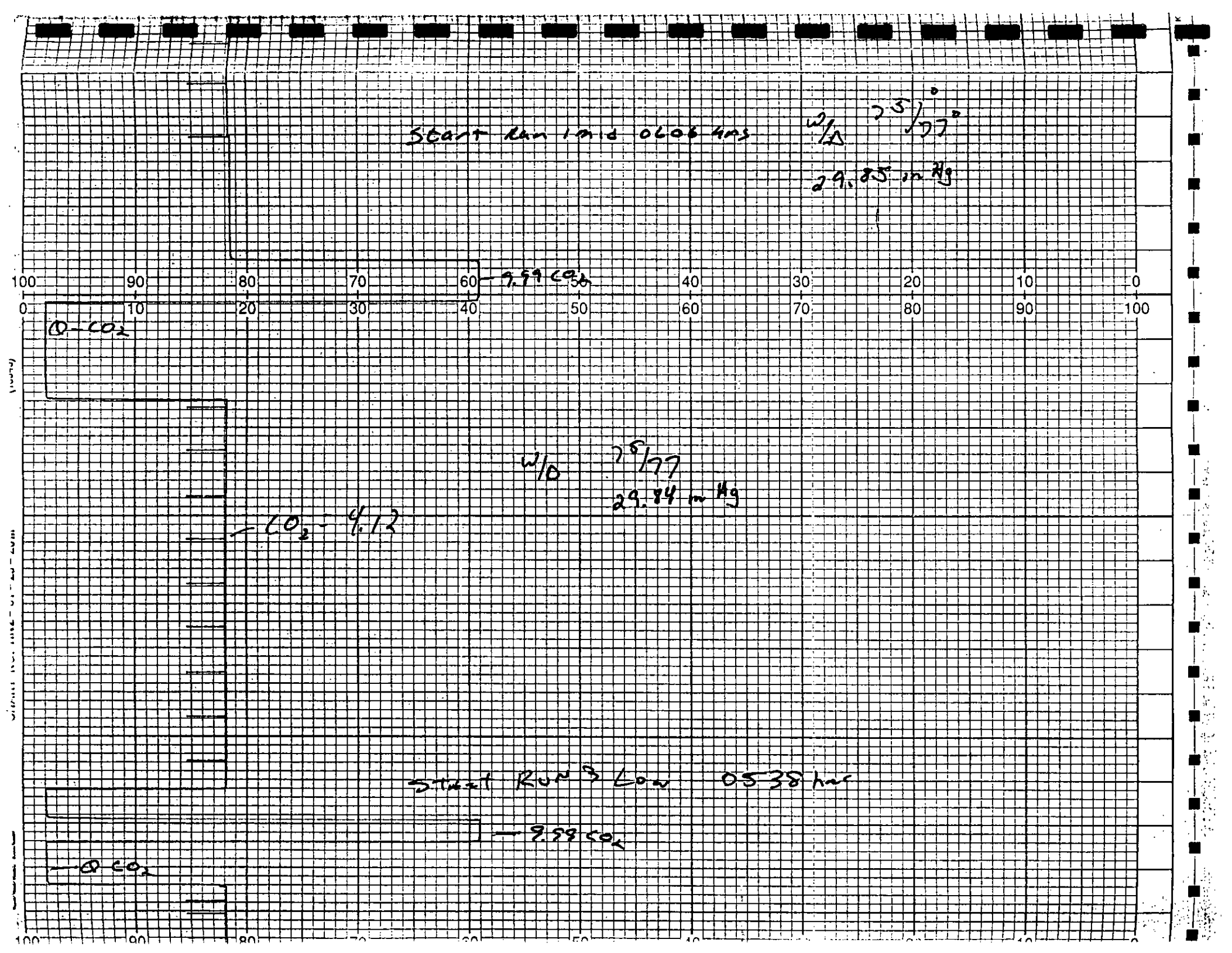

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
2.5% CO2 Bias
0 Bias CO2
5.0% CO2
9.99% CO2
18.0% CO2
0% CO2
O2 0 25
(16545)
CHART NO. RN2-01-25-20M

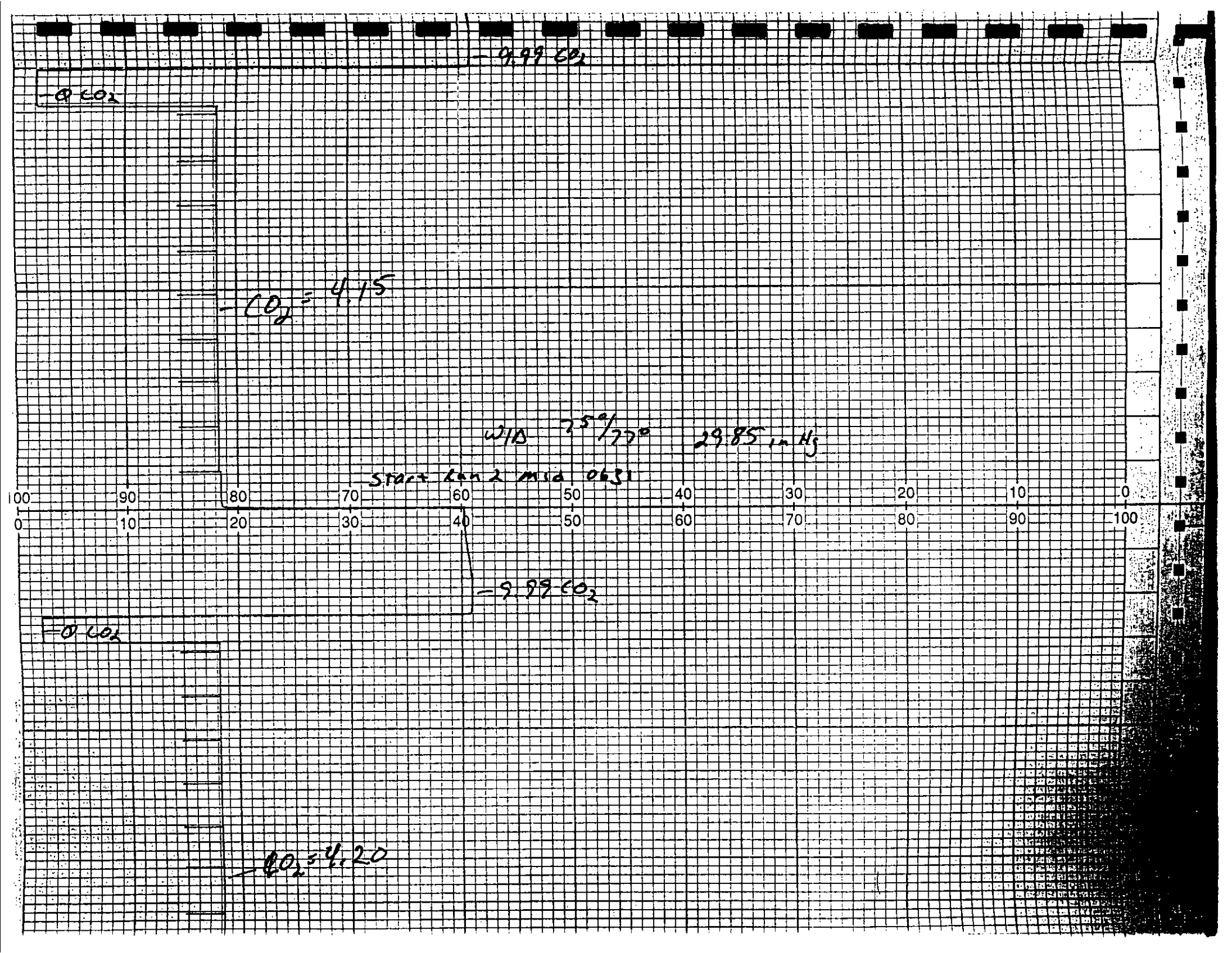

Start Run 1
26.5 C1
44.9 C1
0 THC
2.59 CO2 Bias
0 Bias CO2

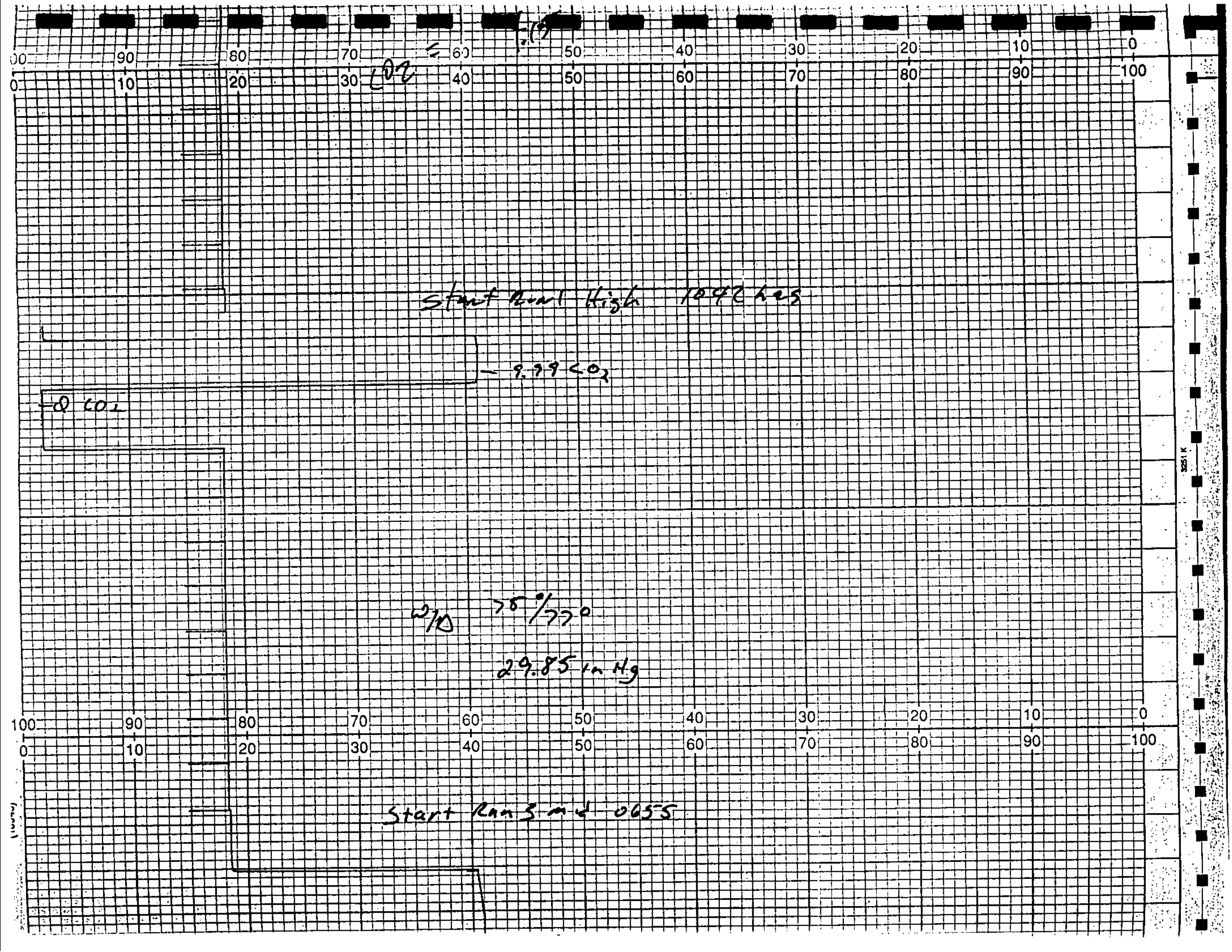

start 0439
Port A
CO_2 = 4.0 %
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
Port B start 0411

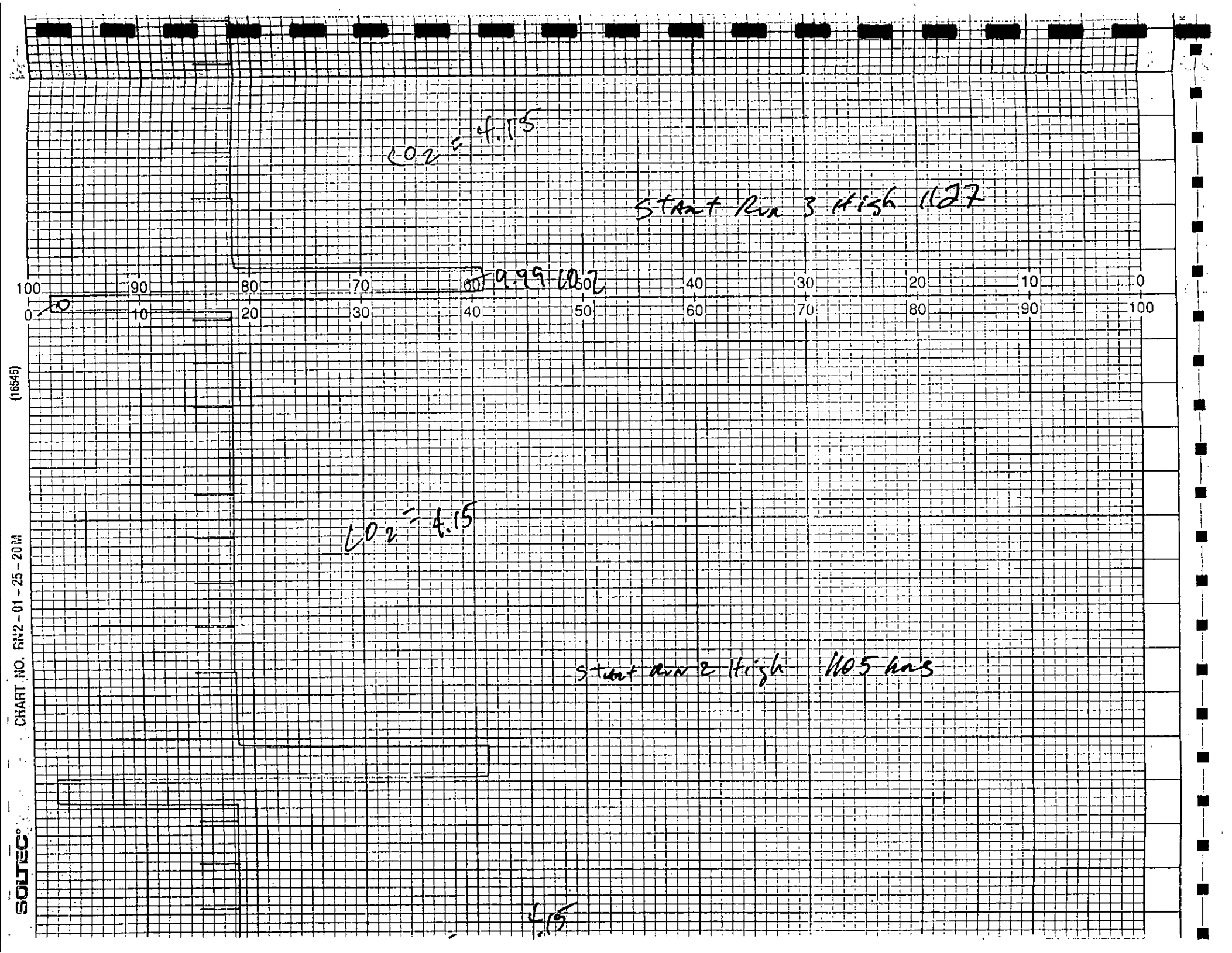


4.12
w/D 74/76°
29.84 in Hg
Start Run 2 0518 hrs
low
9.95 CO2
CO2
CO2 = 4.02


Start run 1 mid 0606 hrs
w/ Δ 25/77°
29.85 in Hg
9.99 CO2
0 - CO2
w/o 25/77
29.84 in Hg
CO2 - 4.12
Start Run 3 Low 0538 hrs
9.89 CO2
0 CO2


9.99 CO2
0 CO2
CO2 = 4.15
W/D 75°/22° 29.85 in Hg
Start Lan 2 mid 0631
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
9.99 CO2
0 CO2
CO2 = 4.20


100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
CO2
9.99 CO2
0 CO2
29.85 in Hg
3251 K


LOZ = 4.15
Start Run 3 High 1127
9.99 LOZ
100 90 80 70 60 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
LOZ = 4.15
Start Run 2 High 1105 hrs
4.15
SOLTEC
CHART NO. 6N2-01-25-20M
(16545)

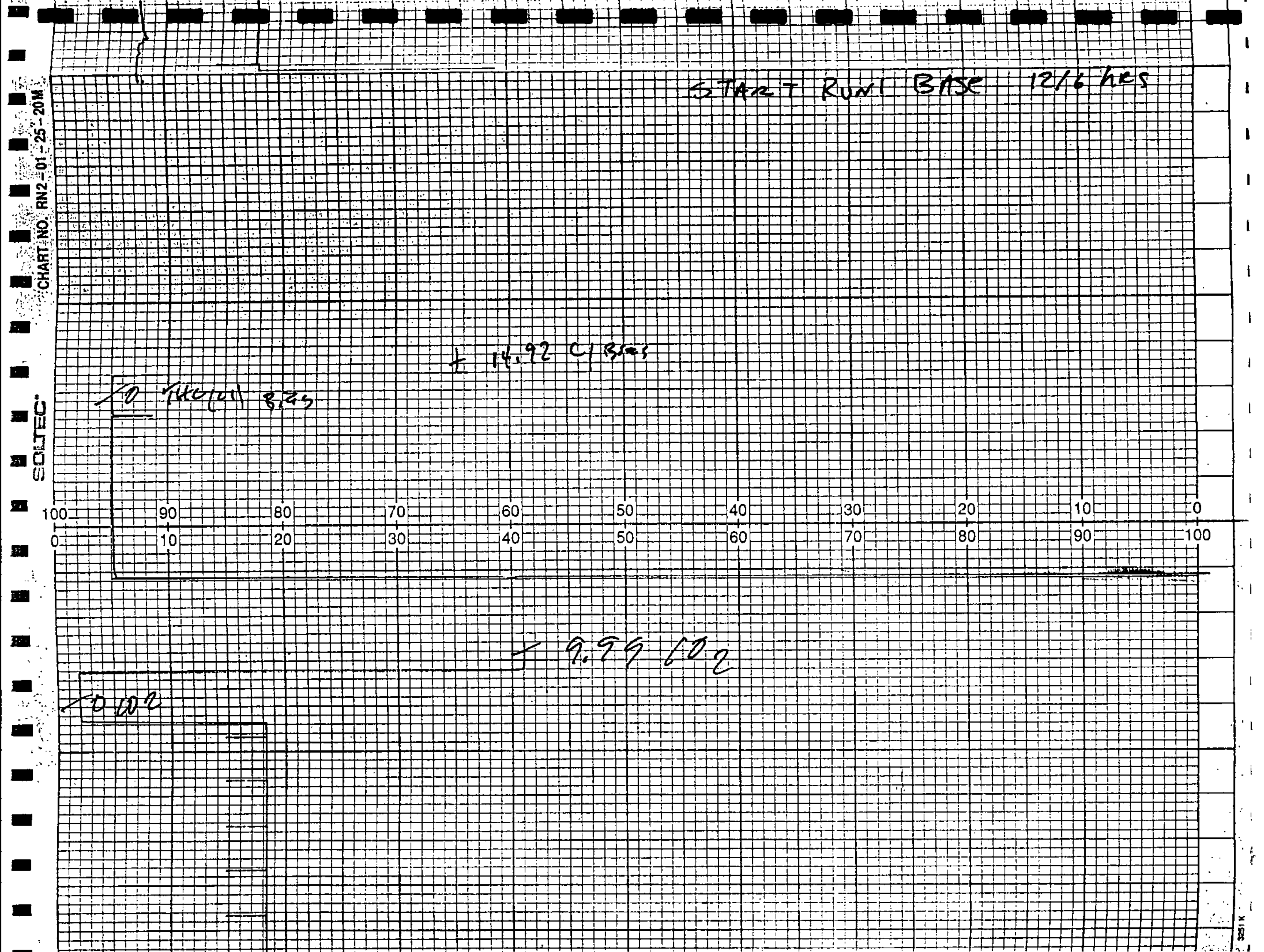
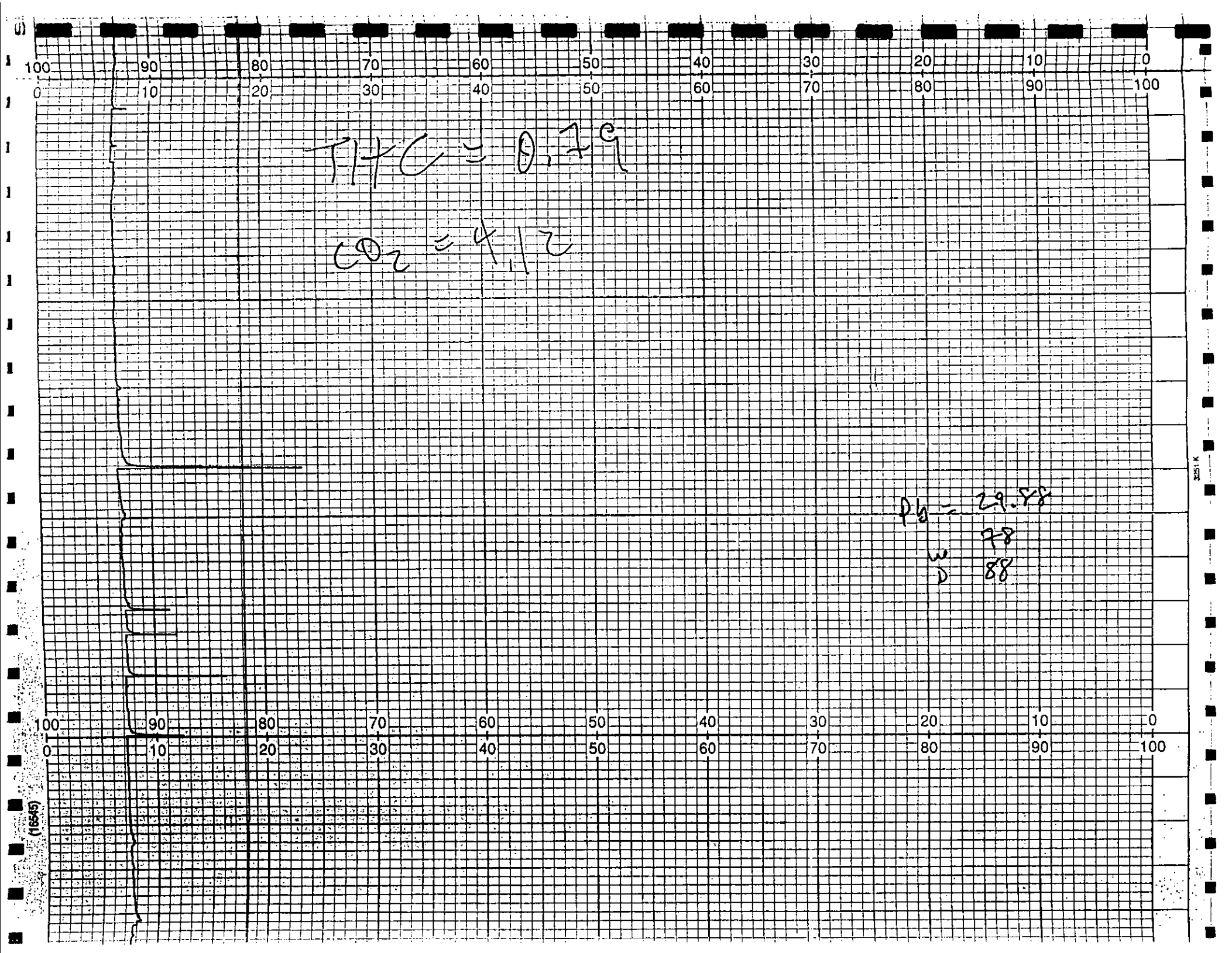
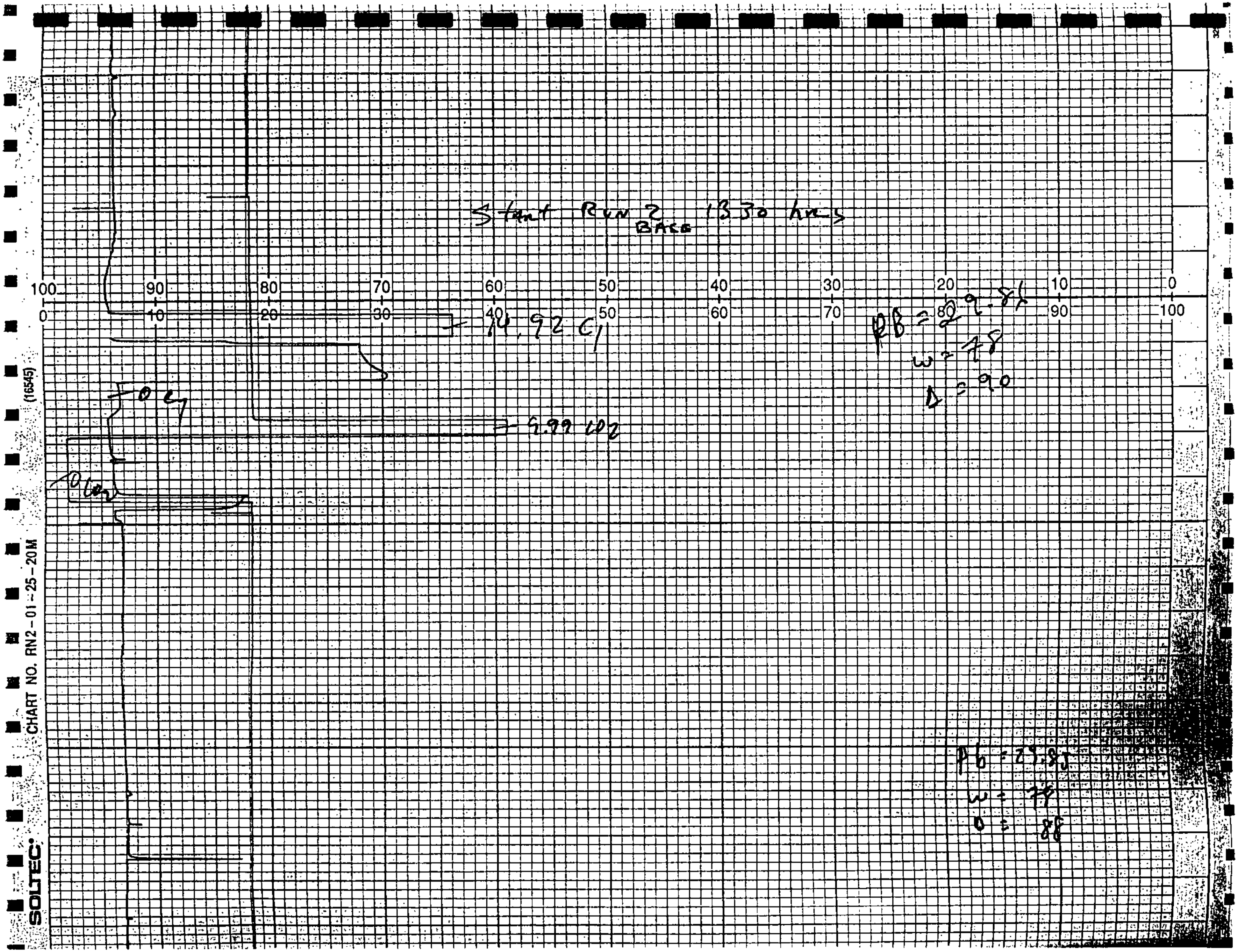
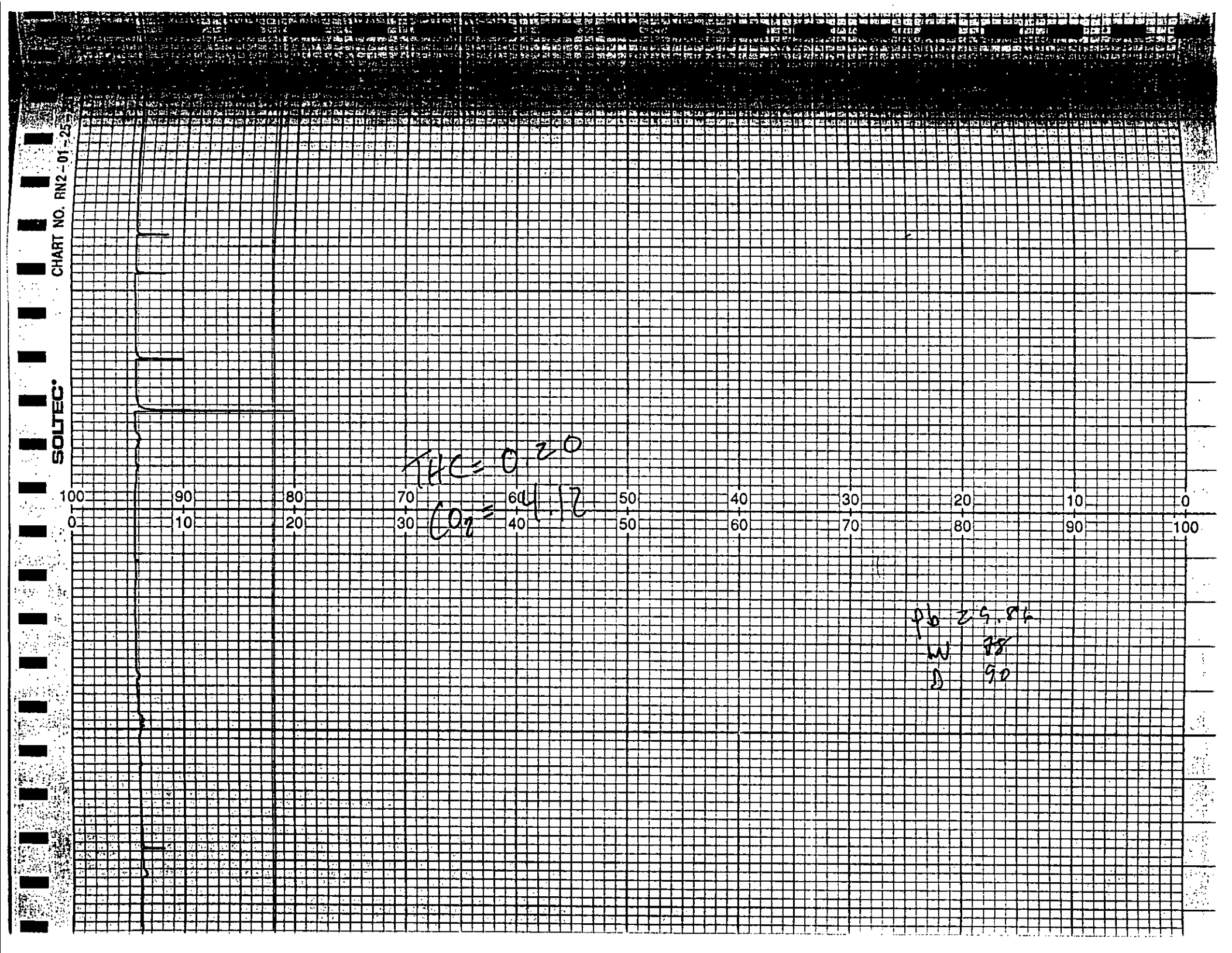


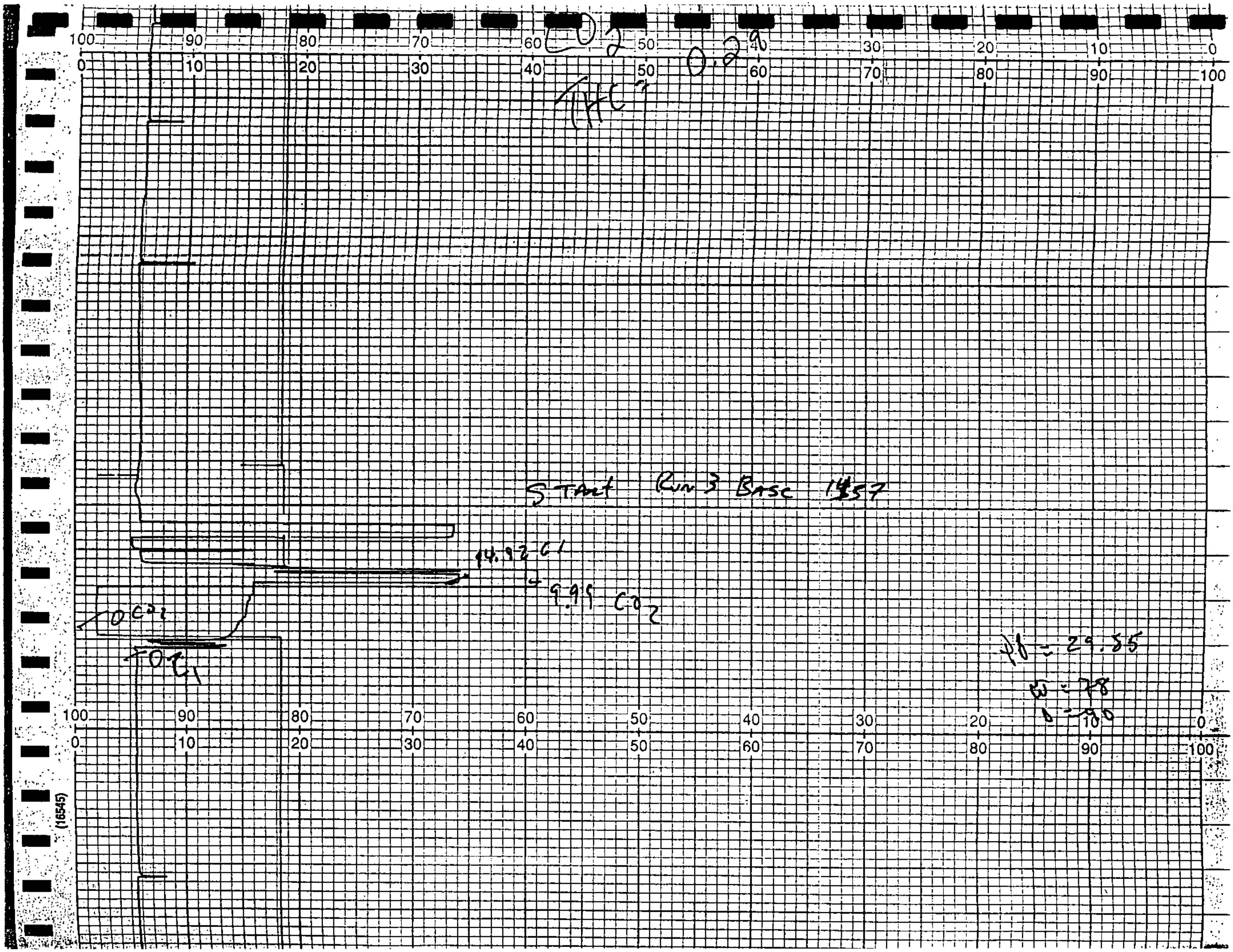
CHART NO. RN2-01-25-20M
SOLTEC
START RUN BASE 12/6 hrs
14.92 C/Bses
0 THC(01) Bses
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
9.99 CO2
0 CO2
3251 K

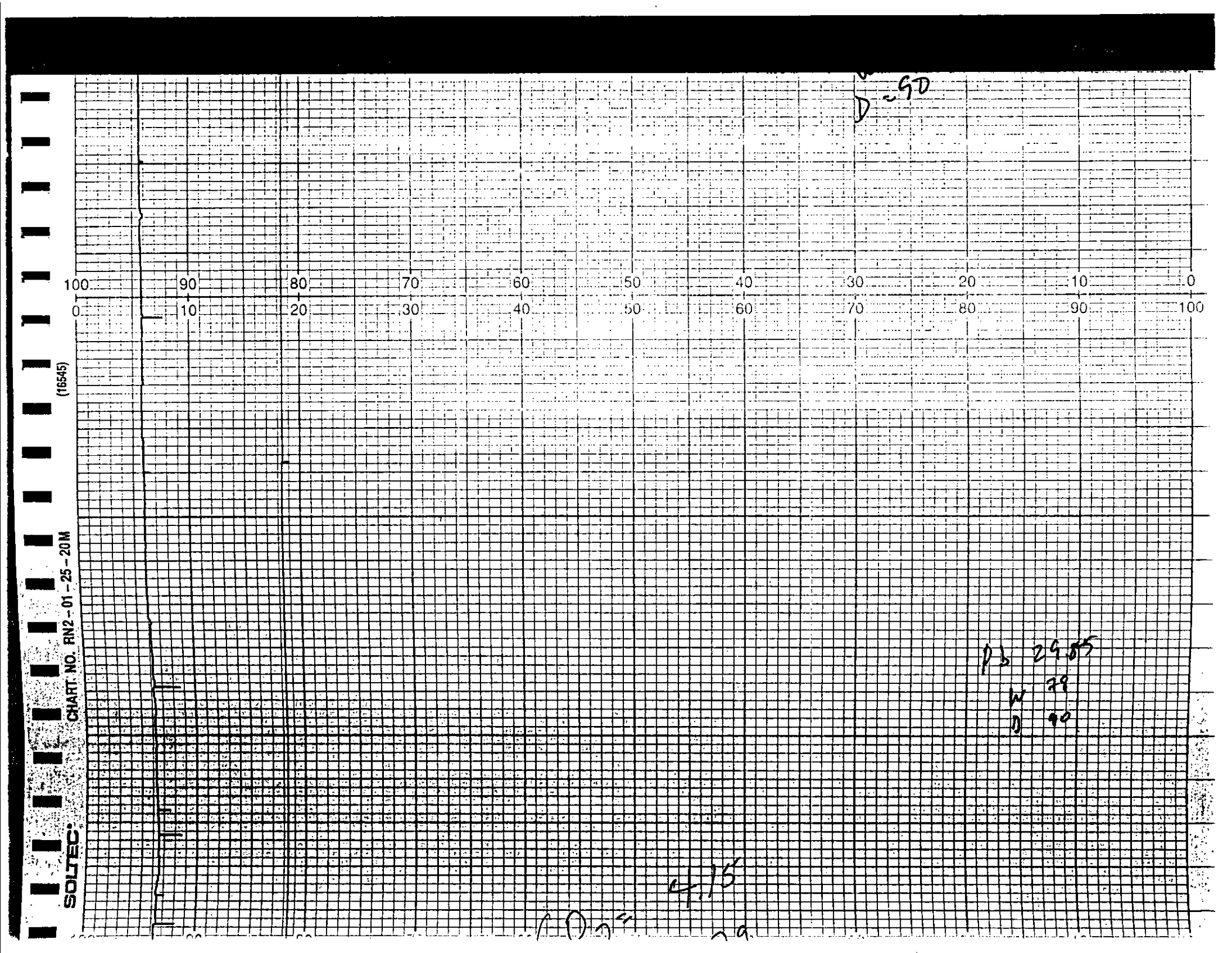

THC = 0.7%
CO2 = 4.1%
Pb = 29.88
WD 78
88



SOLTEC CHART NO. RN2-01-25-20M (16545)
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
Start Run 2 BACS 1330 hrs
14.92 C1
4.99 CO2
0 O2
0 CO2
PB = 29.86
w = 78
D = 90
Pb = 29.85
w = 78
D = 88


SOLTEC
CHART NO. RN2-01-25
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
THC= 0.20
CO2= 4.12
Pb 25.8
W 88
D 90


O2
0.29
THC?
START RUN 3 BASE 1457
14.92 C1
9.99 CO2
0 CO2
0 C1
Pb = 29.85
W = 78
D = 90
(16545)


100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
SOLTEC (16545)
CHART NO. RN2-01-25-20M

APPENDIX G:
OPACITY OBSERVATIONS

TAMPA ELECTRIC
A TECO ENERGY COMPANY

VISIBLE EMISSION OBSERVATION

E-496 R 10/85

SOURCE NAME	SOURCE LOCATION
POLK POWER STATION	UNIT 2 TURBINE SS

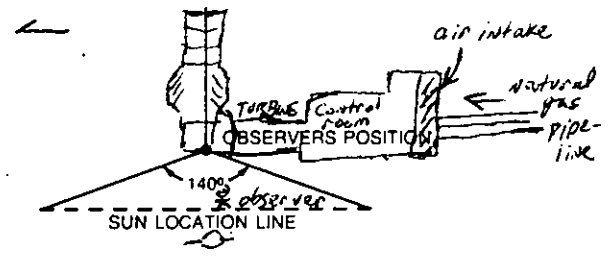
OBSERVATION DATE	START TIME	STOP TIME
10/7/00	12:20	13:20

TYPE OF FACILITY: INTEGRATED COAL GASIFICATION/NATURAL GAS FEED

DISTANCE FROM OBSERVER: ~290'

SKY CONDITIONS/PLUME BACKGROUND: BROKEN SKIES / BLUE BACKGROUND

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



SUN ○ WIND →

AVERAGE OPACITY: 0.0%

WIND SPEED (EST.)	WIND DIRECTION (EST.)
~ 1-5 MPH	SOUTHERLY

OBSERVER'S NAME (PRINT): JAMES A. WERNER

OBSERVER'S SIGNATURE: [signature] DATE: 10/7/00

COMMENTS: % of indication: 15°

SEC. MIN	0	15	30	45	SEC MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

COPY OF VISIBLE EMISSIONS CERTIFICATION CARD

State of Florida
Department of Environmental Protection

This is to Certify That

JAMES WERNER

has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

This Certificate Expires Feb 23, 2001

[signature] Certificate Officer

[signature] Bearer's Signature

APPENDIX H:
OPERATIONAL DATA

UNIT 2 TEST DATA OCTOBER 7, 2000

FROM 10/7/2000 3:11

TO 10/7/2000 4:47

1m

	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor Inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 03:11:00	1190.604736	8495.049805	87.37539673	94.25924683	140.0977478	53.97223282	29.72685242	1.023278713
07-Oct-00 03:12:00	1190.447388	8501.670898	87.18617249	94.2396698	140.101181	53.97869873	29.72681999	1.022033691
07-Oct-00 03:13:00	1190.854126	8516.008789	87.59436035	94.20346069	140.1046143	53.98516464	29.72678757	1.02078855
07-Oct-00 03:14:00	1190.851807	8498.150391	87.63194275	94.16725159	140.1080627	53.99163055	29.72675514	1.019543529
07-Oct-00 03:15:00	1190.65625	8496.200195	87.5486145	94.13103485	140.111496	53.99809647	29.72672272	1.018298507
07-Oct-00 03:16:00	1190.828979	8481.900391	87.6875	94.66313934	140.1149292	54.00456238	29.72669029	1.017053366
07-Oct-00 03:17:00	1190.78125	8497.5	87.6875	94.47208405	140.1183777	54.0110321	29.72665787	1.015808344
07-Oct-00 03:18:00	1190.901001	8496.900391	87.40371704	94.28102875	140.1218109	54.01749802	29.72662544	1.014563203
07-Oct-00 03:19:00	1190.958374	8494.5	87.6875	94.20803833	140.1252441	54.02396393	29.72659302	1.013318181
07-Oct-00 03:20:00	1190.59375	8495.099609	87.6875	94.66098785	140.1286926	54.03042984	29.72656059	1.01207304
07-Oct-00 03:21:00	1190.699585	8492.950195	87.6875	94.37760162	140.1321259	54.03689575	29.72652817	1.010828018
07-Oct-00 03:22:00	1190.966919	8474.75	87.6875	93.77864838	140.1355591	54.04336166	29.72649384	1.009582877
07-Oct-00 03:23:00	1191.455322	8474.75	87.6875	93.83067322	140.1390076	54.04982758	29.72646141	1.008337855
07-Oct-00 03:24:00	1190.460205	8474.75	87.6875	93.95503998	140.1424408	54.05629349	29.72642899	1.007092834
07-Oct-00 03:25:00	1191.375	8474.75	87.6875	94.07939911	140.145874	54.0627594	29.72639656	1.005847692
07-Oct-00 03:26:00	1190.945557	8474.75	87.6875	94.03324127	140.1493225	54.06922531	29.72636414	1.004602671
07-Oct-00 03:27:00	1191.427734	8474.75	87.6875	93.88835144	140.1527557	54.07569504	29.72633171	1.00335753
07-Oct-00 03:28:00	1191.212524	8474.75	87.6875	93.6328125	140.156189	54.08216095	29.72629929	1.002112508
07-Oct-00 03:29:00	1190.4375	8474.75	87.6875	94.35005951	140.1596375	54.08862686	29.72626686	1.000867367
07-Oct-00 03:30:00	1191.034546	8470.200195	87.6875	94.15238953	140.1630707	54.09509277	29.72623444	0.999622345
07-Oct-00 03:31:00	1191.369995	8452	87.6875	94.01857758	140.1665039	54.10155869	29.72620201	0.998377264
07-Oct-00 03:32:00	1191.169678	8456.475586	87.6875	94.10149384	140.1699524	54.1080246	29.72616959	0.997132182
07-Oct-00 03:33:00	1191.520264	8474.75	87.6875	94.05742645	140.1733856	54.11449051	29.72613716	0.995887101
07-Oct-00 03:34:00	1191.1875	8474.75	87.6875	94.01335144	140.1768188	54.12095642	29.72610474	0.994642019
07-Oct-00 03:35:00	1191.022705	8474.75	87.6875	93.96928406	140.1802673	54.12742233	29.72607231	0.993396938
07-Oct-00 03:36:00	1190.449951	8474.75	87.6875	93.95703125	140.1837006	54.13388824	29.72603989	0.992151856
07-Oct-00 03:37:00	1191.25	8474.75	87.6875	93.9631958	140.1871338	54.14035797	29.72600555	0.990906775
07-Oct-00 03:38:00	1191.015625	8474.200195	87.6875	93.96936798	140.1905823	54.14682388	29.72597313	0.989661753
07-Oct-00 03:39:00	1191.225952	8476.470703	87.6875	93.97553253	140.1940155	54.15328979	29.7259407	0.988416672
07-Oct-00 03:40:00	1190.71875	8493.329102	87.6875	93.98170471	140.1974487	54.15975571	29.72590828	0.98717159
07-Oct-00 03:41:00	1191.125	8474.75	87.62004089	93.984375	140.2008972	54.16622162	29.72587585	0.985926509
07-Oct-00 03:42:00	1191.443481	8470.200195	87.38194275	93.984375	140.2043304	54.17268753	29.72584343	0.984681427
07-Oct-00 03:43:00	1191.517822	8456.549805	87.82142639	94.06815338	140.2077637	54.17915344	29.725811	0.983436346
07-Oct-00 03:44:00	1190.994263	8470.799805	87.71746826	94.30967712	140.2112122	54.18561935	29.72577858	0.982191265
07-Oct-00 03:45:00	1190.90625	8459.599609	87.78662872	94.2090683	140.2146454	54.19208527	29.72574615	0.980946183
07-Oct-00 03:46:00	1190.734375	8477.349609	87.85578918	94.10845947	140.2180786	54.19855118	29.72571373	0.979701102
07-Oct-00 03:47:00	1191.122803	8474.75	87.92494965	94.00785065	140.2215271	54.2050209	29.7256813	0.97845608
07-Oct-00 03:48:00	1190.899292	8478.991211	87.99411011	94.2474823	140.2249603	54.21148682	29.72564888	0.977210999
07-Oct-00 03:49:00	1191.525024	8488.548828	88.06327057	94.06602478	140.2283936	54.21795273	29.72561646	0.975965917
07-Oct-00 03:50:00	1191.800049	8456.170898	88.13243103	93.94721222	140.231842	54.22441864	29.72558403	0.974720836
07-Oct-00 03:51:00	1191.314697	8469.902344	88.20159149	93.8796463	140.2352753	54.23088455	29.72555161	0.973475754

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
07-Oct-00 03:52:00	1191.320801	8449.400391	87.875	93.859375	140.2387085	54.23735046	29.72551727	0.972230673									
07-Oct-00 03:53:00	1190.964233	8452	88.25	93.859375	140.2421417	54.24381638	29.72548485	0.970985591									
07-Oct-00 03:54:00	1191.155273	8451.349609	88.25	93.95735168	140.2455902	54.25028229	29.72545242	0.96974051									
07-Oct-00 03:55:00	1191.388062	8453.950195	88.37397003	94.08798981	140.2490234	54.2567482	29.72542	0.968495429									
07-Oct-00 03:56:00	1190.932983	8483.849609	88.49793243	94.27105713	140.2669525	54.26321411	29.72538757	0.967250347									
07-Oct-00 03:57:00	1190.261719	8515.700195	88.5	95.203125	140.2906189	54.26968002	29.72535515	0.966005325									
07-Oct-00 03:58:00	1190.90625	8502.049805	88.5	94.44260406	140.3142853	54.27614975	29.72532272	0.964760244									
07-Oct-00 03:59:00	1191.067261	8520.25	88.5	94.6839447	140.3379517	54.28261566	29.7252903	0.963515162									
07-Oct-00 04:00:00	1189.831543	8520.25	88.5	94.92527771	140.3616028	54.28908157	29.72525787	0.962270081									
07-Oct-00 04:01:00	1189.979126	8520.25	88.5	95.19271088	140.3852692	54.29554749	29.72522545	0.961025									
07-Oct-00 04:02:00	1190.098267	8520.25	88.5	95.13952637	140.4089355	54.3020134	29.72519302	0.959779918									
07-Oct-00 04:03:00	1189.775879	8520.950195	88.5	95.07014465	140.4326019	54.30847931	29.7251606	0.958534837									
07-Oct-00 04:04:00	1190.11145	8523.049805	88.5	94.95046234	140.4562683	54.31494522	29.72512817	0.957289755									
07-Oct-00 04:05:00	1190.440796	8520.25	88.41551971	94.83078766	140.4799194	54.32141113	29.72509575	0.956044674									
07-Oct-00 04:06:00	1190.1875	8520.25	88.31207275	94.796875	140.5035858	54.32787704	29.72506332	0.954799652									
07-Oct-00 04:07:00	1190.3125	8519.650391	88.20861816	94.82169342	140.5272522	54.33434296	29.72502899	0.953554571									
07-Oct-00 04:08:00	1190.25	8517.849609	88.1051712	94.92095947	140.5509186	54.34081268	29.72499657	0.952309489									
07-Oct-00 04:09:00	1190.035156	8520.25	88.00172424	94.97678375	140.5745697	54.34727859	29.72496414	0.951064408									
07-Oct-00 04:10:00	1190.128296	8520.25	88.0338974	95.02391815	140.5982361	54.35374451	29.72493172	0.949819326									
07-Oct-00 04:11:00	1189.766724	8524.849609	88.1306839	95.07105255	140.6219025	54.36021042	29.72489929	0.948574245									
07-Oct-00 04:12:00	1189.666626	8534.099609	87.70587921	95.14688873	140.6455688	54.36667633	29.72486687	0.947329164									
07-Oct-00 04:13:00	1189.833374	8502.049805	87.72631073	95.22779083	140.66922	54.37314224	29.72483444	0.946084082									
07-Oct-00 04:14:00	1190.1875	8520.938477	87.74673462	95.30869293	140.6928864	54.37960815	29.72480202	0.944839001									
07-Oct-00 04:15:00	1190.495483	8523.108398	87.76715851	95.15380859	140.7165527	54.38607407	29.72476959	0.943593979									
07-Oct-00 04:16:00	1189.790405	8524.466797	87.7875824	95.01291656	140.7402191	54.39253998	29.72473717	0.942348897									
07-Oct-00 04:17:00	1189.886353	8539.033203	87.80800629	94.87201691	140.7638855	54.39900589	29.72470474	0.941103816									
07-Oct-00 04:18:00	1189.864258	8520.25	87.82843018	94.83437347	140.7875366	54.40547562	29.72467232	0.939858735									
07-Oct-00 04:19:00	1189.757813	8520.25	87.84885406	94.91473389	140.811203	54.41194153	29.72463989	0.938613653									
07-Oct-00 04:20:00	1190.106567	8520.25	87.86927795	95.0025177	140.8348694	54.41840744	29.72460747	0.937368572									
07-Oct-00 04:21:00	1189.972534	8520.25	87.88970947	95.09324646	140.8585358	54.42487335	29.72457504	0.93612349									
07-Oct-00 04:22:00	1190.160767	8520.25	87.91013336	95.25937653	140.8821869	54.43133926	29.72454071	0.934878409									
07-Oct-00 04:23:00	1189.835571	8520.25	87.93055725	94.98356628	140.9058533	54.43780518	29.72450829	0.933633327									
07-Oct-00 04:24:00	1190.052124	8524.849609	87.95098114	95.10921478	140.9295197	54.44427109	29.72447586	0.932388246									
07-Oct-00 04:25:00	1190.703979	8542.650391	87.97140503	95.23485565	140.953186	54.450737	29.72444344	0.931143224									
07-Oct-00 04:26:00	1189.98877	8536.25	87.99182892	95.33839417	140.9768372	54.45720291	29.72441101	0.929898143									
07-Oct-00 04:27:00	1189.885986	8520.25	88	95.29821777	141.0005035	54.46366882	29.72437859	0.928653061									
07-Oct-00 04:28:00	1190.166626	8520.25	87.69036865	95.25803375	141.0241699	54.47013855	29.72434616	0.92740798									
07-Oct-00 04:29:00	1190.401001	8520.25	88.45833588	95.21785736	141.0478363	54.47660446	29.72431374	0.926162899									
07-Oct-00 04:30:00	1190.21875	8524.466797	88	95.41767883	141.0715027	54.48307037	29.72428131	0.924917817									
07-Oct-00 04:31:00	1190.64624	8539.033203	88.04776764	95.23577118	141.0951538	54.48953629	29.72424889	0.923672736									
07-Oct-00 04:32:00	1189.644653	8524.466797	88.23885345	95.11185455	141.1188202	54.4960022	29.72421646	0.922427654									
07-Oct-00 04:33:00	1189.758911	8543.25	88.42993927	95.59233093	141.1424866	54.50246811	29.72418404	0.921182573									
07-Oct-00 04:34:00	1189.75	8538.650391	88.02173615	95.42460632	141.166153	54.50893402	29.72415161	0.919937551									
07-Oct-00 04:35:00	1189.9375	8524.849609	88.13043213	95.58866882	141.1898041	54.51539993	29.72411919	0.91869247									
07-Oct-00 04:36:00	1190.020874	8543.25	88.23912811	95.640625	141.2134705	54.52186584	29.72408676	0.917447388									
07-Oct-00 04:37:00	1189.75	8543.25	88.3478241	95.38210297	141.2371368	54.52833176	29.72405243	0.916202307									
07-Oct-00 04:38:00	1189.735107	8543.25	88.45652008	95.39878082	141.2608032	54.53480148	29.72402	0.914957225									
07-Oct-00 04:39:00	1189.756226	8543.25	88.9375	95.4223175	141.2844543	54.5412674	29.72398758	0.913712144									
07-Oct-00 04:40:00	1190.032715	8543.25	88	95.53455353	141.3081207	54.54773331	29.72395515	0.912467062									
07-Oct-00 04:41:00	1189.630737	8543.25	88	95.1919632	141.3317871	54.55419922	29.72392273	0.911221981									

07-Oct-00 04:42:00	1189.924316	8543.25	88	95.57142639	141.3554535	54.56066513	29.7238903	0.9099769
07-Oct-00 04:43:00	1189.508545	8538.650391	88	95.13198853	141.3791199	54.56713104	29.72385788	0.908731878
07-Oct-00 04:44:00	1190.043457	8520.25	88	94.89670563	141.402771	54.57359695	29.72382545	0.907486796
07-Oct-00 04:45:00	1189.884888	8520.25	88	94.83229828	141.4264374	54.58006287	29.72379303	0.906241715
07-Oct-00 04:46:00	1190.074219	8525.414063	88.2726593	95.01525879	141.4501038	54.58652878	29.7237606	0.904996634
07-Oct-00 04:47:00	1189.349976	8541.6875	88.3195343	95.48608398	141.4737701	54.59299469	29.72372818	0.903751552
	1190.506626	8502.969414	87.95379269	94.64340186	140.5470219	54.28261444	29.7252903	0.963515151
FROM	10/7/2000 5:18	8.502969414						
TO	10/7/2000 5:34							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 05:18:00	1190.219849	8520.25	88	94.74817657	140.8171844	54.7934494	29.72271919	0.865154207
07-Oct-00 05:19:00	1190.078125	8520.25	88	94.61536407	140.8356934	54.79991913	29.72268677	0.863909125
07-Oct-00 05:20:00	1190.3125	8515.700195	88	94.60165405	140.8542023	54.80638504	29.72265434	0.862664044
07-Oct-00 05:21:00	1190.333374	8497.5	88.15591431	94.79367828	140.8727112	54.81285095	29.72262192	0.861419022
07-Oct-00 05:22:00	1190.4375	8497.5	88.47849274	94.65694427	140.8912201	54.81931686	29.72258759	0.860173941
07-Oct-00 05:23:00	1190.28125	8502.049805	88.11643982	94.55586243	140.909729	54.82578278	29.72255516	0.858928859
07-Oct-00 05:24:00	1189.84375	8520.25	88.2756424	94.61914063	140.9282379	54.83224869	29.72252274	0.857683778
07-Oct-00 05:25:00	1189.625	8516.079102	88.5	94.50195313	140.9467621	54.8387146	29.72249031	0.856438696
07-Oct-00 05:26:00	1190.337524	8497.5	88.18125153	94.6484375	140.965271	54.84518051	29.72245789	0.855193615
07-Oct-00 05:27:00	1190.210205	8498.095703	88.5	94.80995941	140.9837799	54.85164642	29.72242546	0.853948534
07-Oct-00 05:28:00	1190.023193	8500.75	88.1692276	95.03125	141.0022888	54.85811234	29.72239304	0.852703452
07-Oct-00 05:29:00	1190.009155	8500.099609	87.6607132	94.88322449	141.0207977	54.86458206	29.72236061	0.851458371
07-Oct-00 05:30:00	1190.119507	8502.75	88.25	94.81833649	141.0393066	54.87104797	29.72232819	0.850213349
07-Oct-00 05:31:00	1189.909668	8523.049805	88.21370697	94.86985016	141.0578156	54.87751389	29.72229576	0.848968267
07-Oct-00 05:32:00	1190.067505	8520.25	87.39904022	94.9213562	141.0763245	54.8839798	29.72226334	0.847723186
07-Oct-00 05:33:00	1190.470581	8520.25	88.02409363	94.97286987	141.0948334	54.89044571	29.72223091	0.846478105
07-Oct-00 05:34:00	1190.229126	8520.25	88.08433533	95.02438354	141.1133423	54.89691162	29.72219849	0.845233023
	1190.147518	8510.151425	88.1181681	94.76896712	140.9652647	54.84518163	29.72245833	0.855193622
Unit 2 Test Data October 7, 2000		8.510151425						

FROM	10/7/2000 5:38
TO	10/7/2000 5:54
	1m

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 05:38:00	1190.25	8520.25	88.64893341	95.0830307	141.1873779	54.92277527	29.72206688	0.840252697
07-Oct-00 05:39:00	1190.603271	8520.25	87.88315582	95.14409637	141.2058868	54.929245	29.72203445	0.839007676
07-Oct-00 05:40:00	1190.408081	8520.25	88.25	95.19001007	141.2243958	54.93571091	29.72200203	0.837762594
07-Oct-00 05:41:00	1189.515625	8524.774414	88.25	94.7964859	141.2429047	54.94217682	29.7219696	0.836517513
07-Oct-00 05:42:00	1189.539063	8539.674805	88.41666412	95.69271088	141.2579803	54.94864273	29.72193718	0.835272431
07-Oct-00 05:43:00	1190.106201	8527.920898	88.171875	95.53646088	141.2709045	54.95510864	29.72190475	0.83402735
07-Oct-00 05:44:00	1189.710571	8545.904297	87.859375	95.38021088	141.2838287	54.96157455	29.72187233	0.832782269

07-Oct-00 05:45:00	1189.975952	8543.855469	87.78353882	95.27770233	141.2967682	54.96804047	29.7218399	0.831537187
07-Oct-00 05:46:00	1190.189575	8541.950195	88.32926941	95.19155121	141.3096924	54.97450638	29.72180748	0.830292106
07-Oct-00 05:47:00	1190.269287	8523.049805	88.51219177	95.10540771	141.3226318	54.98097229	29.72177505	0.829047024
07-Oct-00 05:48:00	1189.868408	8520.25	88.69512177	95.10090637	141.335556	54.9874382	29.72174263	0.827801943
07-Oct-00 05:49:00	1189.9375	8520.25	88.33333588	95.1342392	141.3484955	54.99390793	29.72171021	0.826556921
07-Oct-00 05:50:00	1190.67395	8524.25	88.45833588	95.16757202	141.3614197	55.00037384	29.72167778	0.82531184
07-Oct-00 05:51:00	1189.819458	8540.849609	88.58333588	95.20090485	141.3743591	55.00683975	29.72164536	0.824066758
07-Oct-00 05:52:00	1190.033691	8543.25	88.70833588	95.10167694	141.3872833	55.01330566	29.72161102	0.822821677
07-Oct-00 05:53:00	1189.556274	8543.25	88.25	95.12791443	141.4002228	55.01977158	29.7215786	0.821576595
07-Oct-00 05:54:00	1189.838501	8538.650391	88.25	95.19147491	141.413147	55.02623749	29.72154617	0.820331514
	1190.017377	8531.684111	88.31667463	95.20131504	141.3072267	54.9745075	29.72180714	0.830292123
FROM	10/7/2000 6:06	8.531684111						
TO	10/7/2000 6:22							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 06:06:00	1169.589478	9475.579102	83.10354614	114.4697723	157.9396973	60.66588211	29.72115707	0.805390596
07-Oct-00 06:07:00	1169.565308	9460.575195	83.01026154	114.4347229	157.7657623	60.67234039	29.72112274	0.804145575
07-Oct-00 06:08:00	1169.832153	9468.623047	82.91697693	114.771965	157.6357269	60.67879868	29.72109032	0.802900493
07-Oct-00 06:09:00	1170.099243	9429.700195	82.875	114.3693924	157.5415802	60.68525696	29.72105789	0.801655412
07-Oct-00 06:10:00	1170.319824	9411.5	82.875	113.9668198	157.4474335	60.69171524	29.72102547	0.80041033
07-Oct-00 06:11:00	1170.540405	9416.049805	82.875	114.0654297	157.353302	60.69817352	29.72099304	0.799165249
07-Oct-00 06:12:00	1169.29541	9447.950195	82.875	114.203125	157.3716583	60.70463181	29.72096062	0.797920167
07-Oct-00 06:13:00	1168.940186	9498.849609	82.875	114.828125	157.476059	60.71109009	29.72092819	0.796675086
07-Oct-00 06:14:00	1168.860474	9482.561523	82.875	115.0176849	157.5804596	60.71754837	29.72089577	0.795430005
07-Oct-00 06:15:00	1168.842651	9484.644531	82.875	114.8401871	157.6848602	60.72400665	29.72086334	0.794184923
07-Oct-00 06:16:00	1168.824829	9505.349609	82.875	115.167366	157.7892609	60.73046494	29.72083092	0.792939842
07-Oct-00 06:17:00	1168.807007	9502.75	82.875	115.494545	157.8936462	60.73692322	29.72079849	0.79169482
07-Oct-00 06:18:00	1168.789185	9502.75	82.875	115.4184723	157.9980469	60.7433815	29.72076607	0.790449739
07-Oct-00 06:19:00	1168.771362	9498.533203	82.86280823	115.3355637	158.1024475	60.74983978	29.72073364	0.789204657
07-Oct-00 06:20:00	1168.75354	9479.75	82.83466339	115.252655	158.2068481	60.75629807	29.72070122	0.787959576
07-Oct-00 06:21:00	1168.725342	9479.75	82.80651855	115.1697464	158.3112488	60.76275635	29.72066879	0.786714494
07-Oct-00 06:22:00	1168.69458	9483.700195	82.77837372	115.1038055	158.4156494	60.76921463	29.72063446	0.785469413
	1169.250057	9472.271542	82.88606756	114.8181987	157.7949228	60.71754837	29.72089577	0.795430022
FROM	10/7/2000 6:31	9.472271542						
TO	10/7/2000 6:47							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 06:31:00	1167.947266	9548.25	82.625	115.6757278	158.7883148	60.6937561	29.72034264	0.77426374
07-Oct-00 06:32:00	1167.858765	9543.700195	82.625	116.4076691	158.7694702	60.67189026	29.72031021	0.773018658
07-Oct-00 06:33:00	1167.770386	9530.049805	82.625	115.9668503	158.7506256	60.65002823	29.72027779	0.771773577
07-Oct-00 06:34:00	1167.681885	9547.660156	82.625	116.04422	158.731781	60.6281662	29.72024536	0.770528495
07-Oct-00 06:35:00	1167.593506	9541.628906	82.625	116.1215897	158.7129364	60.60630035	29.72021294	0.769283473

07-Oct-00 06:36:00	1167.836426	9525.5	82.625	115.765625	158.6940918	60.58443832	29.72018051	0.768038392
07-Oct-00 06:37:00	1168.25769	9525.5	82.625	115.5877075	158.6752472	60.56257629	29.72014618	0.766793311
07-Oct-00 06:38:00	1168.679077	9525.5	82.625	115.4097824	158.6564026	60.54071426	29.72011375	0.765548229
07-Oct-00 06:39:00	1168.865356	9521.599609	82.375	115.4655685	158.637558	60.51884842	29.72008133	0.764303148
07-Oct-00 06:40:00	1168.873169	9509.835938	82.39027405	115.6137466	158.6187134	60.49698639	29.7200489	0.763058066
07-Oct-00 06:41:00	1168.362549	9525.5	82.4055481	115.7619171	158.5998688	60.47512436	29.72001648	0.761812985
07-Oct-00 06:42:00	1168.336914	9525.5	82.42082214	115.9100952	158.5810242	60.45326233	29.71998405	0.760567904
07-Oct-00 06:43:00	1168.311157	9525.5	82.43609619	116.0582733	158.5621796	60.43139648	29.71995163	0.759322822
07-Oct-00 06:44:00	1168.285522	9525.5	82.45137787	115.2281265	158.543335	60.40953445	29.7199192	0.758077741
07-Oct-00 06:45:00	1168.259888	9525.5	82.46665192	115.7616882	158.5244904	60.38767242	29.71988678	0.756832719
07-Oct-00 06:46:00	1168.234131	9529.741211	82.48192596	115.7321625	158.5056458	60.36581039	29.71985435	0.755587637
07-Oct-00 06:47:00	1168.208496	9543.700195	82.49720001	115.7026291	158.4868164	60.34394455	29.71982193	0.754342556
	1168.197775	9530.598001	82.5249939	115.7772576	158.6375589	60.51884999	29.720082	0.764303144
FROM	10/7/2000 6:55	9.530598001						
TO	10/7/2000 7:11							
	1m							

	2TMETI934	2FGSFT904CMR	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 06:55:00	1168.549072	9525.5	82.61940002	115.735199	158.3360596	60.16904068	29.71956062	0.744381964
07-Oct-00 06:56:00	1168.675049	9525.5	82.66424561	115.7423248	158.317215	60.14717865	29.7195282	0.743136883
07-Oct-00 06:57:00	1168.801025	9525.5	82.9258728	115.6695862	158.2983704	60.12531662	29.71949577	0.741891801
07-Oct-00 06:58:00	1168.927002	9520.950195	83.1875	115.5968475	158.2795258	60.10345078	29.71946335	0.74064672
07-Oct-00 06:59:00	1169.022583	9507.299805	82.625	115.5241089	158.2606812	60.08158875	29.71943092	0.739401639
07-Oct-00 07:00:00	1169.115234	9525.5	82.625	115.4513702	158.2418365	60.05972672	29.7193985	0.738156557
07-Oct-00 07:01:00	1169.208008	9525.5	81.88124847	115.3786392	158.2229919	60.03786469	29.71936607	0.736911476
07-Oct-00 07:02:00	1169.300781	9525.5	82.625	115.3059006	158.2041473	60.01599884	29.71933365	0.735666394
07-Oct-00 07:03:00	1169.344482	9521.329102	82.625	115.2322922	158.1809998	59.99413681	29.71930122	0.734421372
07-Oct-00 07:04:00	1169.192017	9502.75	82.625	115.1072922	158.1252747	59.97227478	29.7192688	0.733176291
07-Oct-00 07:05:00	1169.039673	9498.150391	82.66364288	114.9822922	158.0695648	59.95041275	29.71923637	0.73193121
07-Oct-00 07:06:00	1168.887207	9479.75	82.92127991	114.9648819	158.0138397	59.92854691	29.71920395	0.730686128
07-Oct-00 07:07:00	1168.79248	9479.75	83.1789093	115.2433472	157.9581146	59.90668488	29.71916962	0.729441047
07-Oct-00 07:08:00	1169.13562	9484.349609	82.64386749	115.3148956	157.9023895	59.88482285	29.71913719	0.728195965
07-Oct-00 07:09:00	1169.184692	9502.75	82.7146225	115.2386398	157.8466797	59.86296082	29.71910477	0.726950884
07-Oct-00 07:10:00	1169.233765	9502.75	82.7853775	115.162384	157.7909546	59.84109497	29.71907234	0.725705802
07-Oct-00 07:11:00	1169.282837	9507.299805	82.85613251	115.09375	157.7352295	59.81923294	29.71903992	0.724460721
	1169.040678	9509.419347	82.71571171	115.3378677	158.1049338	59.99413726	29.71930066	0.734421344
FROM	10/7/2000 10:42	9.509419347						
TO	10/7/2000 10:58							
	1m							

	2TMETI934	2FGSFT904CMR	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 10:42:00	1149.068481	10485	79.1875	134.3169708	175.6698303	67.1404953	29.71217155	1.221981525
07-Oct-00 10:43:00	1149.014648	10472.7334	79.1875	134.4265442	175.6887665	67.16210938	29.71213913	1.226093531
07-Oct-00 10:44:00	1148.960815	10474.2666	79.22225952	134.5361176	175.7077026	67.18372345	29.7121067	1.230205536

07-Oct-00 10:45:00	1148.978027	10485	79.38269043	134.5276794	175.7266388	67.20533752	29.71207428	1.23431766
07-Oct-00 10:46:00	1149.049438	10472.7334	79.54311371	134.4458923	175.745575	67.2269516	29.71204185	1.238429666
07-Oct-00 10:47:00	1149.12085	10462	79.6875	134.36409	175.7645264	67.24856567	29.71200943	1.242541671
07-Oct-00 10:48:00	1149.206177	10462	79.6875	134.2823029	175.7834625	67.27017975	29.71197701	1.246653795
07-Oct-00 10:49:00	1149.485962	10462	79.6875	134.2005005	175.8023987	67.29178619	29.71194458	1.2507658
07-Oct-00 10:50:00	1149.635498	10474.2666	79.6875	134.1167603	175.8213348	67.31340027	29.71191216	1.254877925
07-Oct-00 10:51:00	1149.778198	10448.4668	79.6875	134.0319519	175.840271	67.33501434	29.71187973	1.25898993
07-Oct-00 10:52:00	1149.920898	10428.5332	79.6875	133.9471588	175.8592224	67.35662842	29.7118454	1.263101935
07-Oct-00 10:53:00	1149.39917	10451.09473	79.6875	133.9399719	175.8781586	67.37824249	29.71181297	1.26721406
07-Oct-00 10:54:00	1149.331299	10486.03809	79.6875	134.0879974	175.8970947	67.39985657	29.71178055	1.271326065
07-Oct-00 10:55:00	1149.293701	10495.61621	79.66810608	133.9203796	175.9160309	67.42147064	29.71174812	1.27543819
07-Oct-00 10:56:00	1148.938599	10497.13379	79.53879547	134.4235229	175.9349823	67.44308472	29.7117157	1.279550195
07-Oct-00 10:57:00	1148.959717	10495.61621	79.40948486	134.400238	175.9539185	67.46469116	29.71168327	1.2836622
07-Oct-00 10:58:00	1148.980957	10485	79.28017426	134.3769379	175.9728546	67.48630524	29.71165085	1.287774324
	1149.242496	10472.79406	79.52468378	134.2555892	175.8213393	67.31340251	29.71191137	1.254877883
FROM	10/7/2000 11:05	10.47279406						
TO	10/7/2000 11:21							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 11:05:00	1148.814331	10495.61621	79.6875	134.3035736	176.0283661	67.63759613	29.71142387	1.316558599
07-Oct-00 11:06:00	1148.736206	10485	79.6875	134.3839264	176.0334625	67.65921021	29.71139145	1.320670724
07-Oct-00 11:07:00	1148.889893	10485	79.64583588	134.3605042	176.038559	67.68082428	29.71135712	1.324782729
07-Oct-00 11:08:00	1148.951172	10485	79.45352936	134.1526489	176.0436554	67.70243835	29.71132469	1.328894854
07-Oct-00 11:09:00	1148.778687	10497.13379	79.26121521	134.9754486	176.0487366	67.72405243	29.71129227	1.333006859
07-Oct-00 11:10:00	1148.606323	10495.61621	79.71346283	134.9620514	176.053833	67.7456665	29.71125984	1.337118864
07-Oct-00 11:11:00	1148.648682	10486.7334	80.2326889	134.8505859	176.0589294	67.76727295	29.71122742	1.341230989
07-Oct-00 11:12:00	1148.869019	10486.5166	79.6875	134.5429688	176.0640259	67.78888702	29.71119499	1.345342994
07-Oct-00 11:13:00	1148.854858	10485	79.6875	134.3578186	176.0691223	67.8105011	29.71116257	1.349455118
07-Oct-00 11:14:00	1148.840576	10485	79.6875	134.6625061	176.0742188	67.83211517	29.71113014	1.353567123
07-Oct-00 11:15:00	1148.826294	10496.75391	79.6875	134.495163	176.0793152	67.85372925	29.71109772	1.357679129
07-Oct-00 11:16:00	1148.820923	10507.75	79.6875	134.2552032	176.0844116	67.87534332	29.71106529	1.361791253
07-Oct-00 11:17:00	1149.084351	10507.75	79.93553162	134.0531311	176.0895081	67.8969574	29.71103287	1.365903258
07-Oct-00 11:18:00	1149.521851	10495.61621	80.20127869	134.3812561	176.0946045	67.91856384	29.71100044	1.370015383
07-Oct-00 11:19:00	1149.927368	10485	80.25	134.5523682	176.0997009	67.94017792	29.71096802	1.374127388
07-Oct-00 11:20:00	1149.724243	10485	80.17009735	134.4879608	176.1047821	67.96179199	29.71093559	1.378239393
07-Oct-00 11:21:00	1149.52124	10485	80.07421875	134.411377	176.1098785	67.98340607	29.71090317	1.382351518
	1149.024472	10491.14625	79.80884462	134.481676	176.0691241	67.810502	29.71116279	1.349455069
FROM	10/7/2000 11:27	10.49114625						
TO	10/7/2000 11:43							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 11:27:00	1149.60791	10475.79199	80.42073059	134.6465454	176.1404572	68.11308289	29.71070671	1.407023787

07-Oct-00 11:28:00	1149.559814	10486.5166	80.6646347	134.6264954	176.1455536	68.13469696	29.71067429	1.411135793
07-Oct-00 11:29:00	1150.04895	10485	80.29102325	134.3851013	176.15065	68.15631104	29.71064186	1.415247917
07-Oct-00 11:30:00	1149.678955	10497.13379	80.35753632	134.1782379	176.1557465	68.17792511	29.71060944	1.419359922
07-Oct-00 11:31:00	1149.508545	10507.75	80.42405701	134.3691101	176.1608429	68.19953918	29.71057701	1.423472047
07-Oct-00 11:32:00	1149.338013	10495.61621	80.4905777	134.559967	176.1659241	68.22115326	29.71054459	1.427584052
07-Oct-00 11:33:00	1149.189941	10496.93457	80.55709839	134.7242126	176.1710205	68.2427597	29.71051216	1.431696057
07-Oct-00 11:34:00	1149.211182	10495.99609	80.62361145	134.8085938	176.1761169	68.26437378	29.71047974	1.435808182
07-Oct-00 11:35:00	1149.2323	10485	80.69013214	134.3717804	176.1812134	68.28598785	29.71044731	1.439920187
07-Oct-00 11:36:00	1149.262451	10472.7334	80.67308044	134.5386963	176.1863098	68.30760193	29.71041489	1.444032311
07-Oct-00 11:37:00	1149.355957	10474.2666	80.75	134.3809814	176.1914063	68.329216	29.71038055	1.448144317
07-Oct-00 11:38:00	1149.486084	10472.7334	80.75219727	134.2359161	176.1965027	68.35083008	29.71034813	1.452256322
07-Oct-00 11:39:00	1149.616333	10474.2666	80.8840332	134.1052704	176.2015991	68.37244415	29.7103157	1.456368446
07-Oct-00 11:40:00	1149.553955	10472.93457	81.01586914	134.0862579	176.2066956	68.3940506	29.71028328	1.460480452
07-Oct-00 11:41:00	1149.477783	10474.08496	81.14770508	134.2132111	176.211792	68.41566467	29.71025085	1.464592576
07-Oct-00 11:42:00	1149.401611	10485	81.27954102	134.3401642	176.2168884	68.43727875	29.71021843	1.468704581
07-Oct-00 11:43:00	1149.556641	10485	81.52884674	134.384964	176.2219696	68.45889282	29.710186	1.472816586
	1149.475672	10484.51522	80.73827497	134.4091474	176.181217	68.28598875	29.71044653	1.439920208
FROM	10/7/2000 12:16	10.48451522						
TO	10/7/2000 13:16							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 12:16:00	1123.670776	11729.49609	83.23628235	154.7570496	201.2313385	86.89707947	29.70911217	1.608514309
07-Oct-00 12:17:00	1123.8125	11720.30859	83.48018646	154.6285248	201.1958313	86.89732361	29.70907974	1.612626433
07-Oct-00 12:18:00	1123.65625	11731.94629	82.88900757	154.5	201.1603394	86.89756775	29.70904732	1.616738439
07-Oct-00 12:19:00	1123.5	11741.25	82.80555725	154.6033325	201.1248322	86.89781189	29.70901489	1.620850444
07-Oct-00 12:20:00	1123.46521	11731.30371	83.30500031	154.7323151	201.0893402	86.89805603	29.70898247	1.624962568
07-Oct-00 12:21:00	1123.916016	11720.19141	83.1875	154.8612823	201.053833	86.89830017	29.70895004	1.629074574
07-Oct-00 12:22:00	1124.366821	11706.41504	83.1875	154.8942871	201.0183411	86.90638733	29.70891571	1.633186698
07-Oct-00 12:23:00	1124.885742	11697.36621	83.1875	154.4475098	201.0027618	86.92405701	29.70888329	1.637298703
07-Oct-00 12:24:00	1124.807739	11697.13379	83.1875	154.0500488	201.0084534	86.94171906	29.70885086	1.641410708
07-Oct-00 12:25:00	1124.134644	11695.5	83.1875	154.6484375	201.0141602	86.95938873	29.70881844	1.645522833
07-Oct-00 12:26:00	1124.709595	11693.7666	83.1171875	154.2417755	201.0198517	86.97705078	29.70878601	1.649634838
07-Oct-00 12:27:00	1125.139038	11693.9834	82.33159637	154.21875	201.0255585	86.99472046	29.70875359	1.653746963
07-Oct-00 12:28:00	1124.5177	11695.5	82.6267395	154.21875	201.03125	87.01238251	29.70872116	1.657858968
07-Oct-00 12:29:00	1123.873901	11695.5	82.921875	154.2493591	201.0369415	87.01013947	29.70868874	1.661970973
07-Oct-00 12:30:00	1124.350586	11695.5	83.1875	154.3460083	201.0426483	87.0034256	29.70865631	1.666083097
07-Oct-00 12:31:00	1124.51355	11671.09961	83.109375	154.4426575	201.0483398	86.99671173	29.70862389	1.670195103
07-Oct-00 12:32:00	1124.95752	11661.9502	83.21022797	153.6770782	201.0540466	86.98999786	29.70859146	1.674307108
07-Oct-00 12:33:00	1125.244141	11684.8252	83.43141937	153.96875	201.0597382	86.983284	29.70855904	1.678419232
07-Oct-00 12:34:00	1124.801758	11695.5	83.67947388	153.9861145	201.0766449	86.97657013	29.70852661	1.682531238
07-Oct-00 12:35:00	1124.635742	11695.5	83.92752838	153.8385468	201.1040192	86.96985626	29.70849419	1.686643362
07-Oct-00 12:36:00	1124.278442	11695.5	84.17558289	154.2205353	201.1313934	86.9631424	29.70846176	1.690755367
07-Oct-00 12:37:00	1124.943481	11695.5	84.17666626	154.1233368	201.1587524	86.95642853	29.70842743	1.694867373
07-Oct-00 12:38:00	1125.12207	11695.5	83.9622879	154.0784607	201.1861267	86.94971466	29.708395	1.698979497
07-Oct-00 12:39:00	1125.344482	11695.5	83.67552948	154.0335846	201.213501	86.94300079	29.70836258	1.703091502
07-Oct-00 12:40:00	1124.806519	11695.5	83.59574127	154.0697174	201.2408752	86.93628693	29.70833015	1.707203627

07-Oct-00 12:41:00	1124.430176	11707.7666	83.51596069	154.8001709	201.2325897	86.92957306	29.70829773	1.711315632
07-Oct-00 12:42:00	1124.332764	11708.27051	83.4375	154.3643799	201.2064667	86.92285919	29.7082653	1.715427637
07-Oct-00 12:43:00	1124.235352	11709.0752	83.66761017	153.484375	201.1803436	86.91614532	29.70823288	1.719539762
07-Oct-00 12:44:00	1124.137939	11706.41504	83.9744339	153.8667297	201.1542358	86.90943146	29.70820045	1.723651767
07-Oct-00 12:45:00	1125.221924	11695.5	84.29891205	154.6317902	201.1281128	86.90271759	29.70816803	1.727763891
07-Oct-00 12:46:00	1124.6875	11697.36621	84	154.15625	201.1019897	86.89600372	29.7081356	1.731875896
07-Oct-00 12:47:00	1124.933594	11697.16406	84	154.4514465	201.0758667	86.88928986	29.70810318	1.735987902
07-Oct-00 12:48:00	1124.901367	11707.58496	84	154.4909515	201.0497437	86.88257599	29.70807076	1.740100026
07-Oct-00 12:49:00	1124.725342	11718.5	84	154.4416046	201.0236359	86.87586212	29.70803833	1.744212031
07-Oct-00 12:50:00	1124.875	11718.5	84	154.3901825	200.9975128	86.86914825	29.70800591	1.748324156
07-Oct-00 12:51:00	1124.983887	11706.2334	84	154.3693848	200.9713898	86.86243439	29.70797348	1.752436161
07-Oct-00 12:52:00	1124.349365	11707.7666	83.91847992	154.5929718	200.9452667	86.85572052	29.70793915	1.756548166
07-Oct-00 12:53:00	1125.259766	11718.5	83.75543213	154.0814667	200.9191589	86.84900665	29.70790672	1.760660291
07-Oct-00 12:54:00	1124.640381	11706.2334	83.59239197	154.017746	200.8930359	86.84229279	29.7078743	1.764772296
07-Oct-00 12:55:00	1124.383545	11697.36621	83.44480896	154.4161987	200.8669128	86.83557892	29.70784187	1.768884301
07-Oct-00 12:56:00	1123.89209	11697.13379	83.59091187	154.0195313	200.8407898	86.82886505	29.70780945	1.772996426
07-Oct-00 12:57:00	1124.665161	11695.5	83.73701477	154.1995239	200.814682	86.82215118	29.70777702	1.777108431
07-Oct-00 12:58:00	1125.282593	11695.5	83.88311768	153.953125	200.7445679	86.81543732	29.7077446	1.781220555
07-Oct-00 12:59:00	1123.869873	11695.5	84	154.7021484	200.6704559	86.80872345	29.70771217	1.785332561
07-Oct-00 13:00:00	1123.865234	11685.2334	84	154.09375	200.596344	86.80200958	29.70767975	1.789444566
07-Oct-00 13:01:00	1124.528442	11676.25	84	153.9596405	200.5222321	86.92392731	29.70764732	1.79355669
07-Oct-00 13:02:00	1125.146118	11686.5166	84	153.7229919	200.799057	87.07470703	29.7076149	1.797668695
07-Oct-00 13:03:00	1124.209717	11732.0332	84	154.8844299	201.1631775	87.15996552	29.70758247	1.80178082
07-Oct-00 13:04:00	1126.807739	11776.2666	84	155.234375	201.425827	87.15951538	29.70755005	1.805892825
07-Oct-00 13:05:00	1127.673096	11799.2666	84	155.6195068	201.6884766	87.15906525	29.70751762	1.81000483
07-Oct-00 13:06:00	1131.15564	11834.2666	84	156.3535919	201.9511261	87.15862274	29.7074852	1.814116955
07-Oct-00 13:07:00	1133.336792	11855.5	84	155.9803314	202.1855316	87.15817261	29.70745087	1.81822896
07-Oct-00 13:08:00	1134.03125	11843.36621	84	155.4760132	202.1659241	87.15772247	29.70741844	1.822341084
07-Oct-00 13:09:00	1132.676392	11820.61621	84.12928009	155.3531189	202.1463013	87.15727997	29.70738602	1.82645309
07-Oct-00 13:10:00	1131.529785	11811.86621	84.37167358	155.8223724	202.1266785	87.15682983	29.70735359	1.830565095
07-Oct-00 13:11:00	1132.244019	11811.63379	84.61406708	155.6620026	202.1070709	87.1563797	29.70732117	1.834677219
07-Oct-00 13:12:00	1132.830078	11799.59961	84.85646057	155.0637512	202.0874481	87.15593719	29.70728874	1.838789225
07-Oct-00 13:13:00	1133.269531	11788.63379	84.67613983	155.3488617	202.0678253	87.15548706	29.70725632	1.842901349
07-Oct-00 13:14:00	1132.9375	11774.52539	85.0625	155.5249939	202.0482178	87.15503693	29.70722389	1.847013354
07-Oct-00 13:15:00	1131.1875	11778.10449	85.0625	155.7011414	202.028595	87.15459442	29.70719147	1.85112536
07-Oct-00 13:16:00	1131.266479	11778.61621	85.0625	155.3106995	202.0089722	87.15414429	29.70715904	1.855237484
	1126.032084	11724.09356	83.76121246	154.5635699	201.2338439	86.97202651	29.70813535	1.731875893
FROM	10/7/2000 13:30	11.72409356						
TO	10/7/2000 14:30							
	1m							

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 13:30:00	1130.703125	11730.63379	85.58635712	154.1473999	201.7343292	87.14787292	29.70670319	1.912806153
07-Oct-00 13:31:00	1130.789551	11729.11621	85.71083832	154.3930511	201.7147064	87.14743042	29.70667076	1.916918278
07-Oct-00 13:32:00	1130.729492	11718.5	85.8125	154.4494476	201.6950989	87.14698029	29.70663834	1.921030283
07-Oct-00 13:33:00	1130.879028	11718.5	85.8125	154.44104	201.6754761	87.14653015	29.70660591	1.925142288
07-Oct-00 13:34:00	1131.468262	11730.63379	86.02812195	154.5422974	201.6558533	87.14608765	29.70657349	1.929254413

07-Oct-00 13:35:00	1132.011719	11729.11621	86.30937195	154.6736603	201.6362457	87.14563751	29.70654106	1.933366418
07-Oct-00 13:36:00	1132.270508	11730.63379	85.94425964	154.64888	201.6166229	87.14518738	29.70650864	1.937478542
07-Oct-00 13:37:00	1131.5	11742.9834	86.35832977	154.514389	201.5970001	87.14474487	29.7064743	1.941590548
07-Oct-00 13:38:00	1131.388428	11730.63379	86.19166565	154.6679688	201.5773926	87.14429474	29.70644188	1.945702553
07-Oct-00 13:39:00	1131.072144	11732.36621	85.85713959	154.7252045	201.5577698	87.1438446	29.70640945	1.949814677
07-Oct-00 13:40:00	1131.611084	11730.63379	86.03749847	154.265625	201.538147	87.1434021	29.70637703	1.953926682
07-Oct-00 13:41:00	1131.588501	11720.36621	85.953125	154.4133453	201.5185394	87.14295197	29.7063446	1.958038688
07-Oct-00 13:42:00	1131.565918	11733.80371	86.11420441	154.9347687	201.4989166	87.14250183	29.70631218	1.962150812
07-Oct-00 13:43:00	1131.634888	11732.875	85.8125	154.3548584	201.4792938	87.14205933	29.70627975	1.966262817
07-Oct-00 13:44:00	1131.890015	11732.11426	85.8125	155.234375	201.4596863	87.14160919	29.70624733	1.970374942
07-Oct-00 13:45:00	1132.237061	11741.25	85.8125	154.8512573	201.4400635	87.14115906	29.7062149	1.974486947
07-Oct-00 13:46:00	1131.860107	11729.11621	85.8125	154.5512543	201.4204407	87.14071655	29.70618248	1.978598952
07-Oct-00 13:47:00	1131.483154	11720.36621	85.96651459	154.2512512	201.4008331	87.14026642	29.70615005	1.982711077
07-Oct-00 13:48:00	1130.997192	11732.2666	86.36830139	153.8690796	201.3812103	87.13981628	29.70611763	1.986823082
07-Oct-00 13:49:00	1128.881958	11729.11621	85.8125	154.6036987	201.3926697	87.13937378	29.70608521	1.990935206
07-Oct-00 13:50:00	1129.673584	11718.5	85.8125	154.4332428	201.4185333	87.13892365	29.70605278	1.995047212
07-Oct-00 13:51:00	1130.305176	11718.5	85.8125	154.4919128	201.444397	87.13847351	29.70602036	1.99159217
07-Oct-00 13:52:00	1130.856567	11732.36621	85.8125	154.394455	201.4702606	87.13803101	29.70598602	2.003271341
07-Oct-00 13:53:00	1130.469971	11730.86035	85.63567352	154.1354218	201.4961243	87.13758087	29.7059536	2.007383347
07-Oct-00 13:54:00	1128.748047	11730.45313	85.45274353	154.6687469	201.5219879	87.13713074	29.70592117	2.011495352
07-Oct-00 13:55:00	1128.656738	11729.31543	85.3125	154.5625	201.5478516	87.13668823	29.70588875	2.015607357
07-Oct-00 13:56:00	1129.325439	11718.5	85.3125	154.5625	201.5737	87.1362381	29.70585632	2.019719601
07-Oct-00 13:57:00	1130.230591	11718.5	85.3125	154.21875	201.5995636	87.13578796	29.7058239	2.023831606
07-Oct-00 13:58:00	1130.715698	11718.5	86.05034637	154.5625	201.6254272	87.13534546	29.70579147	2.027943611
07-Oct-00 13:59:00	1129.225952	11718.5	85.27825165	154.4491577	201.6512909	87.13489532	29.70575905	2.032055616
07-Oct-00 14:00:00	1127.258057	11730.63379	85.19921112	154.6126862	201.6771545	87.13444519	29.70572662	2.036167622
07-Oct-00 14:01:00	1126.846558	11716.84961	85.12017059	154.2433777	201.7030182	87.13400269	29.7056942	2.040279865
07-Oct-00 14:02:00	1125.136963	11695.5	85.04113007	153.6354218	201.7288818	87.13355255	29.70566177	2.04439187
07-Oct-00 14:03:00	1128.589722	11721.63379	84.96208954	154.3882599	201.7547455	87.13310242	29.70562935	2.048503876
07-Oct-00 14:04:00	1130.057007	11767.16699	84.88304901	155.0559692	201.7806091	87.13265991	29.70559692	2.052615881
07-Oct-00 14:05:00	1131.818481	11788.86621	84.80400848	155.4227905	201.8064728	87.13220978	29.7055645	2.056727886
07-Oct-00 14:06:00	1135.525024	11800.90039	84.80872345	156.25	201.8144226	87.13175964	29.70553207	2.06084013
07-Oct-00 14:07:00	1137.507568	11822.13379	84.99416351	156.0648499	201.8169403	87.13131714	29.70549774	2.064952135
07-Oct-00 14:08:00	1138.692871	11844.88379	85.17960358	156.3884125	201.8194427	87.130867	29.70546532	2.06906414
07-Oct-00 14:09:00	1139.878174	11857.36621	85.38907623	156.046875	201.8219604	87.13041687	29.70543289	2.073176146
07-Oct-00 14:10:00	1139.756714	11844.86621	85.65934753	155.5542603	201.8244781	87.12997437	29.70540047	2.077288151
07-Oct-00 14:11:00	1139.566284	11832.5	85.86195374	156.0708313	201.8269806	87.12952423	29.70536804	2.081400394
07-Oct-00 14:12:00	1139.375977	11832.5	86.23282623	155.9573212	201.8294983	87.1290741	29.70533562	2.0855124
07-Oct-00 14:13:00	1136.979126	11808.2334	85.8125	156.1484375	201.8320007	87.12863159	29.70530319	2.089624405
07-Oct-00 14:14:00	1136.273315	11788.86621	85.8125	155.6680756	201.8345184	87.12818146	29.70527077	2.09373641
07-Oct-00 14:15:00	1136.304565	11788.63379	85.8125	155.5686188	201.8370361	87.12773132	29.70523834	2.097848415
07-Oct-00 14:16:00	1136.135742	11774.7334	85.8125	155.3682556	201.8395386	87.12728882	29.70520592	2.101960659
07-Oct-00 14:17:00	1135.204346	11778.13379	85.8125	155.5814209	201.8420563	87.12683868	29.70517349	2.106072664
07-Oct-00 14:18:00	1135.117554	11790.5	85.8125	155.4886017	201.8445587	87.12638855	29.70514107	2.110184669
07-Oct-00 14:19:00	1135.609863	11788.63379	85.8125	155.156662	201.8470764	87.12594604	29.70510864	2.114296675
07-Oct-00 14:20:00	1135.154175	11787	85.8125	155.6616211	201.8495941	87.12549591	29.70507622	2.11840868
07-Oct-00 14:21:00	1134.950317	11787	85.8125	155.5086975	201.8520966	87.12504578	29.70504379	2.122520924
07-Oct-00 14:22:00	1135.796143	11788.86621	85.8125	154.765625	201.8546143	87.12460327	29.70500946	2.126632929
07-Oct-00 14:23:00	1138.144287	11790.5	85.8125	155.7738647	201.857132	87.12415314	29.70497704	2.130744934
07-Oct-00 14:24:00	1138.044678	11788.63379	85.8125	155.5916443	201.8596344	87.123703	29.70494461	2.134856939

07-Oct-00 14:25:00	1137.251465	11788.83594	85.8125	155.168396	201.8621521	87.1232605	29.70491219	2.138968945
07-Oct-00 14:26:00	1136.143433	11788.69141	85.8125	155.4459839	201.8646545	87.12281036	29.70487976	2.143081188
07-Oct-00 14:27:00	1135.664063	11787	85.8125	155.2209778	201.8671722	87.12236023	29.70484734	2.147193193
07-Oct-00 14:28:00	1135.880127	11798.85254	85.8125	154.9085999	201.8696899	87.12191772	29.70481491	2.151305199
07-Oct-00 14:29:00	1135.178589	11821.79395	85.8125	155.5507202	201.8721924	87.12146759	29.70478249	2.155417204
07-Oct-00 14:30:00	1137.209351	11832.5	85.8125	156.1812439	201.8747101	87.12101746	29.70475006	2.159529209
	1133.046237	11760.03655	85.699436	154.974763	201.6869584	87.13444769	29.7057265	2.036167727
		11.76003655						

FROM 10/7/2000 14:37
TO 10/7/2000 15:37
1m

[redacted]	2TMETI934	2FGSFT904CMP	2TMSTI922MP	2PWRJI900	2TMSPJ916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 14:37:00	1141.164063	11810	86.375	155.515625	201.8040924	87.1178894	29.70452118	2.188313723
07-Oct-00 14:38:00	1141.448486	11811.86621	86.80000305	156.0184174	201.7937775	87.11743927	29.70448875	2.192425728
07-Oct-00 14:39:00	1141.220459	11813.5	87.23986816	155.6588593	201.7834778	87.11698914	29.70445633	2.196537733
07-Oct-00 14:40:00	1140.972656	11811.63379	86.7638855	155.4953766	201.7731781	87.11654663	29.7044239	2.200649738
07-Oct-00 14:41:00	1139.743896	11810	86.78301239	155.8694	201.7628784	87.1160965	29.70439148	2.204761744
07-Oct-00 14:42:00	1138.1875	11823.86621	86.5070343	156.1083527	201.7525787	87.11564636	29.70435905	2.208873987
07-Oct-00 14:43:00	1137.272095	11822.13379	86.23106384	155.5595703	201.7422791	87.11520386	29.70432663	2.212985992
07-Oct-00 14:44:00	1137.11792	11823.86621	85.95508575	155.354538	201.7319641	87.11475372	29.7042942	2.217097998
07-Oct-00 14:45:00	1136.81958	11822.13379	85.75715637	155.9438934	201.7216644	87.11430359	29.70426178	2.221210003
07-Oct-00 14:46:00	1136.808716	11822	85.64265442	156.0770111	201.7113647	87.11385345	29.70422935	2.225322008
07-Oct-00 14:47:00	1136.885254	11832.5	85.48992157	156.1774597	201.7010651	87.11341095	29.70419693	2.229434252
07-Oct-00 14:48:00	1137.141846	11832.5	85.3125	155.984375	201.6907654	87.11296082	29.70416451	2.233546257
07-Oct-00 14:49:00	1137.786987	11832.5	85.3197937	155.8855896	201.6804657	87.11251068	29.70413208	2.237658262
07-Oct-00 14:50:00	1137.371948	11822.36621	85.4291687	155.7494965	201.6701508	87.11206818	29.70409966	2.241770267
07-Oct-00 14:51:00	1137.651001	11811.66406	85.5385437	155.6548309	201.6598511	87.11161804	29.70406723	2.245882273
07-Oct-00 14:52:00	1138.059692	11821.82227	85.6479187	155.6980896	201.6495514	87.11116791	29.7040329	2.249994516
07-Oct-00 14:53:00	1138.468384	11820.5	85.7572937	155.5483093	201.6392517	87.1107254	29.70400047	2.254106522
07-Oct-00 14:54:00	1139.899292	11811.86621	85.8666687	155.8284912	201.628952	87.11027527	29.70396805	2.258218527
07-Oct-00 14:55:00	1138.512451	11811.63379	85.9760437	155.5502472	201.6186523	87.10982513	29.70393562	2.262330532
07-Oct-00 14:56:00	1140.126221	11823.86621	86.0854187	155.9273834	201.6083374	87.10938263	29.7039032	2.266442537
07-Oct-00 14:57:00	1140.605835	11846.40039	86.1947937	156.1255341	201.5980377	87.1089325	29.70387077	2.270554781
07-Oct-00 14:58:00	1140.5177	11843.2334	86.3041687	156.1875	201.587738	87.10848236	29.70383835	2.274666786
07-Oct-00 14:59:00	1141	11832.5	86.4135437	156.1875	201.5774384	87.10803986	29.70380592	2.278778791
07-Oct-00 15:00:00	1141.625	11832.5	86.5229187	155.7984619	201.5671387	87.10758972	29.7037735	2.282890797
07-Oct-00 15:01:00	1141.563354	11820.5	86.61469269	155.2397308	201.556839	87.10713959	29.70374107	2.287002802
07-Oct-00 15:02:00	1141.20752	11810	86.46005249	155.4004517	201.546524	87.10669708	29.70370865	2.291115046
07-Oct-00 15:03:00	1141	11810	86.875	155.3385468	201.5362244	87.10624695	29.70367622	2.295227051
07-Oct-00 15:04:00	1141.017212	11810	87.33203125	155.3601227	201.5259247	87.10579681	29.7036438	2.299339056
07-Oct-00 15:05:00	1141.048462	11810	86.80000305	155.453125	201.515625	87.10535431	29.70361137	2.303451061
07-Oct-00 15:06:00	1141.22583	11822	87.34375	155.59375	201.5053253	87.10490417	29.70357895	2.307563066
07-Oct-00 15:07:00	1141.522949	11820.36621	86.375	155.359375	201.4950256	87.10445404	29.70354462	2.31167531
07-Oct-00 15:08:00	1141.498779	11797.61621	87.1129837	155.2246704	201.484726	87.10401154	29.70351219	2.315787315
07-Oct-00 15:09:00	1141.297974	11787	86.80000305	155.5832367	201.474411	87.1035614	29.70347977	2.319899321
07-Oct-00 15:10:00	1140.460571	11801.13379	87.40566254	155.5625	201.4641113	87.10311127	29.70344734	2.324011326

07-Oct-00 15:11:00	1139.869019	11811.63379	87.4375	154.9356689	201.4538116	87.10266876	29.70341492	2.328123331
07-Oct-00 15:12:00	1139.578125	11797.7334	87.4375	155.4453125	201.443512	87.10221863	29.70338249	2.332235575
07-Oct-00 15:13:00	1139.695801	11787	87.4375	155.2444153	201.4332123	87.10176849	29.70335007	2.33634758
07-Oct-00 15:14:00	1139.617554	11799.2666	87.4375	155.2946472	201.4229126	87.10132599	29.70331764	2.340459585
07-Oct-00 15:15:00	1138.998291	11810	87.4375	155.3448639	201.4125977	87.10087585	29.70328522	2.34457159
07-Oct-00 15:16:00	1137.9375	11810	87.25	155.4156036	201.402298	87.10042572	29.70325279	2.348683596
07-Oct-00 15:17:00	1138.121338	11810	86.375	155.5171204	201.3919983	87.09998322	29.70322037	2.352795601
07-Oct-00 15:18:00	1139.227783	11810	86.375	155.6186371	201.3816986	87.09953308	29.70318794	2.356907845
07-Oct-00 15:19:00	1140.371826	11810	86.375	155.3102264	201.3713989	87.09908295	29.70315552	2.358059883
07-Oct-00 15:20:00	1139.915894	11810	86.7997818	155.4013672	201.3610992	87.09864044	29.70313072	2.354772568
07-Oct-00 15:21:00	1139.140137	11799.59961	86.53429413	155.6663666	201.3507843	87.09819031	29.70319557	2.351485014
07-Oct-00 15:22:00	1140.091797	11800.90039	87.31944275	155.7766571	201.3404846	87.09774017	29.70326042	2.34819746
07-Oct-00 15:23:00	1141.235352	11811.86621	86.40833282	155.8869476	201.3301849	87.09729767	29.70332527	2.344909906
07-Oct-00 15:24:00	1141.634644	11799.36621	86.56845093	155.8203125	201.3198853	87.09684753	29.70339203	2.341622353
07-Oct-00 15:25:00	1141.424805	11787	86.875	155.3589172	201.3095856	87.0963974	29.70345688	2.338334799
07-Oct-00 15:26:00	1141.367188	11799.44238	87.00480652	155.117569	201.2992859	87.0959549	29.70352173	2.335047245
07-Oct-00 15:27:00	1141.50354	11799.59961	87.4375	155.2025909	201.2889709	87.09550476	29.70358658	2.331759691
07-Oct-00 15:28:00	1140.660767	11788.63379	87.4375	155.1550903	201.2786713	87.09505463	29.70365143	2.328472376
07-Oct-00 15:29:00	1141.620605	11787	87.66130829	155.2997589	201.2683716	87.09461212	29.70371628	2.325184822
07-Oct-00 15:30:00	1141.184692	11787	87.51845551	155.5947876	201.2580719	87.09416199	29.70378304	2.321897268
07-Oct-00 15:31:00	1138.393799	11799.47461	87.21591187	156.0027466	201.2487488	87.09371185	29.70384789	2.318609715
07-Oct-00 15:32:00	1137.843506	11810	87.08333588	155.7193909	201.2429657	87.09326935	29.70391273	2.315322161
07-Oct-00 15:33:00	1137.415649	11797.55762	86.29130554	155.9645233	201.2371826	87.09281921	29.70397758	2.312034607
07-Oct-00 15:34:00	1137.286133	11788.86621	86.1745224	155.776535	201.2313995	87.09236908	29.70404243	2.308747053
07-Oct-00 15:35:00	1137.674072	11802.7666	86.05773926	155.5466156	201.2256012	87.09192657	29.70410728	2.305459499
07-Oct-00 15:36:00	1138.509155	11811.63379	85.94096375	155.6794281	201.2198181	87.09147644	29.70417404	2.302172184
07-Oct-00 15:37:00	1139.344238	11810	85.8241806	155.7447968	201.214035	87.09102631	29.70423889	2.29888463
	1139.637915	11811.01327	86.56963886	155.6206675	201.4966881	87.10445692	29.70379301	2.290010214

TECO
TAMPA ELECTRIC

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NOV 17 2000
BUREAU OF AIR REGULATION

November 10, 2000

Mr. W.A. Proses
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619

Via FedEx
Airbill No. 7923 8144 8615

Re: Polk Power Station Unit 2 Fuel Oil Fired Initial Compliance Testing

Dear Mr. Proses:

Please find enclosed the final test report addressing the initial compliance test of Polk Unit 2 while firing distillate oil.

If you have any questions, please feel free to call Shannon Todd or me at (813) 641-5125.

Sincerely,

Patrick L. Shell
Administrator – Air Programs
Environmental Affairs

Enclosure

EP\gm\SKT207

c(enc): Mr. A. Linero – FDEP
Mr. H. Oven – FDEP
Mr. S. Sheplak – FDEP
Mr. J. Kissel – FDEP SW

TEST REPORT
on
EXHAUST EMISSIONS

from a
GENERAL ELECTRIC PG7241FA
SIMPLE CYCLE POWER TURBINE

at the
POLK POWER STATION

located in
POLK COUNTY, FLORIDA

Prepared for

TAMPA ELECTRIC COMPANY

September, 2000

Cubix Job No. 5906

Prepared by

Cubix Corporation
http://www.cubixcorp.com

CORPORATE HEADQUARTERS
9225 US Hwy. 183 South, Austin, TX 78747
(512) 243-0202 TEL (512) 243-0222 FAX

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INTRODUCTION

Emission testing was conducted on a simple cycle combustion turbine manufactured by General Electric (GE). The unit, used to generate power, was recently installed at the Polk Power Station located in Mulberry, Polk County, Florida. Tampa Electric Company (TECO) owns and operates this facility. This report documents the testing of the turbine engine while firing with No.2 fuel oil. A separate report will be provided for the testing of this unit while fueled with natural gas. The testing was conducted by Cubix Corporation.

The purpose of this testing was to determine the status of compliance for turbine engine emissions with the permit limits set forth by the Florida Department of Environmental Protection (FDEP), Permit Number PSD-FL-263. Additionally, the emissions were measured to determine compliance with the Environmental Protection Agency (EPA) regulation entitled "Standards of Performance for Stationary Gas Turbines", 40 CFR 60, Subpart GG. The tests followed the procedures set forth in 40 CFR 60, Appendix A, Methods 1, 2, 3a, 9, 10, 19, 20, and 25a.

Turbine exhaust was analyzed for oxides of nitrogen (NO_X), carbon monoxide (CO), total unburned hydrocarbons (UHC), oxygen (O_2), and carbon dioxide (CO_2) using continuous instrumental monitors. Volatile organic compounds (VOC) were determined from the product of UHC and the fraction of non-methane/non-ethane hydrocarbons contained in the exhaust. Gaseous analyses were performed on a dry basis for all compounds except hydrocarbons. Laboratory analyses were conducted on samples of the distillate fuel obtained from the fuel storage tank during the testing schedule. Table 1 provides background data pertinent to these tests.

This test report has been reviewed and approved for submittal to the Florida Department of Environmental Protection (FDEP) by the following representatives:

Tampa Electric Company

Cubix Corporation

TABLE 1
BACKGROUND DATA

Owner/Operator:	**Tampa Electric Company** 702 N Franklin Street Tampa, Florida 33602 (813) 228-1111, ext. 39109 TEL (863) 428-5927 FAX Attn: Mike Perkins
Testing Organization:	**Cubix Corporation, Headquarters** 9225 U.S. Highway 183 South Austin, Texas 78747 (512) 243-0202 TEL (512) 243-0222 FAX Attn: Jim Barufaldi
Test Participants:	**Tampa Electric Company** David Smith **Cubix Corporation** Jim Barufaldi Jeremiah Jarrell Nick Garcia
Test Dates:	September 13 and 15, 2000
Facility Location:	Polk County Power Station 9995 Sate Road 37 South Mulberry, Florida 33860
Process Description:	One simple cycle combustion turbine is used to generate electrical power. The unit, GE Model PG7241FA, consists of a single shaft gas turbine directly connected to a 60 Hz power generator. The turbine is fueled on either distillate oil or natural gas.

Regulatory Application:	State of Florida, Department of Environmental Protection (FDEP) Permit No. PSD-FL-263 and EPA New Source Performance Standards (NSPS) 40 CFR 60, Subpart GG.
Sampling Location:	The exhaust stack is a circular stack 114' tall with a diameter of 18'. Four 4" sample ports were located 90° from each other at 106' above grade. Access to the sample ports was provided with a permanently mounted steel grate service platform equipped with a caged safety ladder.
Test Methods:	EPA Method 1 for O_2 and particulate matter traverse point locations.
	EPA Method 2 for stack gas pressure head measurements.
	EPA Method 3a for CO_2 concentrations.
	EPA Method 9 for opacity observations.
	EPA Method 10 for CO concentrations.
	EPA Method 19 for the calculation of volumetric flow and pollutant mass emission rates.
	EPA Method 20 for NO_X and O_2 concentrations.
	EPA Method 25a for UHC concentrations.

SUMMARY OF RESULTS

Exhaust emissions from a GE PG7241FA combustion turbine (CT) were tested to determine the quantity of emissions being vented to the atmosphere. Testing was conducted on the unit while fired with on No.2 fuel oil. Tests were performed at four different combustion turbine loads: approximately 80 MW generator output, ~112 MW generator output, ~ 136 MW generator output, and full capacity 160 MW generator output.

The first step in the test matrix consisted of conducting the initial O_2-traverse of the exhaust stack. The turbine was set to 80 MW with the water injection system operating. O_2 concentrations were measured at 48 traverse points within the stack to determine the eight points of lowest O_2 concentration. No stratification was found at any of the 48 points; therefore, all subsequent tests were conducted at the eight most convenient traverse points.

Following the O_2-traverse, Cubix conducted three test runs at four load conditions across the operational range of the CT (~80 MW, ~112 MW, ~136 MW, and capacity at ~160 MW). Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Capacity is defined as 90 to 100% of the maximum permitted capacity, expressed as heat input, defined from the GE performance curve for the unit. NO_X, CO_2, O_2, and UHC were continuously monitored at all load conditions. Additional base load measurements included opacity. The base load test runs were 1 hour in duration for all constituents. Opacity results can be found in Appendix G of this report.

The executive summary, Table 2, signifies the performance of the unit during the full load testing. This performance is an average of the three full load test runs. These emissions are compared to FDEP Permit No. PSD-FL-263. These conditions include the maximum allowable emissions from the combustion turbine firing No.2 fuel oil. Based upon the FDEP permit, the maximum allowable NO_X emissions at 15% O_2 were 42 ppmv, dry basis.

Table 1

~~TALBE~~ 2

Executive Summary

Base Load Conditions

Parameter	Gas Turbine Emissions	NSPS/FDEP Permit Limits
NO_X @ 15% O_2 (ppmv dry basis)	41.45	42
NO_X (lbs/hr)	235.8	319
CO @ 15% O_2 (ppmv dry basis)	1.05	20
CO (lbs/hr)	3.6	65
VOC @ 15% O_2 (ppmv dry basis)	0.1	3.5
VOC (lbs/hr)	0.133	7
SO_2 (% weight)	0.04%	0.05%
SO_2 (lbs/hr)	59.1	98.1
Visible Emissions (% Opacity)	0 %	10%

Table 3 represents the reduced load test results for the combustion turbine testing. This tabular summary contains all pertinent operational parameters, ambient conditions, Cubix measurements, the calculated emission rates, and corrected concentrations. NO_X emissions are reported in terms of ppmvd (dry basis), ppmvd at 15% O_2, and lbs/hr. CO emissions are reported as ppmvd and lbs/hr. SO_2 emission units are reported in % weight, ppmvd @ 15% O_2, lbs/hr and lbs/MMBtu of fuel burned. VOC emissions are reported in terms of lbs/hr and lbs/MMBtu of fuel burned.

Table 4 summarizes the results of the base load test on the combustion turbine. This table provides the same data as Table 3 with the addition of the opacity measurements.

Appendix A contains all field data sheets used during these tests. Appendix B contains examples of all calculations necessary for the reduction of the data presented in this section of the report. Appendix F contains the strip charts used to record the NO_X, CO, VOC, O_2, and CO_2 concentrations. A data logger was also utilized during the tests for quick, convenient checks of concentrations; however, the strip chart records provided the data used for presentation of the results included in this report. Appendix H contains the operational data provided by General Electric during the test runs. The operational data was recorded in the control room on computer printouts at 20-minute intervals during each test run. The operational data reported in the summary tables is an average of the readings recorded during the gaseous test period of each run. Appendix G contains all VE readings.

TABLE 3: Summary of Results Reduced Loads

Test Number	Run 1	Run 2	Run 3		Run 1	Run 2	Run 3		Run 1	Run 2	Run 3	
Date:	9/15/2000	9/15/2000	9/15/2000		9/15/2000	9/15/2000	9/15/2000		9/15/2000	9/15/2000	9/15/2000	
Start Time	6:11	6:36	7:01		7:44	8:09	8:34		9:20	9:45	10:10	
Stop Time	6:31	6:56	7:21		8:04	8:29	8:54		9:40	10:05	10:30	
Operation	50% Load	50% Load	50% Load		70% Load	70% Load	70% Load		85% Load	85% Load	85% Load	
Turbine Load (MW)	80.2	80.5	79.7		112.4	112.7	112.6		136.3	136.6	136.5	
Ambient Conditions												
Temperature (°F wet)	75	76	76		76	77	77		78	78	78	
Temperature (°F dry)	78	78	79		80	81	82		83	83	83	
Barometer (in. Hg)	29.74	29.75	29.75		29.76	29.77	29.77		29.78	29.80	29.80	
Humidity (lbs/lb of air)	0.0177	0.0185	0.0183		0.0181	0.0187	0.0185		0.0191	0.0191	0.0191	
Fuel Stoichiometric Data												
Fuel Flow (lbs/sec)	13.56	13.38	13.53		16.40	16.36	16.21		18.50	18.58	18.54	
Fuel Flow (MMBtu/hr)	951.09	938.33	949.18		1150.71	1147.91	1136.84		1297.41	1303.28	1300.35	
Fuel Heating Value (BTU/lb-HHV)	19485	19485	19485		19485	19485	19485		19485	19485	19485	
Fuel O2 F-Factor (DSCF/MMBTU)	9225	9225	9225		9225	9225	9225		9225	9225	9225	
Fuel CO2 F-Factor (DSCF/MMBTU)	1436	1436	1436		1436	1436	1436		1436	1436	1436	
Combustion Moisture (vol % @ 0% O2)	12.04	12.04	12.04		12.04	12.04	12.04		12.04	12.04	12.04	
Moisture Content (vol % at stack)	7.67	7.78	7.65		7.90	7.98	7.94		8.16	8.17	8.16	
Fo Factor	1.40	1.39	1.36		1.37	1.36	1.37		1.37	1.37	1.37	
Stack Flow Rates (Dry SCFH)				AVG.				AVG.				AVG.
O2 Stoichiometry	2.19E+07	2.17E+07	2.24E+07	**2.20E+07**	2.56E+07	2.57E+07	2.54E+07	**2.56E+07**	2.84E+07	2.84E+07	2.84E+07	**2.84E+07**
CO2 Stoichiometry	2.28E+07	2.25E+07	2.27E+07	**2.27E+07**	2.62E+07	2.60E+07	2.58E+07	**2.60E+07**	2.89E+07	2.91E+07	2.90E+07	**2.90E+07**
Measured Emissions												
NOx (ppmv)	49.10	50.66	50.29	**50.02**	56.52	56.36	56.68	**56.52**	57.47	57.05	56.96	**57.16**
NOx (ppm @ 15% O2)	34.61	35.92	36.36	**35.63**	38.51	38.58	38.75	**38.61**	38.44	38.08	38.10	**38.21**
CO (ppmvd)	3.38	2.87	2.67	**2.97**	2.91	2.58	2.58	**2.69**	2.30	2.20	2.21	**2.24**
CO (ppmvd @ 15% O2)	2.38	2.04	1.93	**2.12**	1.98	1.77	1.76	**1.84**	1.54	1.47	1.48	**1.50**
O2 (%)	12.53	12.58	12.74	**12.62**	12.24	12.28	12.27	**12.26**	12.08	12.06	12.08	**12.07**
CO2 (%)	5.99	6.00	6.00	**6.00**	6.31	6.33	6.32	**6.32**	6.45	6.44	6.44	**6.44**
VOC (ppmv dry as C1 by M-25a)*	0.10	0.10	0.10	**0.10**	0.10	0.10	0.10	**0.10**	0.10	0.10	0.10	**0.10**
VOC (ppmvd @ 15% O2)	0.07	0.07	0.07	**0.07**	0.07	0.07	0.07	**0.07**	0.07	0.07	0.07	**0.07**
Mass Emissions												
NOx (lbs/hr)	128.5	131.6	134.7	**131.6**	172.9	172.8	171.9	**172.6**	194.7	193.7	193.4	**193.9**
NOx (lbs/MMBTU)	0.135	0.140	0.142	**0.139**	0.150	0.151	0.151	**0.151**	0.150	0.149	0.149	**0.149**
CO (lbs/hr)	5.4	4.5	4.4	**4.8**	5.4	4.8	4.8	**5.0**	4.7	4.5	4.6	**4.6**
CO (lbs/MMBTU)	0.006	0.005	0.005	**0.0050**	0.005	0.004	0.004	**0.0044**	0.004	0.003	0.004	**0.0036**
SO2 (lbs/hr)	38.56	38.04	38.48	**38.36**	46.65	46.54	46.09	**46.42**	52.60	52.84	52.72	**52.72**
SO2 (lbs/MMBtu)	*0.04054*	*0.04054*	*0.04054*	***0.04054***	*0.04054*	*0.04054*	*0.04054*	***0.04054***	*0.04054*	*0.04054*	*0.04054*	***0.04054***
VOC (lbs/MMBTU as C1)	0.0001	0.0001	0.0001	**0.0001**	0.0001	0.0001	0.0001	**0.0001**	0.0001	0.0001	0.0001	**0.0001**
VOC (lbs/hr as C1)	0.091	0.090	0.093	**0.092**	0.106	0.107	0.106	**0.106**	0.118	0.118	0.118	**0.118**

*Measurments at lower detection limit of Analyzer

TABLE 4: Summary of Results Base Load

Test Number	Run 1	Run 2	Run 3	
Date:	9/13/2000	9/13/2000	9/13/2000	
Start Time	17:12	18:23	19:28	
Stop Time	18:12	19:23	20:28	
Operation	100% Load	100% Load	100% Load	
Turbine Load (MW)	159.7	160.0	159.8	
Ambient Conditions				
Temperature (°F wet)	79	79	79	
Temperature (°F dry)	89	91	88	
Barometer (in. Hg)	29.77	29.77	29.77	
Humidity (lbs/lb of air)	0.0186	0.0181	0.0189	
Fuel Stoichiometric Data				
Fuel Flow (lbs/sec)	20.79	20.77	20.79	
Fuel Flow (MMBtu/hr)	1458.30	1456.90	1458.30	
Fuel Heating Value (BTU/lb-HHV)	19485	19485	19485	
Fuel O2 F-Factor (DSCF/MMBTU)	9225	9225	9225	
Fuel CO2 F-Factor (DSCF/MMBTU)	1436	1436	1436	
Combustion Moisture (vol % @ 0% O2)	12.04	12.04	12.04	
Moisture Content (vol % at stack)	8.04	8.00	8.10	
Fo Factor	1.35	1.36	1.36	
Stack Flow Rates (Dry SCFH)				**AVG**
O2 Stoichiometry	3.21E+07	3.18E+07	3.20E+07	**3.20E+07**
CO2 Stoichiometry	3.24E+07	3.23E+07	3.24E+07	**3.24E+07**
Measured Emissions				
NOx (ppmv)	61.02	62.01	62.15	**61.73**
NOx (ppm @ 15% O2)	41.14	41.48	41.72	**41.45**
CO (ppmvd)	1.65	1.55	1.50	**1.57**
CO (ppmvd @ 15% O2)	1.11	1.04	1.01	**1.05**
O2 (%)	12.15	12.08	12.11	**12.11**
CO2 (%)	6.46	6.47	6.46	**6.46**
VOC (ppmv dry as C1 by M-25a)*	0.10	0.10	0.10	**0.10**
VOC (ppmvd @ 15% O2)	0.07	0.07	0.07	**0.07**
Mass Emissions				
NOx (lbs/hr)	234.2	235.9	237.4	**235.8**
NOx (lbs/MMBTU)	0.161	0.162	0.163	**0.162**
CO (lbs/hr)	3.9	3.6	3.5	**3.6**
CO (lbs/MMBTU)	0.003	0.002	0.002	**0.0025**
SO2 (lbs/hr)	59.12	59.06	59.12	**59.10**
SO2 (lbs/MMBtu)	0.04054	0.04054	0.04054	**0.04054**
VOC (lbs/MMBTU as C1)	0.0001	0.0001	0.0001	**0.0001**
VOC (lbs/hr as C1)	0.133	0.132	0.133	**0.133**

PROCESS DESCRIPTION

Tampa Electric Company is the owner of the Polk Power Station which is located in Mulberry, Polk County, Florida. This station contains a simple cycle gas turbine manufactured by General Electric. This unit was installed to provide electrical power to Tampa, Florida and surrounding areas. Emission testing was conducted on the simple cycle unit to determine its compliance status with state and federal regulations. This section of the emission test report provides a brief description of the unit.

The unit is a GE Model PG7241FA 165 MW simple cycle combustion turbine. The main body consists of a single shaft combustion turbine directly coupled to a 60 Hz generator. The facility is designed to provide two fuels to the combustion turbine: distillate oil and natural gas. During fuel oil operation, NO_x emissions are controlled through injection of water into the combustoin chamber. While firing fuel oil, the CT has a base load rating of 165 MW at site conditions of 59°F inlet air temperature, 60% relative humidity, 14.7 psia atmospheric pressure. The FDEP permit has defined the base load of the unit at a heat input of 1800 MMBtu/hr at 59°F while firing fuel oil.

The circular CT/HRSG exhaust stack was utilized for exhaust emission measurements of the turbine testing. The exhaust stack dimensions are depicted in the stack diagram of Appendix A. Four four-inch diameter sample ports are spaced perpendicular to each other. The stack is 114 ft tall and has a diameter of 18 ft. These ports are located 8 ft from the top of the stack (106 ft above ground level). Metal grate service platforms, a caged safety ladder, and a metal grate stairway were installed to provide access to the sample ports.

ANALYTICAL TECHNIQUES

The sampling and analysis procedures used during these tests conformed with those outlined in The Code of Federal Regulations, 40 CFR 60, Appendix A, Methods 1, 2, 3a, 4, 5B, 8 (modified), 9, 10, 18, 19, 20, and 25a. This section of the report describes the analytical techniques and procedures used during these tests.

Samples of the oil used to fuel the turbine were collected into 1 L bottles on a daily basis during the test schedule. The samples were analyzed by TECO's lab. The fuel oil samples were analyzed for composition (C, H, and O), specific gravity, both higher and lower heat value, and total sulfur content. All sample procedures were submitted to FDEP in Cubix's emission test plan. These procedures were approved by FDEP prior to analysis of the oil samples. Results of these analyses along with chain-of-custody forms are in Appendix C of this report.

The turbine was tested at four load conditions. Measurements of NO_X, CO, VOC, opacity, CO_2, and O_2 were performed during base load tests. At reduced loads, NO_X, CO, VOC, CO_2, and O_2 were measured. Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Three 60 minute test runs were conducted at base load for all components. All compounds were measured on a dry basis except hydrocarbons.

Provisions were made to introduce the calibration gases to the instrumental monitors via two paths: 1) directly to the instruments via the sample manifold quick-connects and rotometers, and 2) through the complete sampling system including the sample probe, filter, heat trace, condenser, manifold, and rotometers. The former method was used for quick, convenient calibration checks. The latter method was used to demonstrate that the sample was not altered due to leakage, reactions, or adsorption within the sampling system (sample system bias check). A NO_X standard calibration gas was introduced into the NO_X analyzer directly. Then the response from the NO_X analyzer was noted as the calibration gas was introduced at the probe. Any difference between the two responses in the instrument was attributed to the bias of the sample system. Following the span gas bias check, a zero gas bias check was performed on the NO_X analyzer using nitrogen to check for any zero bias of the sample system. In accordance with EPA Methods 3a, 20, and 25a, this span and zero bias check procedure was repeated for the CO_2, O_2, and UHC analyzers.

As shown in Figure 1, a 1" stainless steel probe was inserted into the sample port of the stack. The gas sample was continuously pulled through the probe and transported via $^3/_8$" heat-traced Teflon® tubing to the mobile laboratory through Teflon® tubing via a stainless steel/Teflon® diaphragm pump and into a heated sample manifold. From the heated manifold, the sample was partitioned to the hydrocarbon analyzers through heated lines. The bulk of the gas stream then passed to a stainless steel minimum contact condenser to dry the sample stream and into the (dry) sample manifold. From the manifold, the sample was partitioned to the analyzers through glass and stainless steel rotometers for flow control of the sample.

All instruments were housed in an air conditioned trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NO_X calibration gases).

EPA Method 1 procedures were used to determine the O_2-traverse point locations for sampling per the requirements of EPA Method 20. The location of the sample ports and the traverse point distances for the turbine are described by the stack diagram located in Appendix A.

The stack gas analyses for CO_2 concentrations were performed in accordance with procedures set forth in EPA Method 3a. Instrumental analyses are usually used by Cubix in lieu of an Orsat or a Fyrite procedure due to the greater accuracy and precision provided by the instruments. The CO_2 analyzer is based on the principle of infrared absorption.

The F_o calculation of EPA Method 3b (Section 3.4.1.1) was used to verify that the ratio of O_2 to CO_2 were within an acceptable range during all runs. In all cases, the F_o fell within the expected values for distillate oil.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose. This analyzer was equipped with a gas correlation filter which eliminates any interference from moisture, CO_2, or other combustion products.

EPA Method 20 was used to determine concentrations of NO_X (via chemiluminescence) and O_2 (via a micro-fuel cell). An initial O_2-traverse was conducted in the CT/HRSG stack; 48 total points were sampled. This test was performed to identify the 8 sample points of lowest O_2 concentration among the sample traverse points. EPA Method 1 was used to determine the location of

these traverse points. No identifiable differences in the O_2 emission concentrations were found during the sampling traverse of the gas turbine's exhaust. After this initial determination of a well mixed exhaust, all subsequent sampling was performed at eight randomly selected points in the stack.

NO_X concentrations were reported in parts per million by volume on a dry basis corrected to 15% O_2. The example calculations can be found in Appendix B. This O_2 correction was made in accordance with the formula published in 40 CFR 60, Method 20.

Total hydrocarbons (THC) concentrations were quantified during the testing using Method 25a. Total hydrocarbons were continuously measured throughout each test run using a flame ionization detector (FID). The THC continuous analyzer was calibrated on methane standards in an air matrix. Thus, the results included in this report are presented on a methane basis. Having the calibration standards in an air basis (i.e. 20.9% O_2) more closely matches the background matrix of the engine exhaust and helps to reduce the effect of O_2 synergism on flame ionization detectors.

The stoichiometric calculations of EPA Method 19 were used to calculate the stack volumetric flow rates and mass emission rates. These calculations are based on the heating value and the O_2 and CO_2 "F-factors" (DSCF of exhaust per MMBtu of fuel burned) for natural gas. Method 19 flow rate determinations are also based on the excess air (as measured from the exhaust diluent concentrations) and the fuel flow rates. EPA Method 19 was used as the stack flow rate measurement technique for all gaseous testing. Fuel samples were analyzed by Adirondack Environmental Services. The results of these analysis can be found in Appendix C of this report. Appendix C also contains Cubix's fuel calculations for the O_2 "F-factor" and gross heating value reported by the laboratory.

Table 5 lists the instruments and detection principals used for gaseous analyses. All data from the continuous monitoring instruments were recorded on two synchronized 3-pen strip chart recorders (Soltec Model 1243). These recorders were operated at a chart speed of 30 centimeters/hour and record over a 25-centimeter width. Strip chart records may be found in Appendix F of this report. A data logger with a computer generated display screen was also used as a convenient means of monitoring the emission concentrations, but the results included in this report were obtained from the strip chart records.

Cubix personnel collected ambient absolute pressure, temperature, and humidity data during each test run. A continuous battery-operated psychrometer utilizing a wet/dry bulb was used to determine temperature and humidity

conditions. An aircraft-type aneroid barometer (altimeter) was used to measure absolute atmospheric pressure.

All emission calculations were conducted by a computer spreadsheet as shown in Tables 3 and 4 of this report. Example calculations were performed manually using a hand-held calculator in order to verify the formulas used in the spreadsheet. Example calculations are located in Appendix B of this report.

The printouts of the operational data are included in Appendix H of this report. The tabular summaries in Summary of Results include the averages for all of the above operational parameters during each test run.

TABLE 5
Analytical Instrumentation

Parameter	Model and Manufacturer	Common Ranges	Sensitivity	Response Time	Detection Principle
NOx	TECO Model 42C	0-10 ppm 0-20 ppm 0-50 ppm 0-100 ppm 0-200 ppm 0-1000 ppm 0-2000 ppm 0-5000 ppm	0.1 ppm	1.7 sec.	Thermal reduction of NO_2 to NO. Chemiluminescence reaction of NO with O_3. Detection by PMT. Inherently linear for listed ranges.
CO	TECO 48	0-10 ppm 0-20 ppm 0-50 ppm 0-100 ppm 0-200 ppm 0-500 ppm 0-1000 ppm	.1 ppm	10 sec.	Infrared absorption, gas filter correlation detector, microprocessor based linearization.
CO_2	Servomex 1410 B	0-4 % 0-20 %	0.02%	30 sec	Infrared absorption, analog linearization.
O_2	Servomex 1420 B	0-10 % 0-25 %	0.10%	15 sec.	Paramagnetic cell, inherently linear.
THC	JUM Model 3-300	0-10, 0-100, 0-1K, 0-10K 0-100K ppm	0.2 ppm	5 sec.	Flame ionization of hydrocarbons inherently linear over 2 orders of magnitude.

NOTE: Higher ranges available by sample dilution
Other ranges available via signal attenuation.

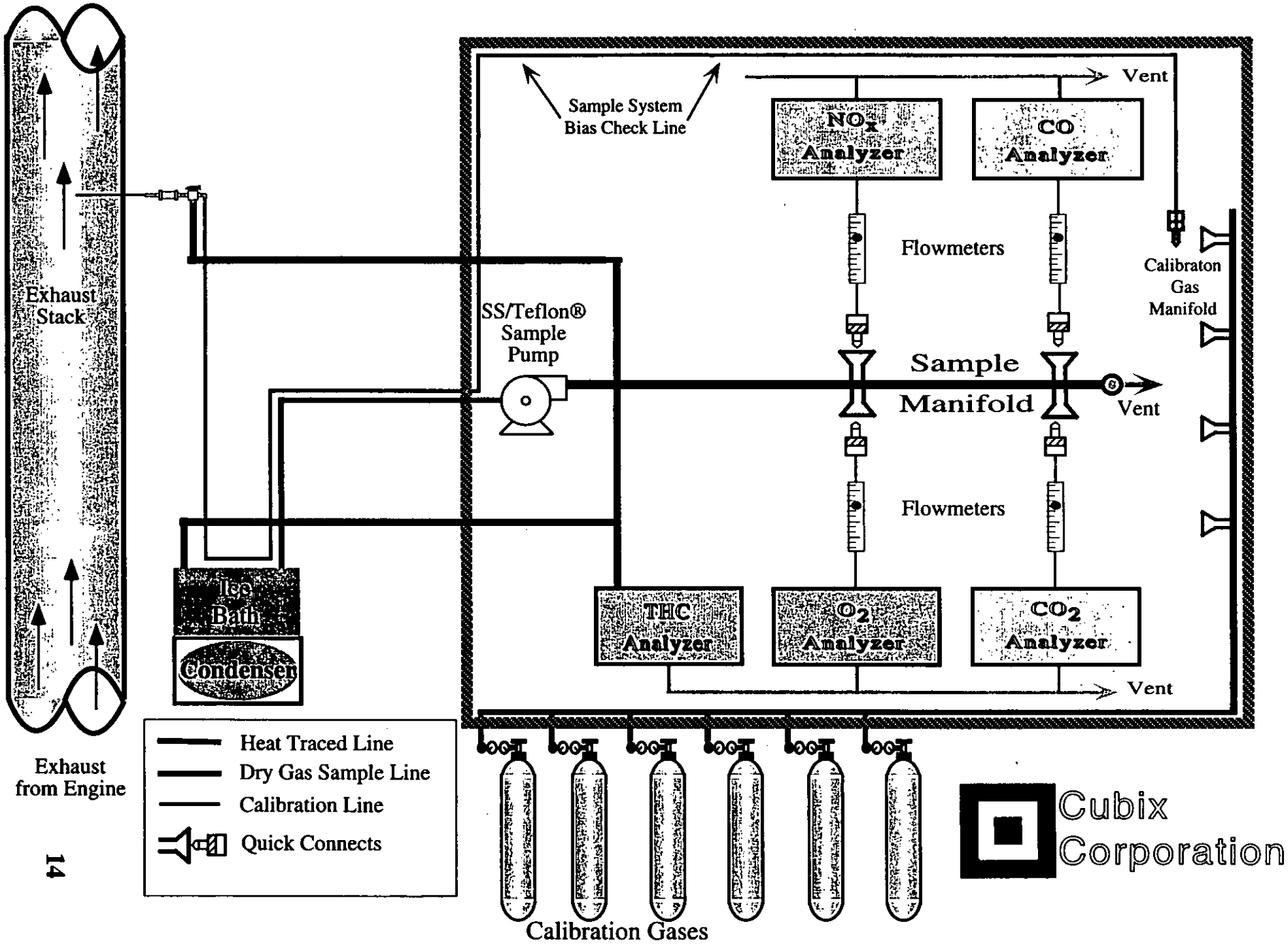


FIGURE 1 : INSTRUMENTAL SAMPLING AND ANALYSIS SYSTEM

QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendices D and E describe each of those activities.

A multi-point calibration was performed for each instrument in the field prior to the collection of data. The instrument's linearity was checked by first adjusting the instrument's zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration. The instrument's response was accepted as being linear if the response of the other calibration gases agree within ± 2 percent of range from the predicted values. (The response of the infrared absorption type CO and CO_2 analyzers is electronically linearized.)

System bias checks were performed both before and after the sampling system was used for emissions testing. The sampling system's integrity was tested by comparing the responses of the NO_X analyzer to a calibration gas (and a zero gas) introduced via two paths as previously described in the *Analytical Techniques* section of this report. This system bias test was performed to assure that no alteration of the sample had occurred during the test due to leakage, reactions, or absorption. Similarly, system bias checks were performed with UHC, O_2, and CO_2 for added assurance of sample system integrity. The results of the system bias checks are available in Appendix D.

Before and after each test run, the analyzers were checked for zero and span drift. This allows each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift no more than ±2 or ±3 percent of the full scale response, depending on the applicable constituent's EPA method. Appendix D contains quality assurance tables which summarize the zero and span checks that were performed for each test run. No drift in excess of each gas constituents calibration requirement was found.

Vacuum leak checks were performed before and after the sampling system was used for emissions testing (i.e. each time the sampling system was set up). Additionally, a vacuum leak check was performed after the sample system was partially disassembled or moved. The sampling system was leak checked by demonstrating that it could hold a vacuum greater than 10" Hg (~23 "Hg actual)

for at least 1 minute with a decline of less than 1" Hg. No leakage was detected at any time during the day of testing. The results of the vacuum leak checks are presented in Appendix D.

The efficiency of the NO_2 to NO converter housed in the NO_X analyzer was checked by having the analyzer sample a mixture of NO in nitrogen standard gas and ambient air from a Tedlar® bag. When this bag is mixed and exposed to sunlight, the NO is oxidized to NO_2 over approximately a 30 minute period. If the NO_X instrument's converter is 100% efficient, the NO_X response will not decline as the NO in the bag is converted to NO_2. The criterion for acceptability is a demonstrated NO_X converter efficiency greater than 90%. The strip charts show that the NO_X concentration remained steady throughout the 30 minute time period. The results of the converter efficiency test are available in Appendix D.

Interference response tests on the instruments were conducted by the instrument vendors and Cubix Corporation on the NO_X, CO, and O_2 analyzers. The sum of the interference responses for H_2O, C_3H_8, CO, CO_2 and O_2 is less than 2 percent of the applicable full scale span value. The instruments used for the tests meet the performance specifications for EPA Methods 3a, 7e, 10, and 20. The results of the interference tests are available in Appendix D of this report.

The residence time of the sampling and measurement system was estimated using the pump flow rate and the sampling system volume. The pump's rated flow rate is 0.8 SCFM at 5 psig. The sampling system volume was $\approx$ 0.21 SCF. Therefore, the minimum sample residence time is approximately 16 seconds.

The NO_X and O_2 sampling and analysis system was checked for response time per the procedures outlined in EPA's Method 20. The average NO_X analyzer's response times were 67.3 seconds upscale and 67.7 seconds down scale. The O_2 analyzer's response times were 60.7 seconds upscale and 65.0 seconds down scale. Method 20 requires a minimum sample time per traverse point of 1-minute plus the average sample system response time. Cubix chose to use 128 seconds per point for the initial O_2 traverses on the turbine and 128 seconds per point during the gaseous constituent compliance tests. The results of these response time tests are contained in Appendix E.

The calibration gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to within $\pm 1\%$ analytical accuracy. EPA Protocol No. 1 was used, where applicable, to assign the concentration values traceable to the National Institute of Standards and Technologies (formally the National Bureau of Standards). Calibration gas certifications may be found in Appendix E of this report.

Appendix E also contains other required additional certifications. The calibration of the altimeter/barometer used during this testing is included. Cubix employee, Dwight Dindial, was certified by the State of Florida to perform visual emission readings by EPA Method 9 procedures. This certification can be found with the observation forms in Appendix G of this report.

Cubix collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Cubix makes no warranty as to the suitability of the test methods. Cubix assumes no liability relating to the interpretation and use of the test data.

APPENDIX A:
FIELD DATA SHEETS

SIGN IN SHEET

Job Name Polk County Electric **DATE(S):** 7/13/00

Job Number 5906 **PERMIT #**

Plant Name/Location Polk County Power - Tampa Electric

Emission Source(s) Unit #2 Simple Cycle

PARTICIPANTS:

CUBIX CORPORATION — Test Contractor

TECO — Owner/Operator

_____ — Regulatory Agency

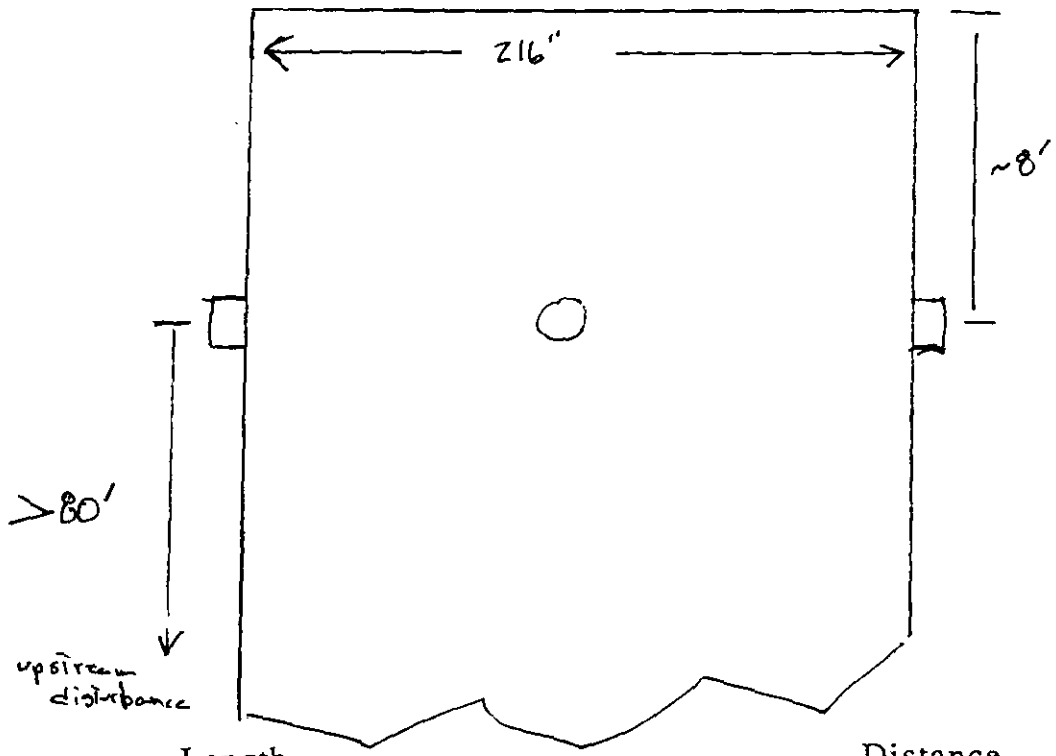
Name:	Affiliation:	Position:	Phone Number	Job Safety Review (Y/N)
Jeremiah Jarrell	Cubix Corp.	Field Tech	512 243 0202	Y
Nick Bare	CUBIX Corp	Tech	512-243-0202	Y
Juan Ramirez	Cubix Corp	Tech	512-243-0202	Y
Sid Casad	Cubix Corp	Tech	512-243-0202	Y
David A. Smith	Tampa Electric	Coordinator	813-630-7382	✓
Jim Werner	Tampa Electric	Technician	813-630-7367	✓

Circular Stack Sampling Traverse Point Layout
(EPA Method 1)

Date: 7/13/00
Plant: Polk Unity Power — Tampa Electric
Source: Unit #2
Technician(s) JB, JJ, NG

Port + Stack ID:: 227" in.
Port Extension 11" in.
Stack ID: 216" in.
Stack Area _____ ft²
Total Req'd Traverse Pts. 48
No. of Traverse Pts. 12 /diam.
No. of Traverse Pts. 6 /port

Stack Diagram (Side View showing major unit components, dimensions and nearest upstream & downstream flow disturbances)



Traverse Point Number	Length Factor (% of diameter) Number of traverse pts./diameter 4	6	8	12	24	Distance from Reference Point (inches)
1	6.7	4.4	3.2	2.1	1.1	2.4
2	25.0	14.6	10.5	8.2	3.2	6.9
3	75.0	29.6	19.4	11.8	5.5	11.9
4	93.3	70.4	32.3	17.7	7.9	17.1
5		85.4	67.7	25.0	10.5	22.7
6		95.6	80.6	35.6	13.2	28.5
7			89.5	64.4	16.1	34.8
8			96.8	75.0	19.4	41.9
9				82.3	23.0	49.7
10				88.2	27.2	58.8
11				93.3	32.3	69.8
12				97.9	39.8	86.0

Cubix Corporation
Air Emission Testing Job Safety Analysis

Job Name Polk Cnty Electric	*Description of Testing Activities:*
Job Number 5906	Compliance For Unit 2
Project Mgr. Jim Barufaldi	Turbine
Plant Contact David Smith	
Date 9/13/00 6Oct 00	

Permits Required (Y or N)		Personal Protective Equipment Required (Y or N)			
Hot Work		hard hat	✓	acid suit	
Cold Work		ear plugs/muffs	✓	rubber boots	
Lock & Tag		safety glasses	✓	monogoggles	
Scaffolding		steel toed shoes	✓	face shield	
Crane/Lift		gloves	✓	safety harness	
Line Break		hot gloves	✓	respirator	

Emergency Response			
Safe Haven Location: Safety office lot		Alarm Knowledge (list type of sound)	None
Wind Direction: N NE E SE S SW W NW		Evacuate:	Fire
Evacuation Route		Poison Gas:	All Clear:
Assembly Points		Other	
Plant Map Reviewed/ Posted (Y or N)			

Emergency Equipment Location Identified (Y or N)		
fire monitors		
fire extinguishers	✓ Trailer	
safety showers		
escape air	6min escape	

HOB/HAZARD IDENTIFIED (circle)	PRECAUTIONS (circle items completed or required)		
Hazardous Materials			
flammability, reactivity, health hazards	MSDS reviewed		
Environmental Hazards			
airborne particulate	respirator		
heat stress	liquid intake	shade breaks	
cold weather/frostbite	cold weather clothing	gloves	hard hat liner
inadequate lighting	flash light/head lamp	night lighting	
noise	hearing protection		
poor access/egress	housekeeping	alternate route	
Chemical Hazards			
asfixiation	carcinogen	**Respiratory**	**Protective Clothing**
poison gas	chemical burns	supplied fresh air	slicker suit
chemical eye exposure	chemical skin exposure	SCBA	acid suit
flammable gas	flamable liquid	respirator	rubber boots
strong acid	strong base	escape pack	monogoggles
		exposure dosiometer	face shield
Equipment/lifting			
test equipment hoisting (pulley/boom)	equipment secure	clear lift zone	
fork lift	certification reviewed	rope condition	
man lift (hydraulic)	guy lines	harness	
personnel basket (crane)	radios/handsignals	guard rails, toe plates	
stairs/ladders	housekeeping	braces/tie offs	
rigging	lines secure	monorails secure	
scaffold	secure tools	hard hats	

APPENDIX B:
EXAMPLE CALCULATIONS

NOx, CO Correction to 15% O2
Refers to test Run 1 Base Load for NOx

Measured NOx emissions (NOx Meas) = C_{gas} = 61.02 ppmv
Measured O_2 emissions (C_{O2}) = 12.15% (from analyzer)

$$NOx\ @\ 15\ \%\ O_2 = \frac{(NOx\ Meas\ x\ (20.9 - 15.0))}{(20.9 - C_{O2})}$$

$$NOx\ @\ 15\ \%\ O_2 = \frac{(61.02 \times 5.9)}{(20.9 - 12.15)}$$

$NOx\ @\ 15\ \%\ O_2$ = 41.14 ppmv

Flow Rate in Stack by O2 F Factor (Qd)
Refers to test Run 1 Base Load

Fg = Fuel flow rate.
Fg = 20.79 lbs/sec

Htg = heating value of fuel from fuel analysis calculations
Htg = 19485 BTU/lb = 0.019485 MMBTU/lb

H = heat rate of turbine = Fg x Htg = 20.79 x 3600 x 0.019485
H = 1458.30 MMBTU/hr

For this fuel the products of combustion (i.e. based on combustion stoichiometry) were determined to be 8776 dry SCF/MMBTU of fuel burned

O2f = O2 F-factor = 9225 DSCF/MMBTU

O2 = O2 concentration in stack (from O2 analyzer) = 12.15 vol%

O2 in ambient air = 20.9 vol %

Qd = Flow rate in stack = H x O2f x 20.9 / (20.9 - O2)
Qd = 1458.30 x 9225 x 20.9 / (20.9 – 12.15)
Qd = 3.21 x 10^7 DSCF/hr

NOx, CO, VOC Mass Emission Rate
Refers to Test Run 1 Base Load for NOx

E_{NOx} = NOx mass emission rate

NOx = NOx concentration (drift corrected only) = 61.02 ppmvd

Qd = stack flow rate = 3.21 x 10^7 DSCFH

MW = molecular weight of NOx = 46.01 lb/lb-mole

R = ideal gas constant = 385.15 SCF/lb/mole

E_{NOx} = NOx mass emission rate
E_{NOx} = (NOx / 1000000) x Qd x MW / R
E_{NOx} = (61.02 / 1000000) x 3.21 x 10^7 x 46.01 / 385.15
E_{NOx} = 234.2 lbs/hr

SO_2 Emission Rate Calculation (E_{SO2})
Refers to distillate fuel oil analysis for turbine #2 and run T2-FO-1 (turbine 2, fuel oil fire, test run 1)

Sw = Sulfur content of fuel (from fuel analysis)
Sw = 0.04 % by weight of sulfur

Fg = Fuel flow to turbine (averaged Mark V data for run T2-FO-1)
Fg = 20.79 lbs/sec

MWso2 = molecular weight of SO2 = 64 lb/lb-mole

MWs = molecular weight of sulfur = 32 lb/lb-mole

E_{SO2} = SO_2 Emission Rate (lbs/hr)
E_{SO2} = (Sw / 100) x Fg x MWso2 / MWs
E_{SO2} = (0.04 / 100) x 20.79 x 3600 x 64 / 32
E_{SO2} = 59.12 lbs/hr

APPENDIX C:
FUEL ANALYSIS

TECO TAMPA ELECTRIC

Environmental Affairs
Laboratory Services

5012 Causeway Blvd * Tampa Fl. 33619 * Ph (813)630-7378 * Fax (813)630-7360 * CompQAP #910140G * DOH #E54272

Wednesday, October 11, 2000

Report For: Fuel Data Coord., Envir. Plan.
Stack Test Coord., Air Programs

Sample Information

Sample ID: **AA56809**
Location Code: PK-STK-2
Location Description: Polk Power, Stack Test, Unit 2

Lab Submittal Date: 09/18/00
Sample Collection Date: 09/13/00
Sample Collector: POLK POWER

Laboratory Results

Parameter	Result	Unit	MDL	Lower Limit	Upper Limit	Violation
API Gravity @ 60 Deg. F	35.0	Degrees API	0.1			
Carbon	87.2	%	0.1			
Fuel Bound Nitrogen in Liquid Petroleum	110	ppm				
Gross Heat of Combustion, Oils, (HHV)	19476	BTU/Lb.	1			
Gross Heat of Combustion, Oils, (HHV)	137812	BTU/Gal.	1			
Hydrogen	12.7	%	0.1			
Nitrogen	Not requested	%	0.1			
Pounds / Gallon @ 60 Deg. F	7.076	Lbs./Gal.	0.001			
Pounds SO2 / Million BTU, Oil	0.04054	Lbs.				
Relative Density 60/60 Deg. F	0.8498		0.0001			
Sulfur in Petroleum Products	0.04	%	0.02			

Comments:

Results for %Carbon and %Hydrogen are normalized.

TECO
TAMPA ELECTRIC

Environmental Affairs
Laboratory Services

5012 Causeway Blvd * Tampa Fl. 33619 * Ph (813)630-7378 * Fax (813)630-7360 * CompQAP #910140G * DOH #E54272

Wednesday, October 11, 2000

Report For: Fuel Data Coord., Envir. Plan.
Stack Test Coord., Air Programs

Sample Information

Sample ID: **AA56810**
Location Code: PK-STK-2
Location Description: Polk Power, Stack Test, Unit 2

Lab Submittal Date: 09/18/00
Sample Collection Date: 09/15/00
Sample Collector: POLK POWER

Laboratory Results

Parameter	Result	Unit	MDL	Lower Limit	Upper Limit	Violation
API Gravity @ 60 Deg. F	35.0	Degrees API	0.1			
Carbon	87.1	%	0.1			
Fuel Bound Nitrogen in Liquid Petroleum	100	ppm				
Gross Heat of Combustion, Oils, (HHV)	19493	BTU/Lb.	1			
Gross Heat of Combustion, Oils, (HHV)	137933	BTU/Gal.	1			
Hydrogen	12.8	%	0.1			
Nitrogen	Not requested	%	0.1			
Pounds / Gallon @ 60 Deg. F	7.076	Lbs./Gal.	0.001			
Pounds SO2 / Million BTU, Oil	0.04051	Lbs.				
Relative Density 60/60 Deg. F	0.8498		0.0001			
Sulfur in Petroleum Products	0.04	%	0.02			

Comments:

Results for %Carbon and %Hydrogen are normalized.

APPENDIX D:
QUALITY ASSURANCE ACTIVITIES

T-5 Interference Response Analyzer Checks

Interference Response Checks

(Frequency: Prior to initial use of sampling system or after alteration or modification.)

Test Date: 8/1/2000 *Technician:* RJK

Analyzer	Make	Model	Serial Number	Detection Method
NOx Analyzer	TECO	42C	42 CEL-64933-345	Chemiluminescence with Ozone
CO Analyzer	TECO	48H	48-42825-268	Infrared Absorption/GFC Detector
O2 Analyzer	Servomex	1400	1420/B701/591	Paramagnetic
CO2 Analyzer	Servomex	1400	1410/B570	Infrared Absorption/Solid State Detector

Interferrent Test Gases		Analyzer Response (ppmv or % as applicable)			
Type Gas	Conc.	NOx	CO	O2	CO2
NOx in N2	4042 ppmv		0.30 ppmv	0.15%	0.00%
CO/C1 in Air	3934 ppmv	0.00 ppmv			0.00%
Moisture	4%	0.00 ppmv	0.00 ppmv	0.00%	0.00%
SO2 in N2	4400	1.70 ppmv	0.00 ppmv	0.00%	0.00%
O2 in N2	15%	0.00 ppmv	0.10 ppmv		0.00%
O2/CO2 in N2	12.63%/10.06%	0.00 ppmv	0.50 ppmv		

Oil 100% Load Run 1	9/13/2000	17:12:20	18:12:20			
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**
NOx (ppmv)	62.77	61.02	24.2	45.6	81.6	100
CO (ppmv)	1.5	1.65	15.27	25.1	45	50
O2 (%)	12.12	12.15	3.99	12.46	20.8	25
CO2 (%)	6.47	6.46	5.04	9.99	18.01	25
THC (ppmv)	-1.01	-0.83	14.92	25.5	44.9	50

	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**
NOx (ppmv)	-0.26	23.77	45.56	81.09	0.43	0.04	0.51
CO (ppmv)	0.08	15.14	24.9	44.92	0.27	0.4	0.16
O2 (%)	0.02	4.02	12.38	20.84	-0.1	0.3	-0.18
CO2 (%)	0	4.96	9.91	18.07	0.33	0.34	-0.23
THC (ppmv)	-0.02	14.69	25.3	44.92	0.46	0.4	-0.05

	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**
NOx (ppmv)	-0.61	84.18	-0.49	84.08	-0.23	2.99	-0.12	0.1
CO (ppmv)	-0.37	46.14	0	45.23	-0.17	0.62	-0.74	1.81
O2 (%)	0.02	20.54	0.05	20.87	0.14	0.12	-0.14	-1.33
CO2 (%)	0	18.07	0	18	0.02	-0.27	-0.02	0.27
THC (ppmv)	-0.07	44.85	-0.27	45.28	-0.5	0.72	0.4	-0.86

Oil 100% Load Run 2	9/13/2000	18:23:05	19:23:05			
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**
NOx (ppmv)	61.89	62.01	24.2	45.6	81.6	100
CO (ppmv)	1.69	1.55	15.27	25.1	45	50
O2 (%)	12.12	12.08	3.99	12.46	20.8	25
CO2 (%)	6.47	6.47	5.04	9.99	18.01	25
THC (ppmv)	-1.09	-0.77	14.92	25.5	44.9	50

	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**
NOx (ppmv)	-0.26	23.77	45.56	81.09	0.43	0.04	0.51
CO (ppmv)	0.08	15.14	24.9	44.92	0.27	0.4	0.16
O2 (%)	0.02	4.02	12.38	20.84	-0.1	0.3	-0.18
CO2 (%)	0	4.96	9.91	18.07	0.33	0.34	-0.23
THC (ppmv)	-0.02	14.69	25.3	44.92	0.46	0.4	-0.05

	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**
NOx (ppmv)	-0.49	81.18	-0.49	82.02	-0.23	0.93	0	-0.84
CO (ppmv)	0	45.23	0.24	45.91	0.32	1.97	-0.49	-1.36
O2 (%)	0.05	20.87	0.05	20.78	0.14	-0.26	0	0.38
CO2 (%)	0	18	0	18	0	-0.25	0.02	-0.02
THC (ppmv)	-0.27	45.28	-0.34	44.91	-0.64	-0.02	0.14	0.74

Oil 100% Load Run 3	9/13/2000	19:28:04	20:28:04			
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**
NOx (ppmv)	62.9	62.15	24.2	45.6	81.6	100
CO (ppmv)	1.77	1.5	15.27	25.1	45	50
O2 (%)	12.13	12.11	3.99	12.46	20.8	25
CO2 (%)	6.47	6.47	5.04	9.99	18.01	25
THC (ppmv)	-1.03	-0.68	14.92	25.5	44.9	50

	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**
NOx (ppmv)	-0.26	23.77	45.56	81.09	0.43	0.04	0.51
CO (ppmv)	0.08	15.14	24.9	44.92	0.27	0.4	0.16
O2 (%)	0.02	4.02	12.38	20.84	-0.1	0.3	-0.18
CO2 (%)	0	4.96	9.91	18.07	0.33	0.34	-0.23
THC (ppmv)	-0.02	14.69	25.3	44.92	0.46	0.4	-0.05

	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**
NOx (ppmv)	-0.49	82.02	-0.49	83.47	-0.23	2.37	0	-1.44
CO (ppmv)	0.24	45.91	0.24	46.37	0.32	2.89	0	-0.92
O2 (%)	0.05	20.78	0.03	20.82	0.05	-0.09	0.09	-0.17
CO2 (%)	0	18	0.01	17.97	0.06	-0.4	-0.06	0.15
THC (ppmv)	-0.34	44.91	-0.34	44.63	-0.64	-0.58	0.01	0.55

Oil 50% Load Run 1	9/15/2000	6:11:50	6:31:50						
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**			
NOx (ppmv)	48.83	49.1	24.2	45.6	81.6	100			
CO (ppmv)	3.85	3.38	15.27	25.1	45	50			
O2 (%)	12.59	12.53	3.99	12.46	20.8	25			
CO2 (%)	5.98	5.99	5.04	9.99	18.01	25			
THC (ppmv)	-0.09	-0.12	14.92	25.5	44.9	50			
	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**	
NOx (ppmv)	-0.38	80.26	-0.42	82.58	0.09	1.34	0.04	-2.32	
CO (ppmv)	0.49	45.17	0.49	45.16	0.04	0.46	0	0.02	
O2 (%)	0.09	20.55	0.69	20.72	2.78	-0.59	-2.38	-0.71	
CO2 (%)	0	17.95	0	17.97	0	-0.34	0	-0.1	
THC (ppmv)	-0.02	44.81	0.08	44.71	0.28	-0.27	-0.21	0.2	

Oil 50% Load Run 2	9/15/2000	6:36:58	6:56:58						
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**			
NOx (ppmv)	51.24	50.66	24.2	45.6	81.6	100			
CO (ppmv)	3.35	2.87	15.27	25.1	45	50			
O2 (%)	12.58	12.58	3.99	12.46	20.8	25			
CO2 (%)	5.98	6	5.04	9.99	18.01	25			
THC (ppmv)	-0.2	-0.28	14.92	25.5	44.9	50			
	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**	
NOx (ppmv)	-0.42	82.58	-0.32	82.95	0.19	1.7	-0.1	-0.37	
CO (ppmv)	0.49	45.16	0.5	45.17	0.07	0.47	-0.03	-0.01	
O2 (%)	0.69	20.72	-0.34	20.65	-1.33	-0.89	4.11	0.3	
CO2 (%)	0	17.97	0	17.94	0	-0.46	0	0.12	
THC (ppmv)	0.08	44.71	0.07	44.67	0.26	-0.34	0.03	0.08	

Oil 50% Load Run 3	9/15/2000	7:01:50	7:21:51						
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**			
NOx (ppmv)	50.71	50.29	24.2	45.6	81.6	100			
CO (ppmv)	3.15	2.67	15.27	25.1	45	50			
O2 (%)	12.63	12.74	3.99	12.46	20.8	25			
CO2 (%)	5.98	6	5.04	9.99	18.01	25			
THC (ppmv)	-0.43	-0.44	14.92	25.5	44.9	50			
	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**	
NOx (ppmv)	-0.32	82.95	-0.47	82.11	0.04	0.87	0.15	0.84	
CO (ppmv)	0.5	45.17	0.49	45.31	0.04	0.75	0.03	-0.28	
O2 (%)	-0.34	20.65	0.14	20.74	0.59	-0.52	-1.91	-0.37	
CO2 (%)	0	17.94	0	17.94	0	-0.46	0	0	
THC (ppmv)	0.07	44.67	-0.05	44.59	0.02	-0.51	0.23	0.16	

Oil 70% Load Run 1	9/15/2000	7:44:47	8:04:47						
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**			
NOx (ppmv)	56.71	56.52	24.2	45.6	81.6	100			
CO (ppmv)	3.38	2.91	15.27	25.1	45	50			
O2 (%)	12.22	12.24	3.99	12.46	20.8	25			
CO2 (%)	6.29	6.31	5.04	9.99	18.01	25			
THC (ppmv)	-0.48	-0.45	14.92	25.5	44.9	50			
	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**	
NOx (ppmv)	-0.47	82.11	-0.45	82.02	0.06	0.78	-0.02	0.09	
CO (ppmv)	0.49	45.31	0.49	45.21	0.04	0.55	0	0.2	
O2 (%)	0.14	20.74	-0.03	20.71	-0.1	-0.64	0.69	0.12	
CO2 (%)	0	17.94	0	17.97	0	-0.34	0	-0.12	
THC (ppmv)	-0.05	44.59	-0.01	44.59	0.09	-0.51	-0.07	0	

Oil 70% Load Run 2	9/15/2000	8:09:58	8:29:58						
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**			
NOx (ppmv)	56.35	56.36	24.2	45.6	81.6	100			
CO (ppmv)	3.05	2.58	15.27	25.1	45	50			
O2 (%)	12.23	12.28	3.99	12.46	20.8	25			
CO2 (%)	6.31	6.33	5.04	9.99	18.01	25			
THC (ppmv)	-0.51	-0.47	14.92	25.5	44.9	50			
	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**	
NOx (ppmv)	-0.45	82.02	-0.42	81.54	0.09	0.3	-0.03	0.48	
CO (ppmv)	0.49	45.21	0.49	45.16	0.05	0.46	-0.01	0.09	
O2 (%)	-0.03	20.71	0.01	20.72	0.1	-0.58	-0.2	-0.06	
CO2 (%)	0	17.97	0	17.95	0	-0.44	0	0.1	
THC (ppmv)	-0.01	44.69	-0.08	44.83	-0.04	-0.04	0.13	-0.27	

Oil 70% Load Run 3	9/15/2000	8:34:57	8:54:57						
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**			
NOx (ppmv)	56.25	56.68	24.2	45.6	81.6	100			
CO (ppmv)	3.05	2.58	15.27	25.1	45	50			
O2 (%)	12.24	12.27	3.99	12.46	20.8	25			
CO2 (%)	6.3	6.32	5.04	9.99	18.01	25			
THC (ppmv)	-0.6	-0.54	14.92	25.5	44.9	50			
	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	**S-Lin**		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**	
NOx (ppmv)	-0.42	81.54	-0.39	80.77	0.12	-0.48	-0.03	0.78	
CO (ppmv)	0.49	45.16	0.49	45.16	0.04	0.46	0.01	0	
O2 (%)	0.01	20.72	0.03	20.73	0.17	-0.57	-0.07	-0.01	
CO2 (%)	0	17.95	0	17.95	0	-0.45	0	0.01	
THC (ppmv)	-0.08	44.83	-0.04	44.82	0.04	-0.05	-0.08	0.01	

Oil 85% Load Run 1	9/15/2000	9:20:05	9:40:05			
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**
NOx (ppmv)	56.72	57.47	24.2	45.6	81.6	100
CO (ppmv)	2.77	2.3	15.27	25.1	45	50
O2 (%)	12.08	12.08	3.99	12.46	20.8	25
CO2 (%)	6.44	6.46	5.04	9.99	18.01	25
THC (ppmv)	-0.72	-0.63	14.92	25.5	44.9	50

	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	S-Lin
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11

	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**
NOx (ppmv)	-0.39	80.77	-0.41	80.64	0.1	-0.61	0.02	0.13
CO (ppmv)	0.49	45.14	0.49	45.2	0.04	0.54	0	-0.12
O2 (%)	0.03	20.73	0.05	20.79	0.25	-0.31	-0.08	-0.26
CO2 (%)	0	17.95	0	17.99	0	-0.26	0	-0.19
THC (ppmv)	-0.04	44.82	-0.14	45.41	-0.16	1.12	0.19	-1.17

Oil 85% Load Run 2	9/15/2000	9:45:01	10:05:01			
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**
NOx (ppmv)	56.25	57.05	24.2	45.6	81.6	100
CO (ppmv)	2.71	2.22	15.27	25.1	45	50
O2 (%)	12.05	12.06	3.99	12.46	20.8	25
CO2 (%)	6.45	6.44	5.04	9.99	18.01	25
THC (ppmv)	-0.9	-0.66	14.92	25.5	44.9	50

	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	S-Lin
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11

	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**
NOx (ppmv)	-0.41	80.64	-0.31	80.57	0.2	-0.68	-0.1	0.07
CO (ppmv)	0.49	45.2	0.51	45.17	0.09	0.48	-0.05	0.06
O2 (%)	0.05	20.79	-0.03	20.75	-0.1	-0.47	0.35	0.16
CO2 (%)	0	18.07	0	18.06	0	-0.01	0	0.04
THC (ppmv)	-0.14	45.41	-0.32	45.47	-0.51	1.25	0.36	-0.13

Oil 85% Load Run 3	9/15/2000	10:10:14	10:30:14			
	Raw	**Corrected**	**Low Gas**	**Mid Gas**	**High Gas**	**Full Scale**
NOx (ppmv)	56.15	56.96	24.2	45.6	81.6	100
CO (ppmv)	2.71	2.21	15.27	25.1	45	50
O2 (%)	12.05	12.08	3.99	12.46	20.8	25
CO2 (%)	6.44	6.44	5.04	9.99	18.01	25
THC (ppmv)	-0.97	-0.63	14.92	25.5	44.9	50

	Zero	**Low**	**Mid**	**Span**	**L-Lin**	**M-Lin**	S-Lin
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11

	I-Zero	**I-Span**	**F-Zero**	**F-Span**	**Z-Bias**	**S-Bias**	**Z-Drift**	**S-Drift**
NOx (ppmv)	-0.31	80.57	-0.39	80.6	0.12	-0.65	0.08	-0.03
CO (ppmv)	0.51	45.17	0.51	45.17	0.09	0.48	0	0
O2 (%)	-0.03	20.75	0.01	20.76	0.09	-0.45	-0.19	-0.02
CO2 (%)	0	18.06	0	17.95	0	-0.42	0	0.41
THC (ppmv)	-0.32	45.47	-0.34	45.37	-0.56	1.05	0.04	0.2

APPENDIX E:
CALIBRATION CERTIFICATIONS

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 150834
ITEM# : 1
P.O.# : CHAZ

CYLINDER # : CC113974
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 2/17/2000
EXPIRATION DATE: 2/17/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	2/8/2000 2/17/2000	81.75 ppm 81.52 ppm	81.6 ppm	+/- 1%
NOx			81.6 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC79981	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Chemi	1/17/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ **DATE:** 2/17/2000
FRED PIKULA

T-5

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 140748
ITEM# : 1
P.O.# : 99049

CYLINDER # : CC106766
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 3/25/99
EXPIRATION DATE: 3/25/2001

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	3/16/99 3/25/99	45.06 ppm 45.50 ppm	45.3 ppm	+/- 1%
NOx			45.6 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-NTRM81684	CC79984	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Chemi	3/9/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA **DATE:** 3/25/99

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SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 149061
ITEM# : 1
P.O.# : 99404

CYLINDER # : CC68327
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 12/28/99
EXPIRATION DATE: 12/28/2001

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	12/21/99 12/28/99	24.09 ppm 24.12 ppm	24.1 ppm	+/- 1%
NOx			24.2 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC79982	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Chemi	12/15/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FP
FRED PIKULA

DATE: 12/28/99

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SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146744
ITEM# : 1
P.O.# : 99316

CYLINDER # : CC110250
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/12/99
EXPIRATION DATE: 10/04/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	10/04/99 10/12/99	45.05 ppm 44.94 ppm	45.0 ppm	+/- 1%
Methane	10/04/99	44.9 ppm	44.9 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88366	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ **DATE:** 10/12/99
FRED PIKULA

T-5

T-D

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146620
ITEM# : 3
P.O.# : 99304

CYLINDER # : CC85002
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 9/30/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	9/29/99 10/07/99	24.96 ppm 25.17 ppm	25.1 ppm	+/- 1%
Methane	9/30/99	25.50 ppm	25.5 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88366	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FP
FRED PIKULA

DATE: 10/07/99

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SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 140748
ITEM# : 5
P.O.# : 99049

CYLINDER # : CC106737
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 3/24/99
EXPIRATION DATE: 3/15/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	3/17/99 3/24/99	15.33 ppm 15.22 ppm	15.27 ppm	+/- 1%
Methane	3/15/99	14.92 ppm	14.92 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC38290	49.8 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	3/17/99
Methane	H. Packard 6890	US00001434	GC - FID	3/9/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 3/24/99

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 156176
ITEM# : 4
P.O.# : 2000301 T-5 Rick

CYLINDER # : CC83913
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 7/26/2000
EXPIRATION DATE: 7/26/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	7/26/2000	20.8 %	20.8 %	+/- 1%
Carbon Dioxide	7/26/2000	5.04 %	5.04 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659x	CC83908	22.8 %
Carbon Dioxide	GMIS-1	CC91046	10.03 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	7/24/2000
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	7/6/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: _____ **DATE:** 7/26/2000
FRED PIKULA

T-5

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SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146620
ITEM# : 1
P.O.# : 99304

CYLINDER # : CC106722
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 10/07/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/07/99	12.46 %	12.46 %	+/- 1%
Carbon Dioxide	10/07/99	9.99 %	9.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659X	CC83900	22.80 %
Carbon Dioxide	GMIS-1	CC57143	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570894081	PM	9/21/99
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	9/23/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FP
FRED PIKULA

DATE: 10/07/99

T-5

SPECTRA GASES INC.
3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE
PROCEDURE # : G1

CUSTOMER: Cubix Corporation
SGI ORDER # : 146038
ITEM# : 2
P.O.# : 99277

CYLINDER # : CC114045
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 580

CERTIFICATION DATE: 9/17/99
EXPIRATION DATE: 9/17/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Dioxide	9/17/99	18.01 %	18.01 %	+/- 1%
Oxygen	9/17/99	3.99 %	3.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Dioxide	NTRM-82745x	CC79944	20.00 %
Oxygen	GMIS-1	CC53245	10.00 %

INSTRUMENTATION

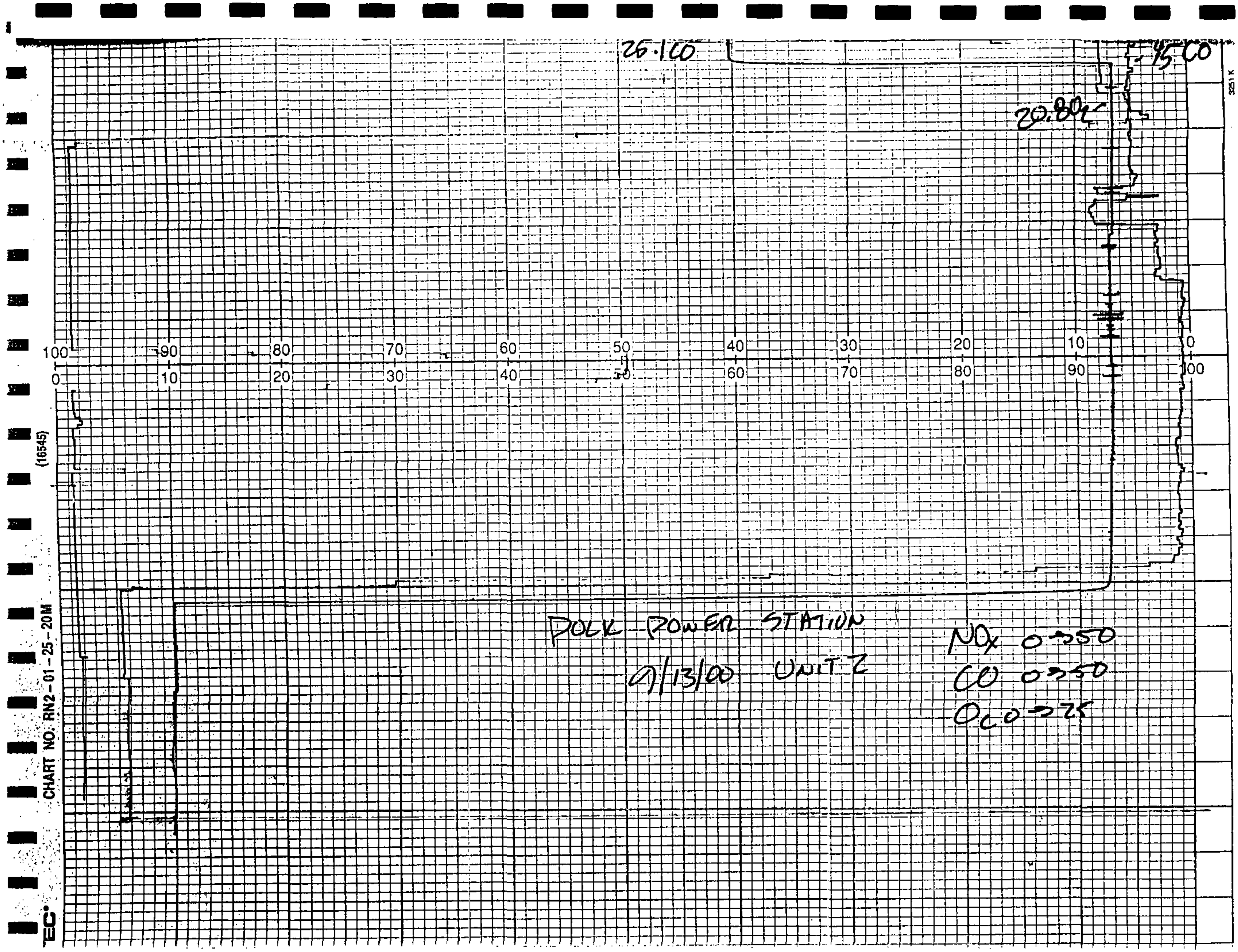
COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	8/20/99
Oxygen	Horiba MPA-510	570694081	PM	9/10/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

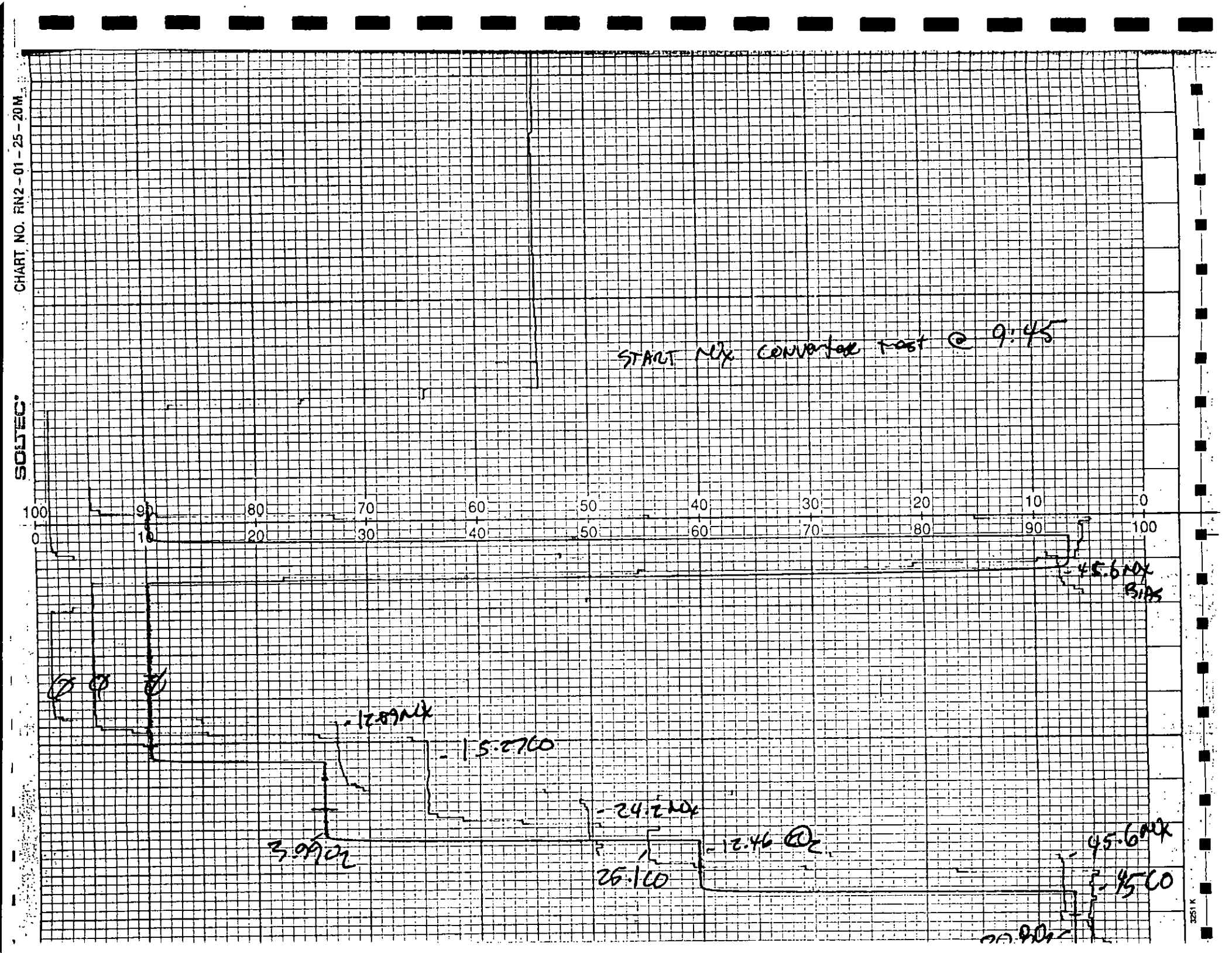
ANALYST: FP
FRED PIKULA

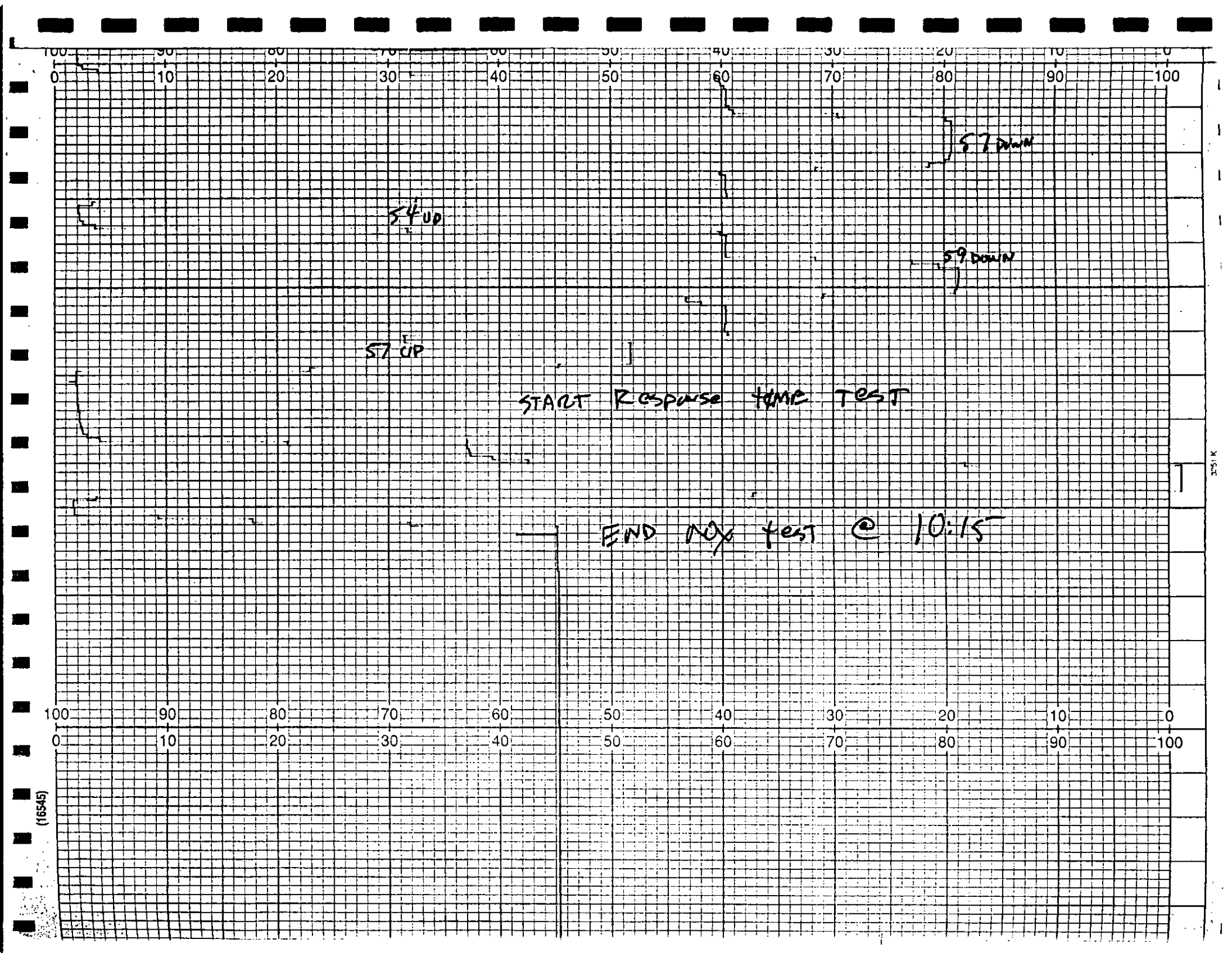
DATE: 9/17/99

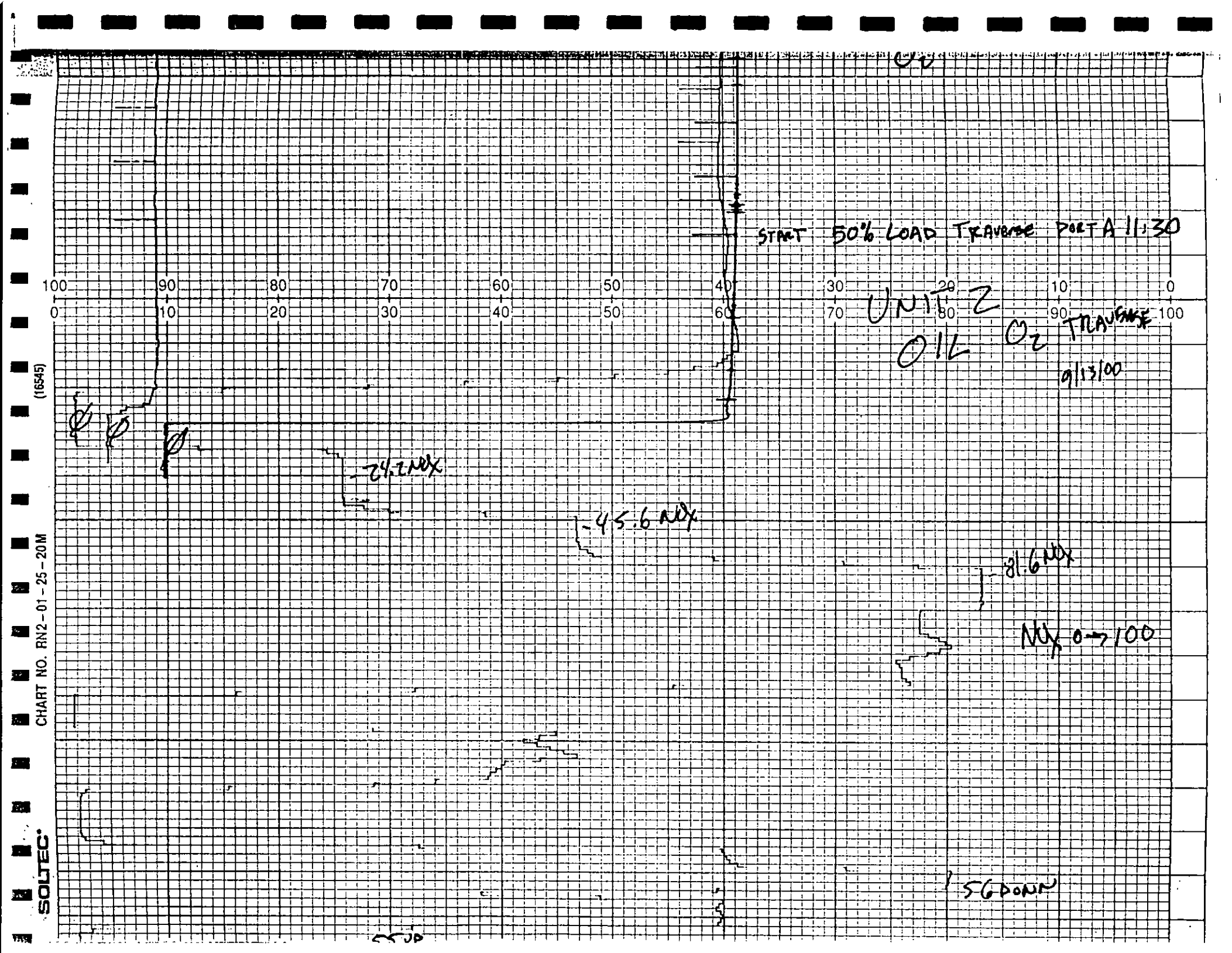
APPENDIX F:
STRIP CHART RECORDS

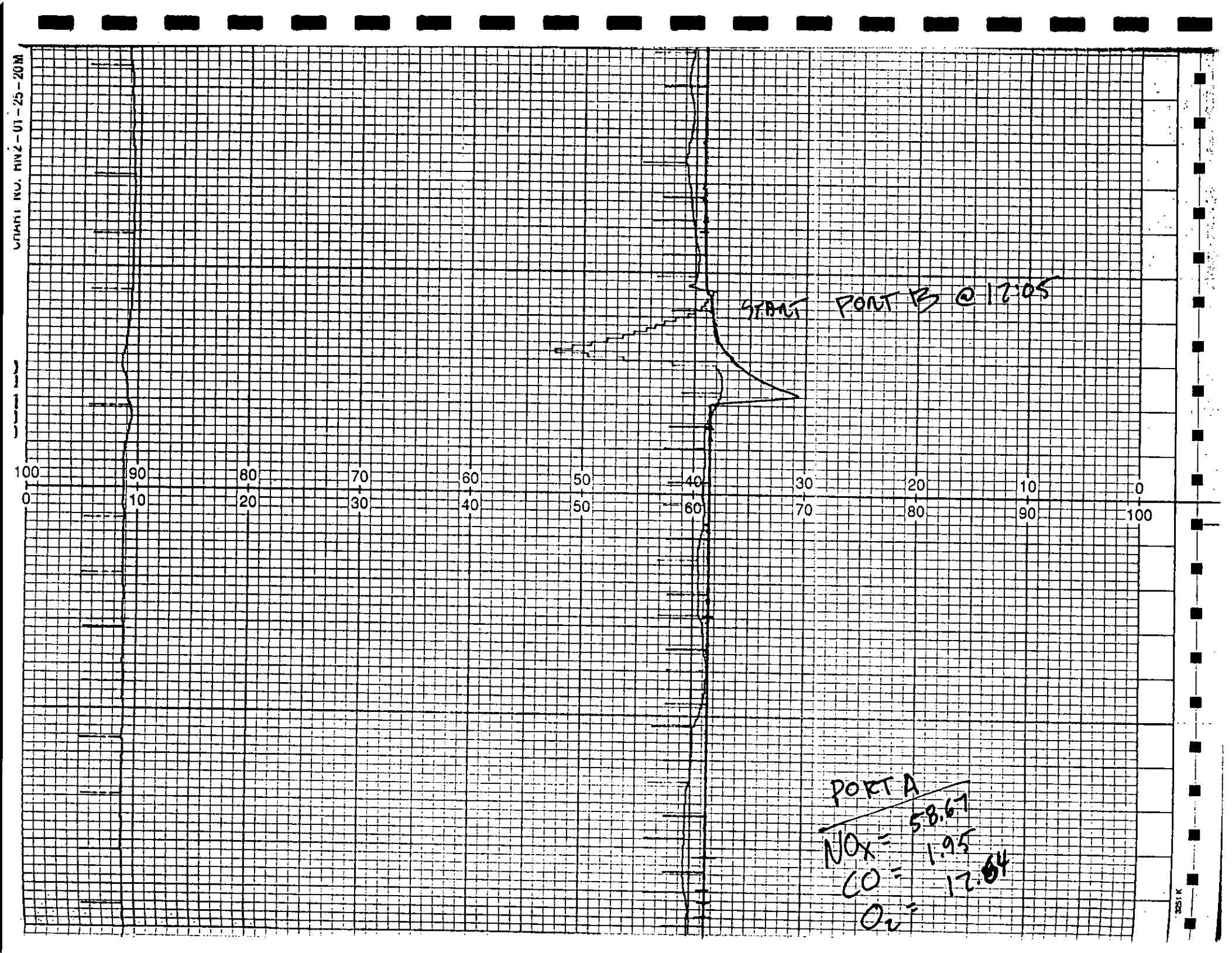


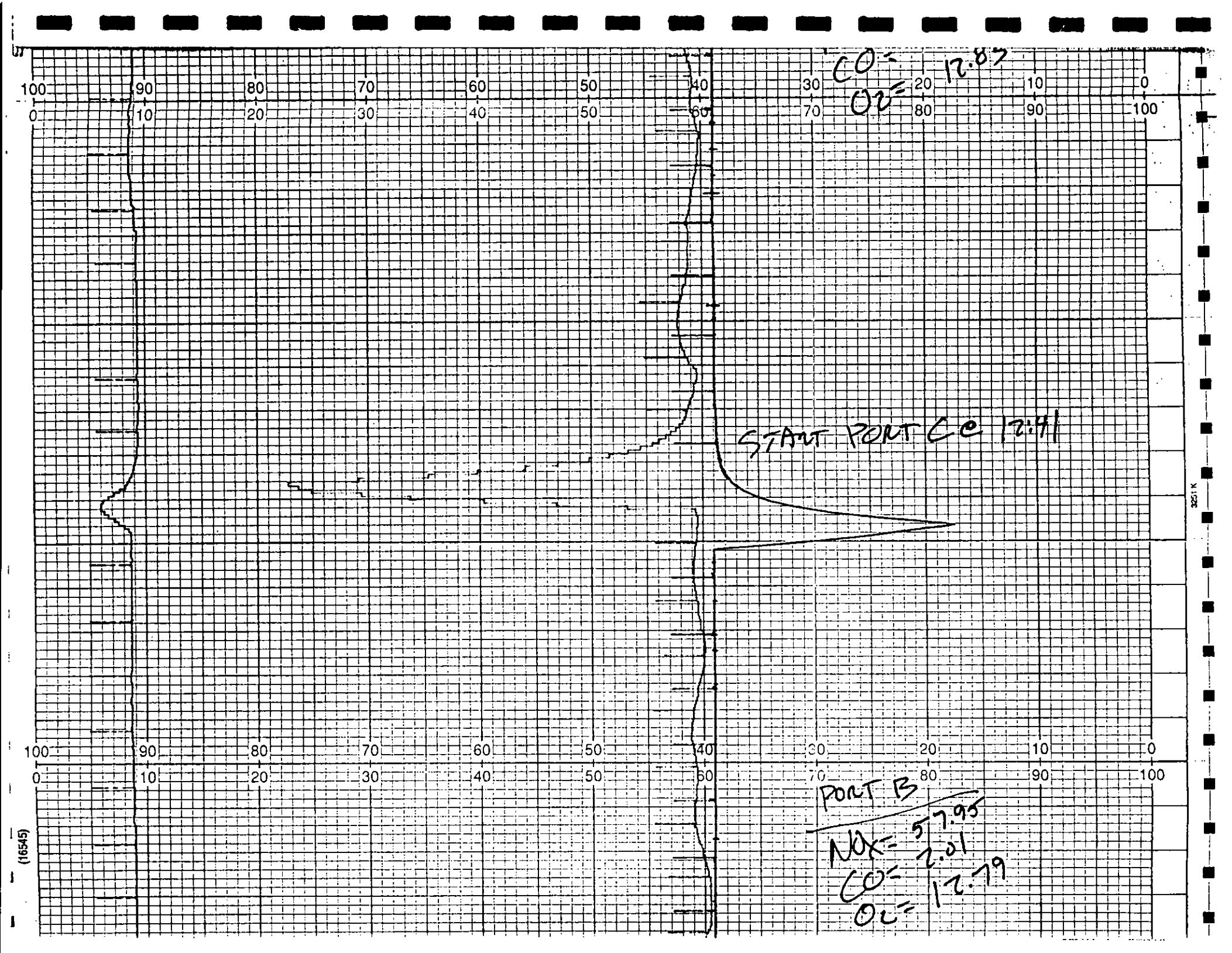
26.1CO
.45 CO
20.80₂
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
POLK POWER STATION
9/13/00 UNIT 2
NOx 0-350
CO 0-350
O₂ 0-25
CHART NO. RN2-01-25-20M
(16545)

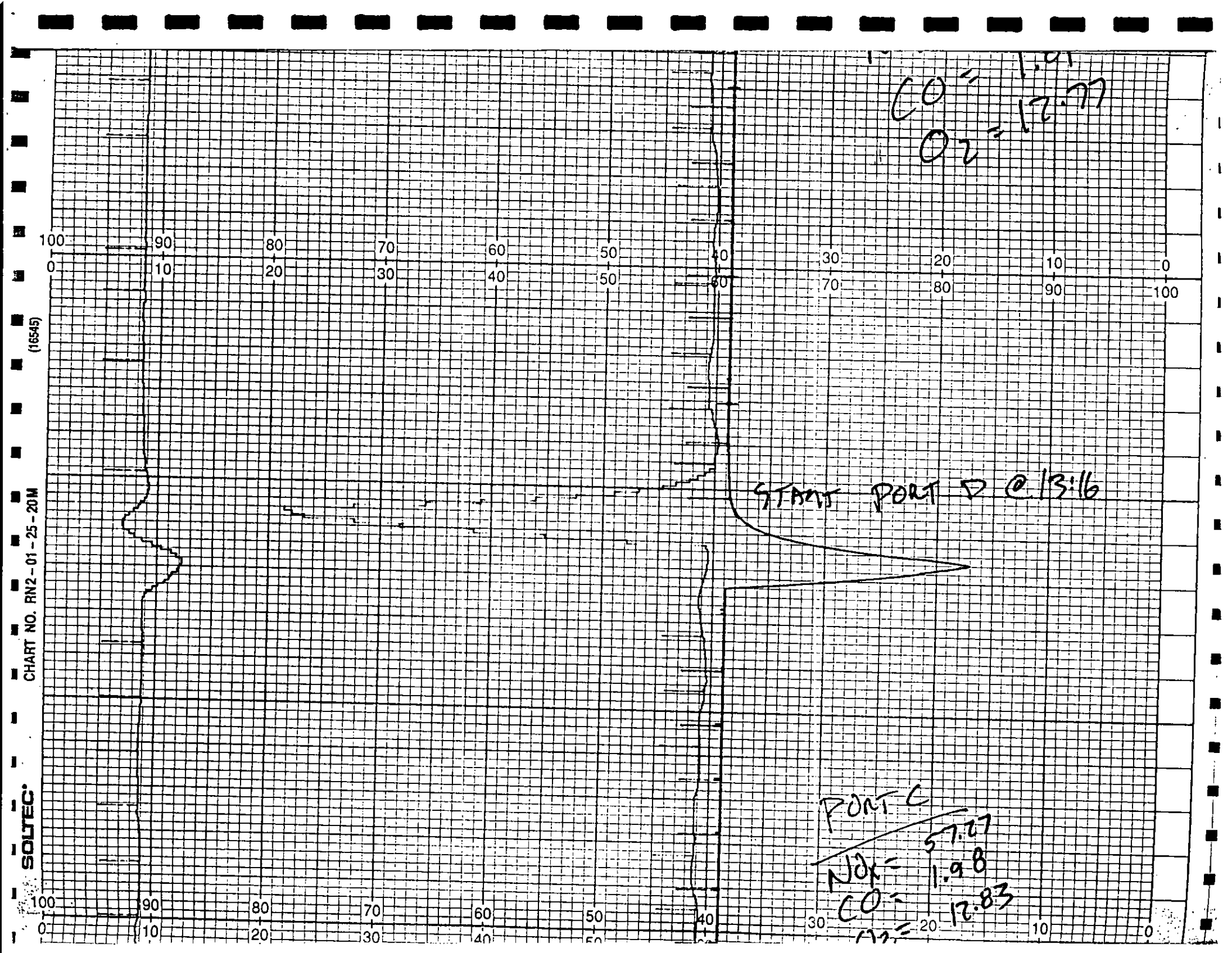

SOLTEC
CHART NO. RN2-01-25-20M
START NOx converter test @ 9:45
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
45.6 NOx BIAS
12.89 NOx
15.27 CO
24.2 NOx
3.99 O2
12.46 O2
26.1 CO
45.6 NOx
45 CO

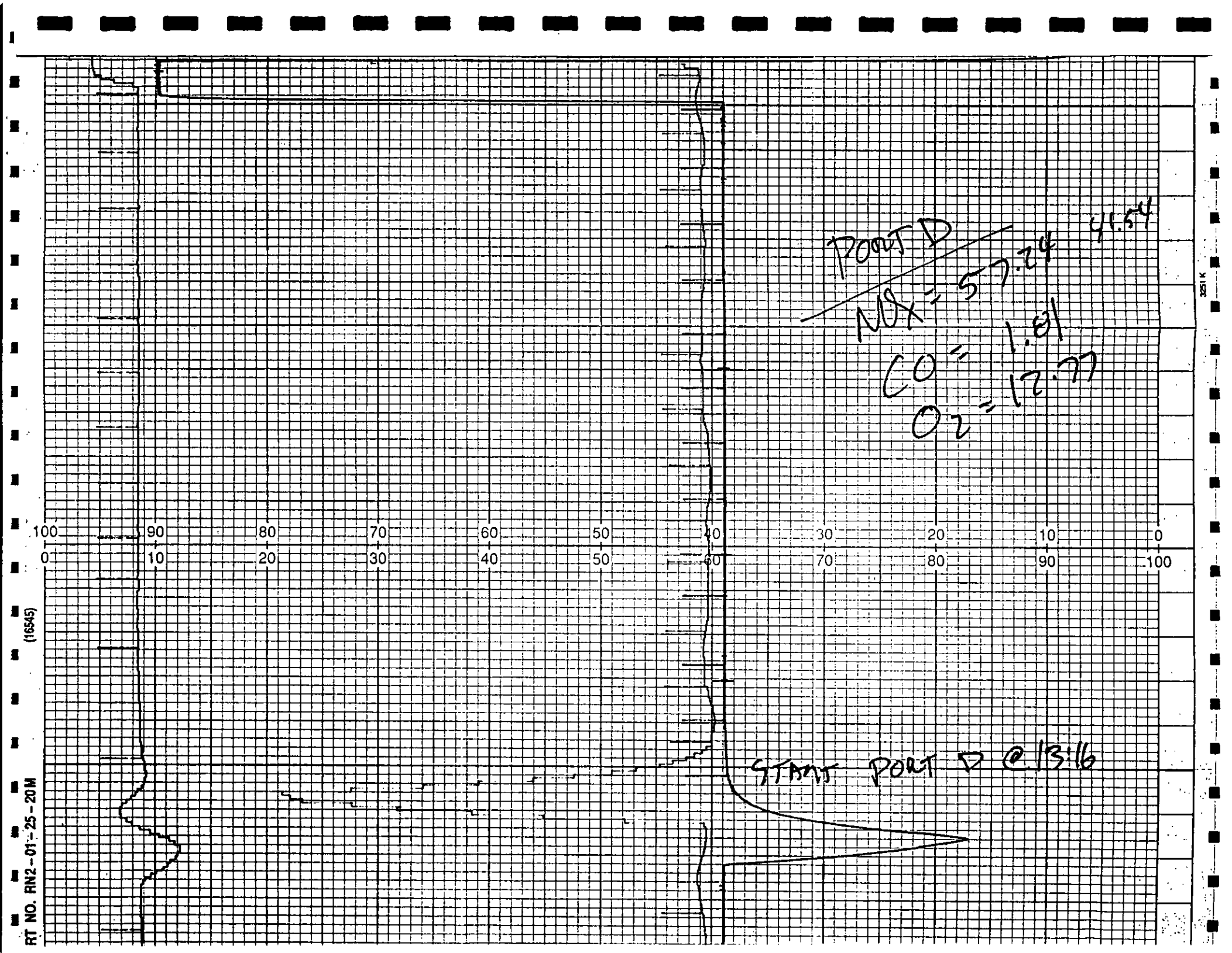

57 DOWN
54 UP
59 DOWN
57 UP
START Response time TEST
END NOx test @ 10:15

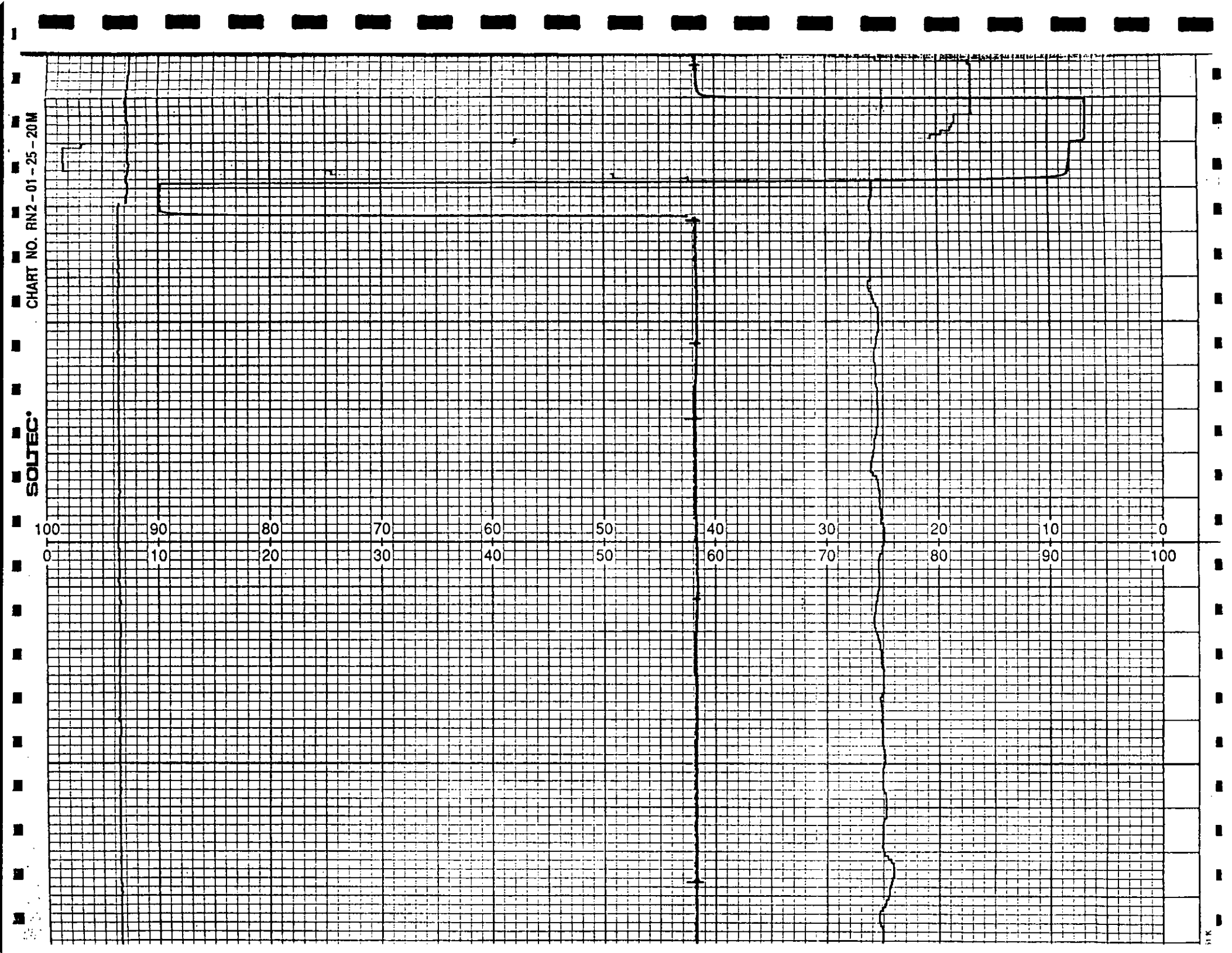

START 50% LOAD TRAVERSE PORT A 11:30
UNIT 2
OIL O2 TRANSFER
9/13/00
24.2 NOX
45.6 NOX
81.6 NOX
NOX 0 → 100
150 DOWN
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
(16545)
CHART NO. RN2-01-25-20M
SOLTEC

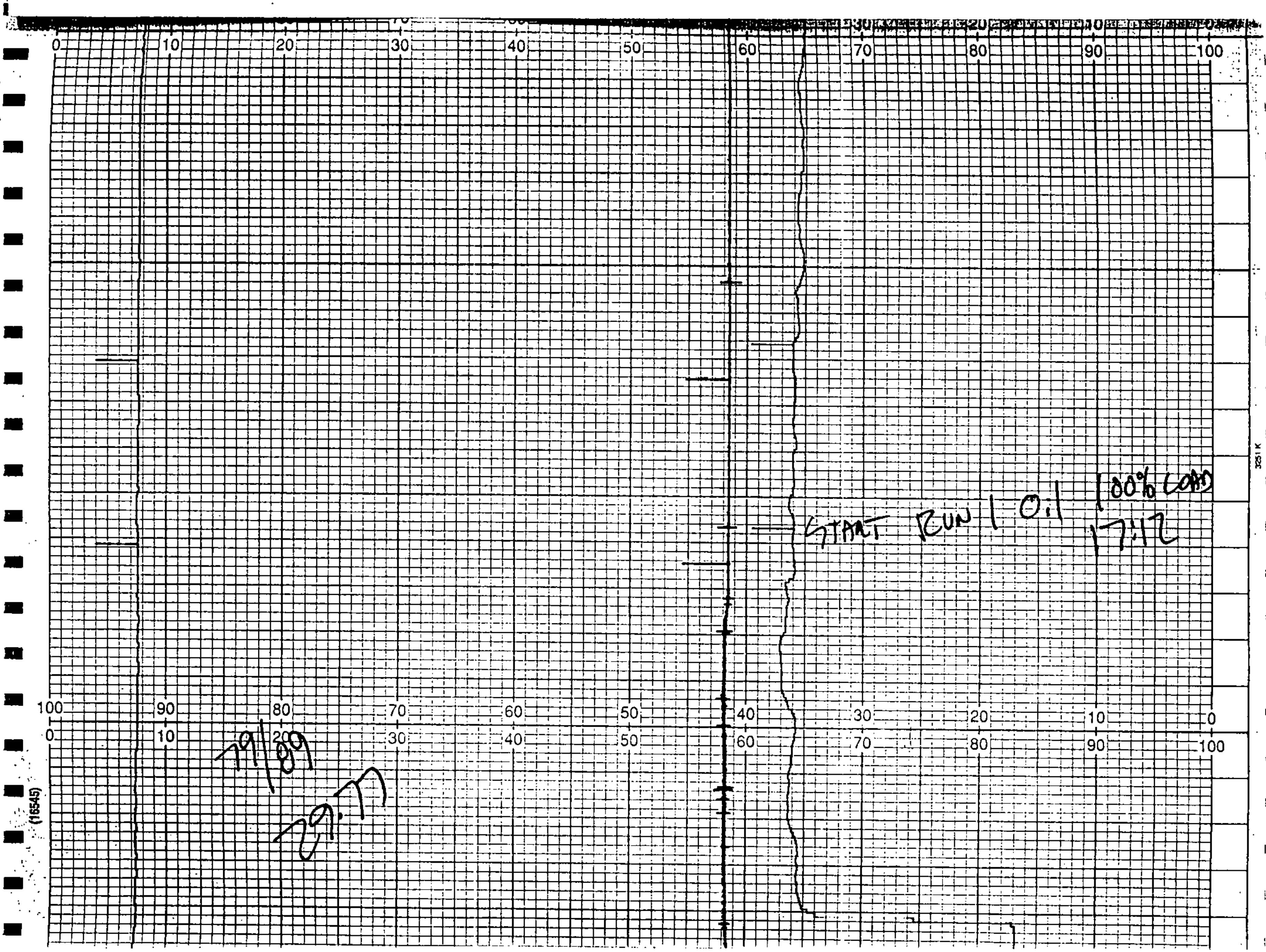

START PORT B @ 12:05
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
PORT A
NOx = 58.61
CO = 1.95
O2 = 17.64

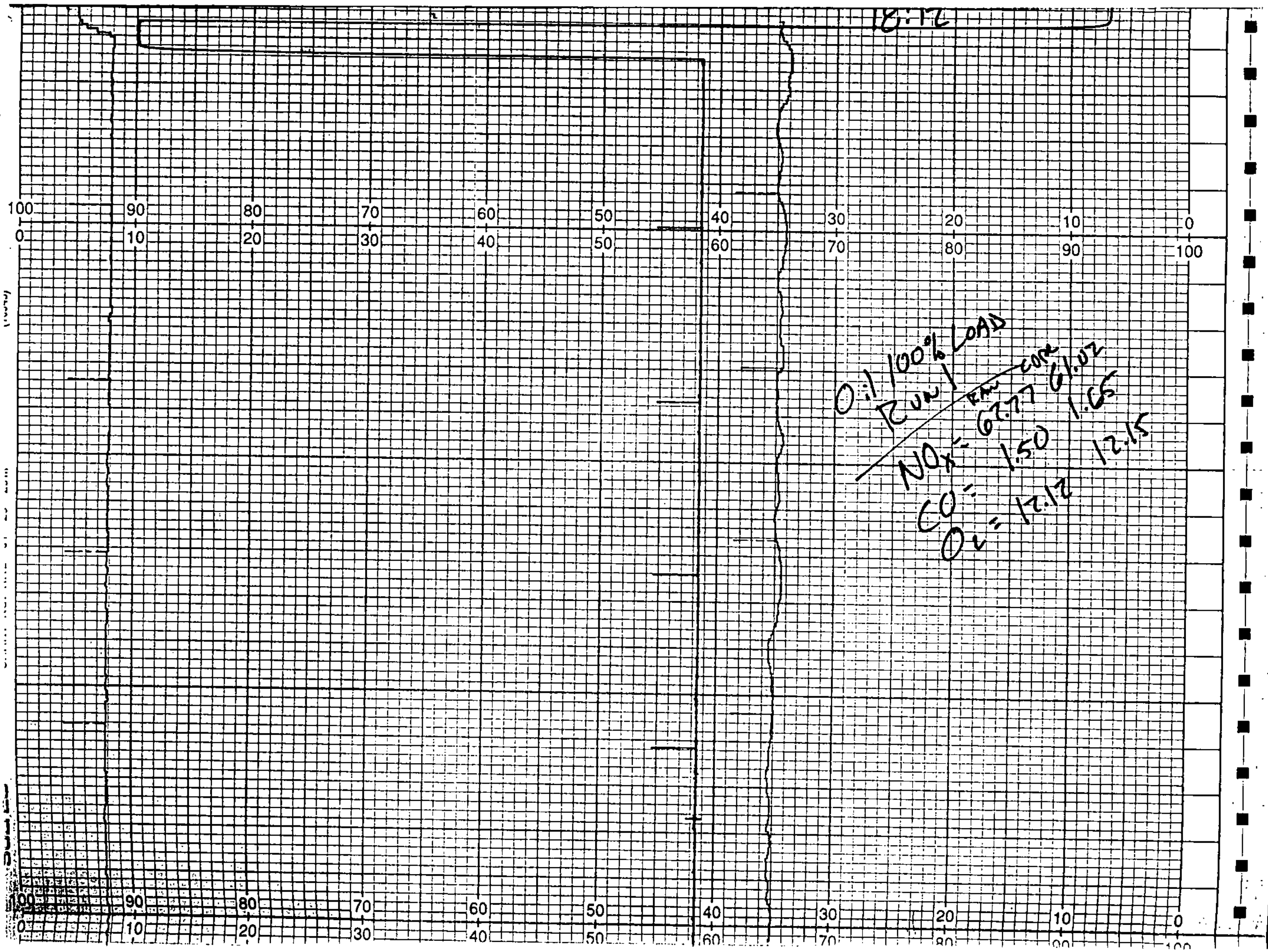

CO= 12.87
O2= 20
START POINT @ 12:41
PORT B
NOX= 57.95
CO= 2.01
O2= 17.79
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
(16545)
3251 K


CO = 1.91
O2 = 12.77
100 90 80 70 60 50 40 30 20 10 0
START PORT D @ 13:16
PORT C
NOx = 1.98
CO = 12.83
SOLTEC
CHART NO. RN2-01-25-20M
(16545)


Point D
41.54
NOX = 57.24
CO = 1.81
O2 = 12.77
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
START POINT @ 13:16
RT NO. RN2-01-25-20M
(16545)
3251 K


SOLTEC
CHART NO. RN2-01-25-20M
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


0 10 20 30 40 50 60 70 80 90 100
START RUN 1 0:1
100% LOAD
17:12
100 90 80 70 60 50 40 30 20 10 0
79/89
29.77
(16545)
3251 K


18:12
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
O:1 100% LOAD
RUN 1
RAW CORR
NOx = 67.77 61.02
CO = 1.50 1.65
O2 = 12.12 12.15

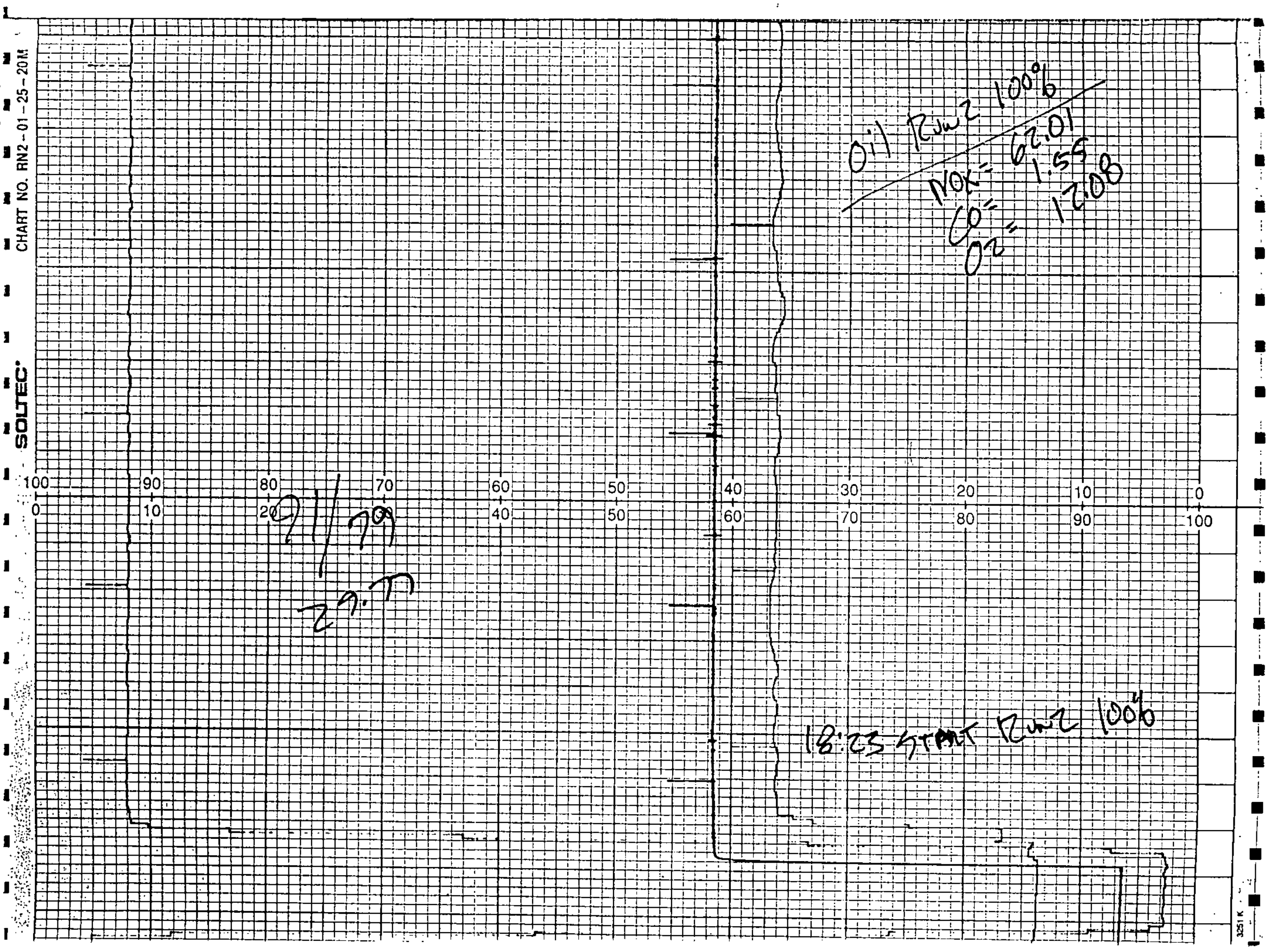
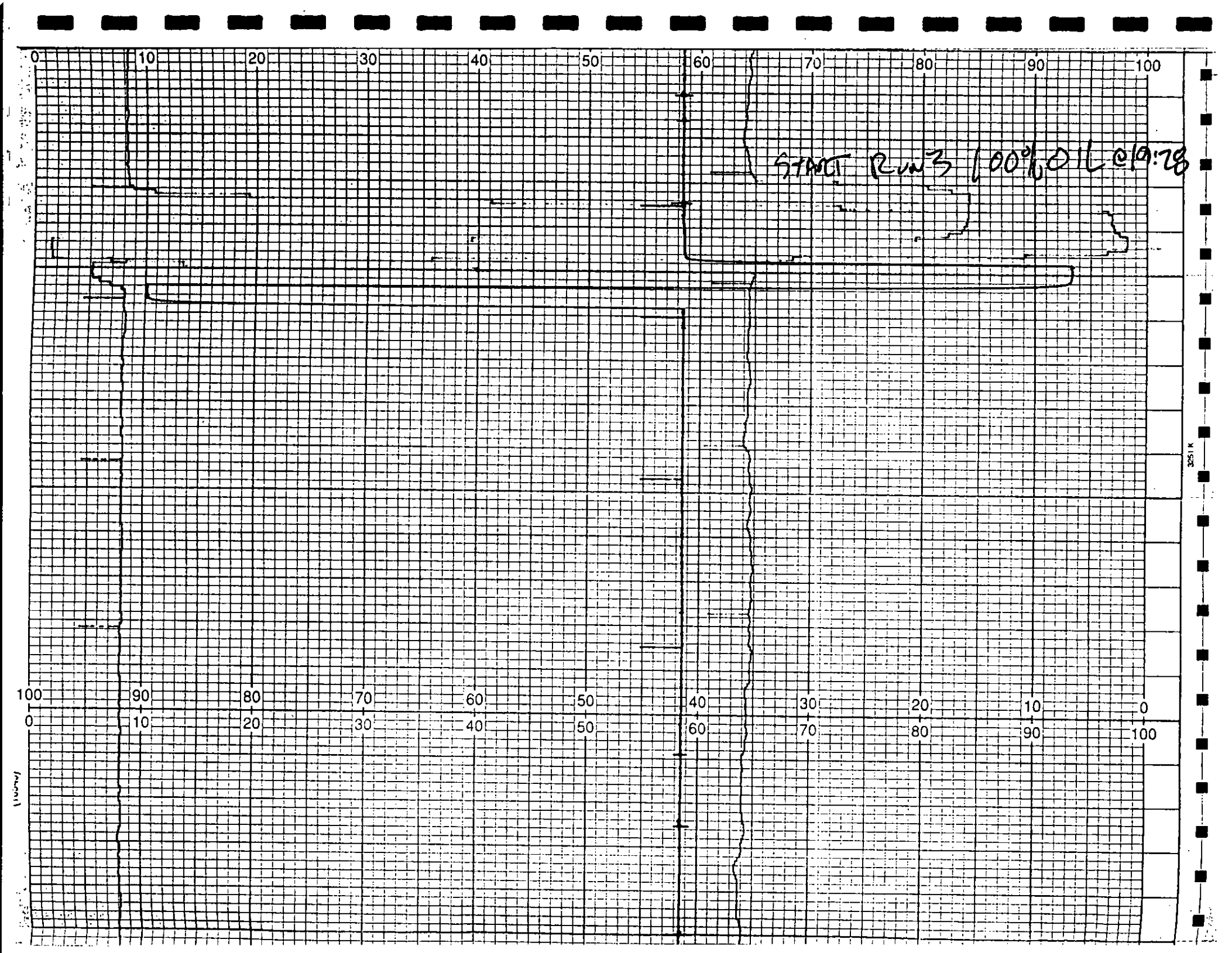
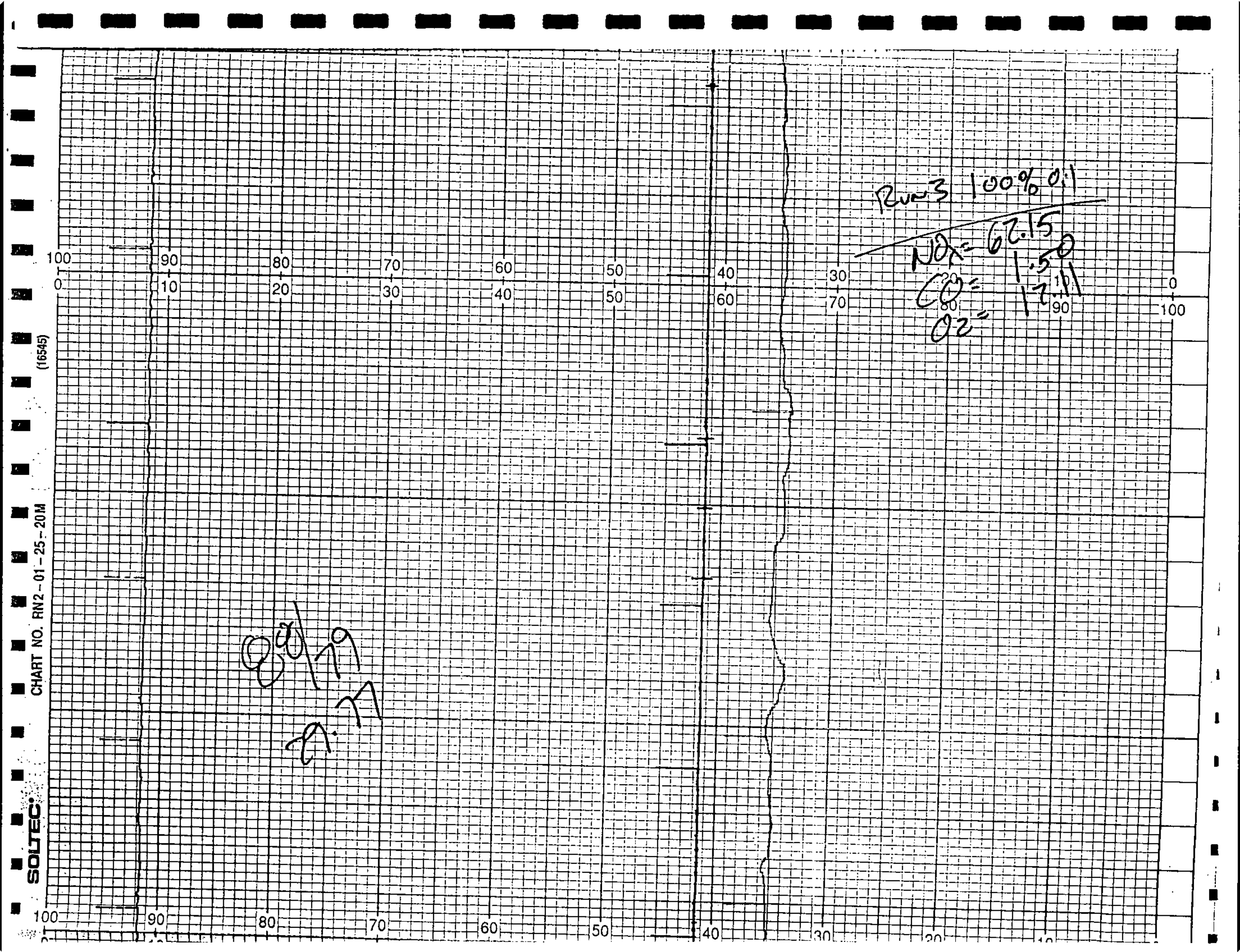
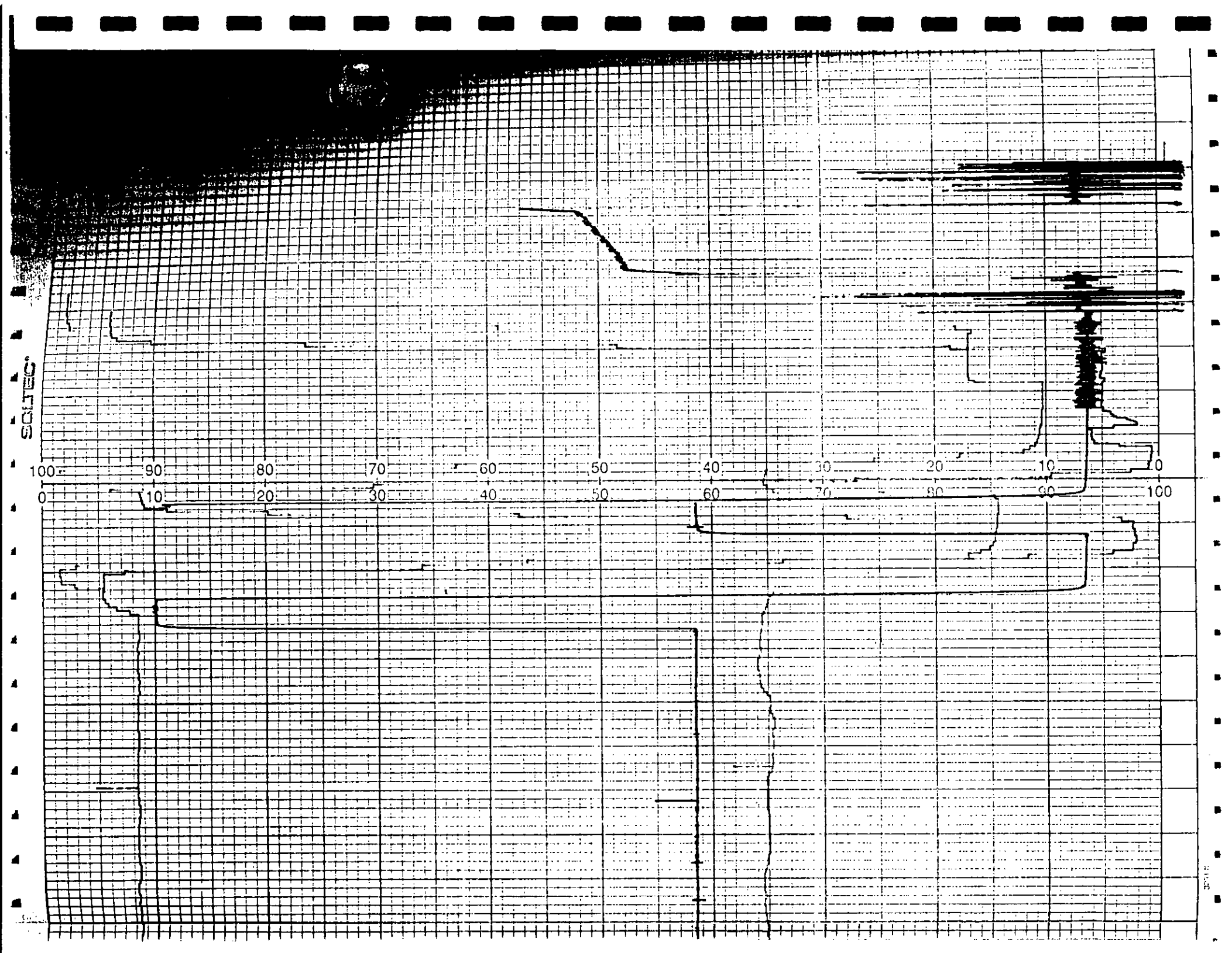
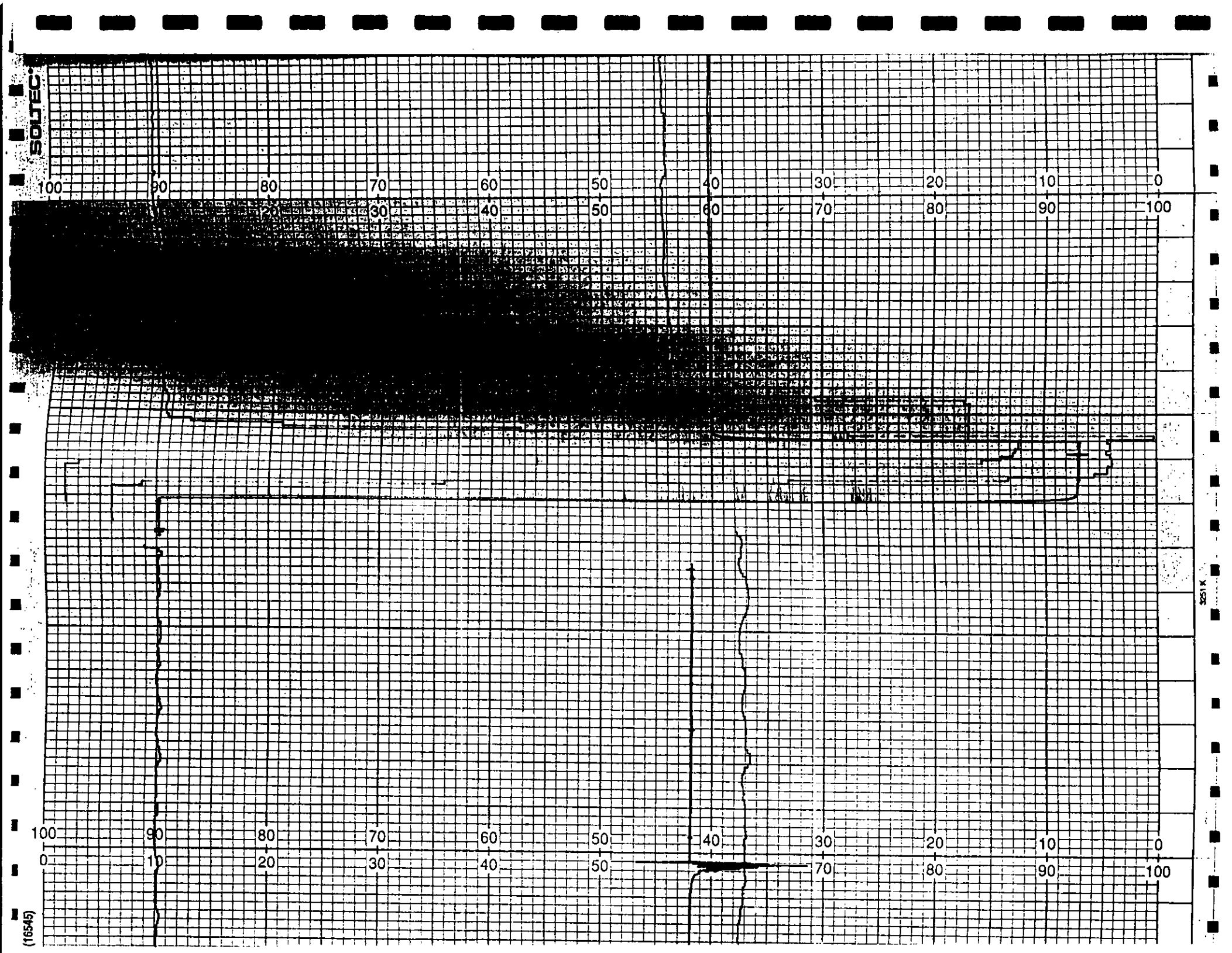


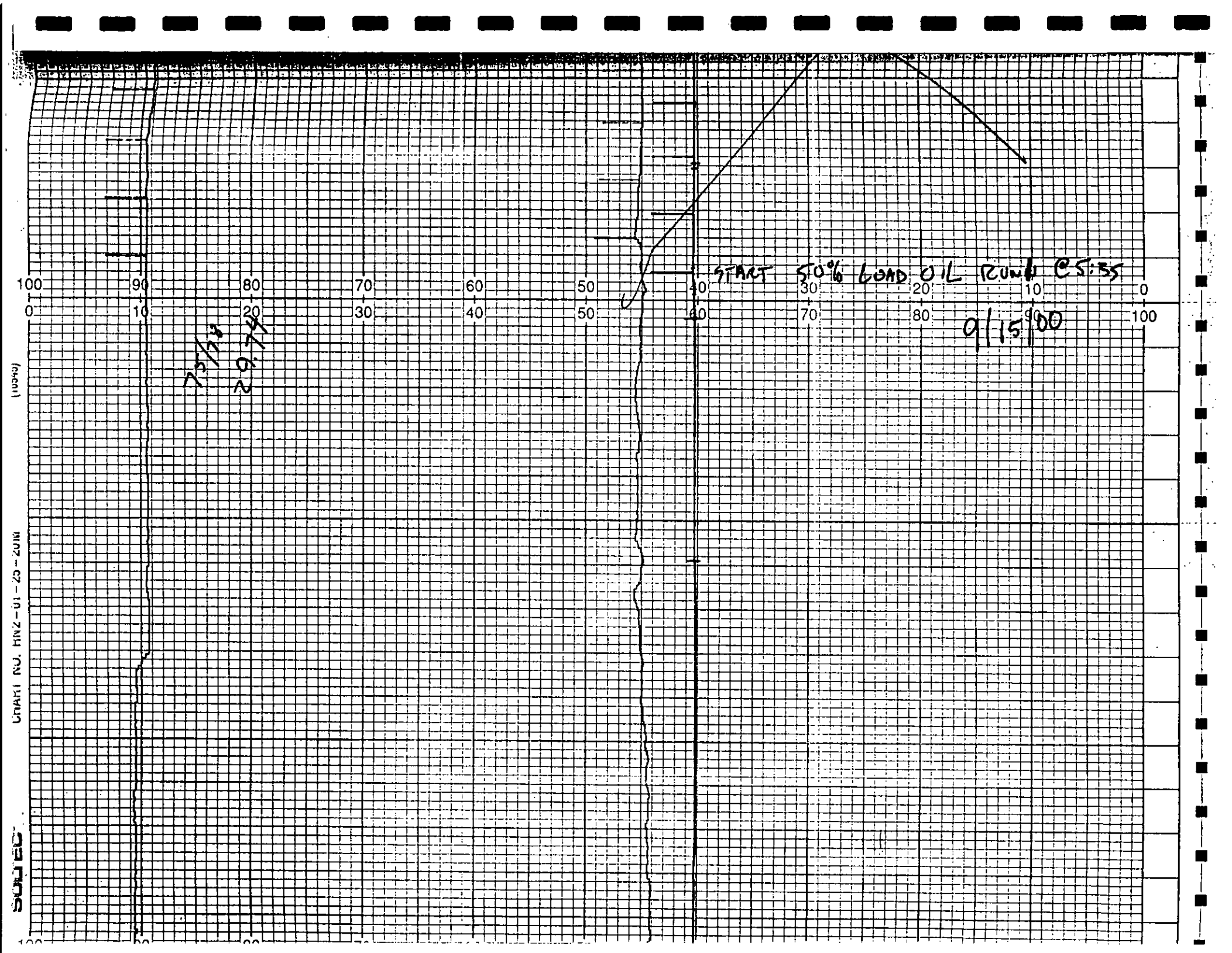
CHART NO. RN2-01-25-20M
SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
Oil Run 2 100%
NOx = 62.01
CO = 1.55
O2 = 12.08
9/1/99
29.77
18:23 START Run 2 100%


START RUN 3 100% OIL @ 19:28


Run 3 100% oil
NOx = 62.15
CO = 1.50
O2 = 17.11
CHART NO. RN2-01-25-20M
(16545)
SOLTEC


SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
3251 K
(16545)


START 50% LOAD OIL RUN @ 5:35
9/15/00
100
90
80
70
60
50
40
30
20
10
0

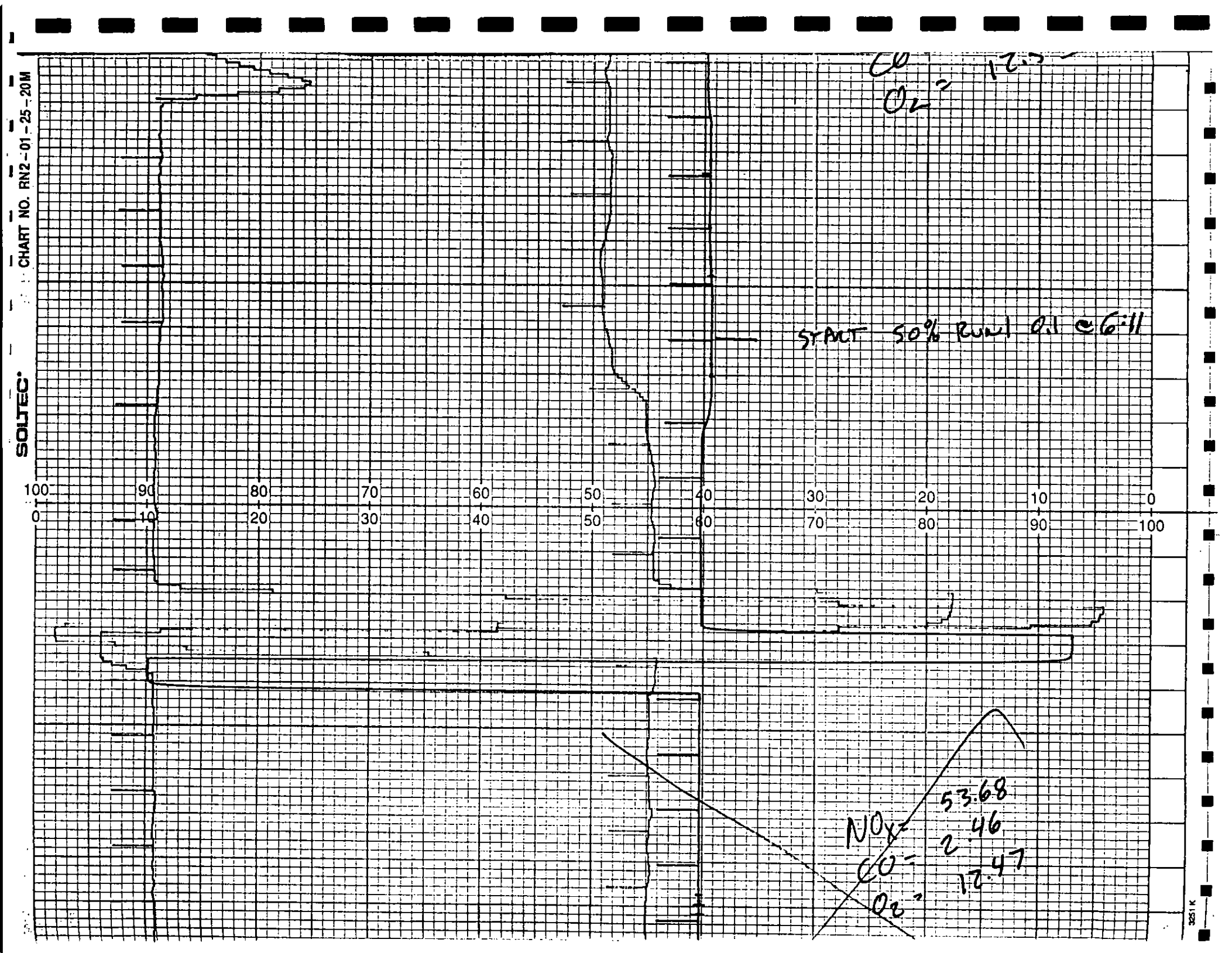
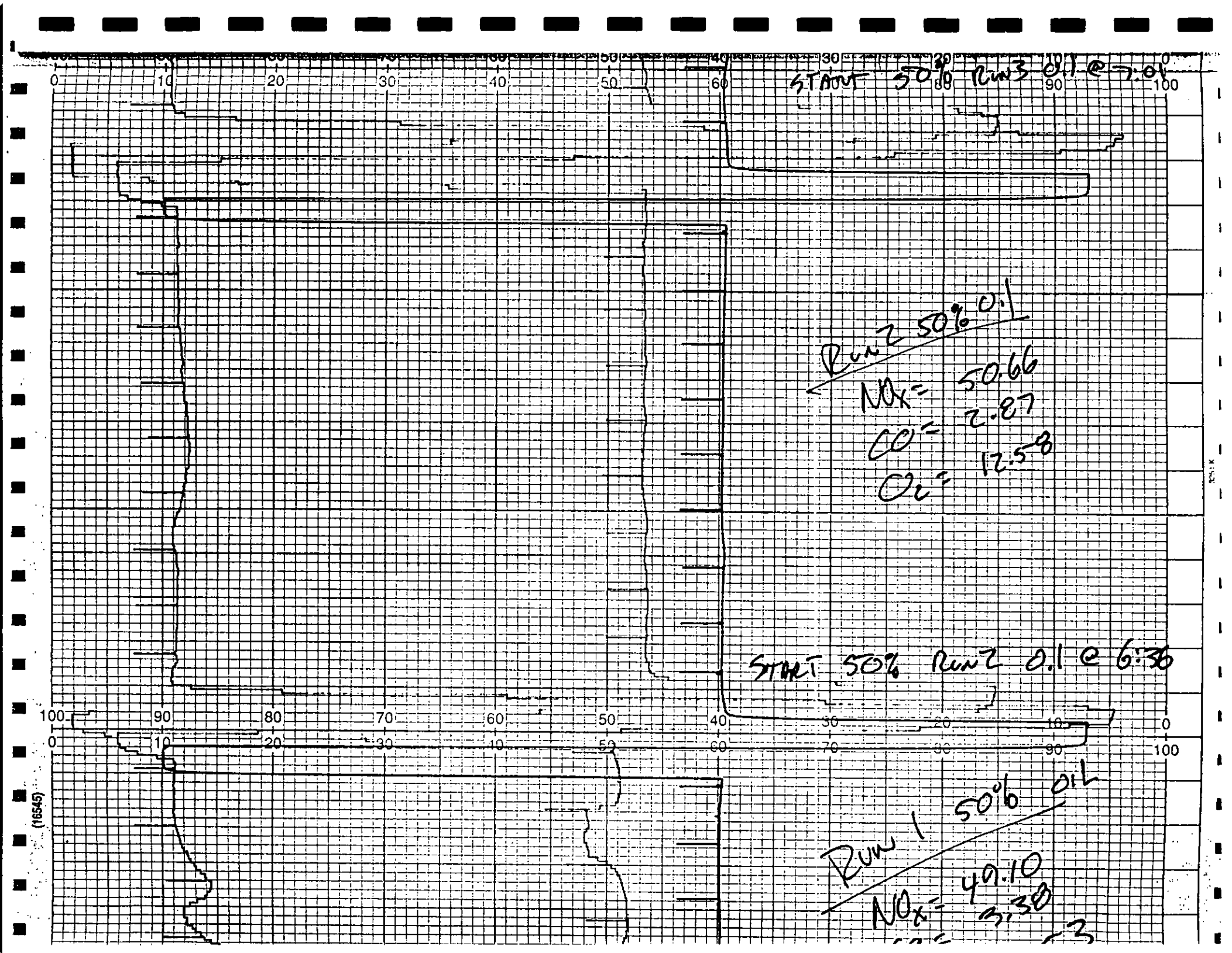
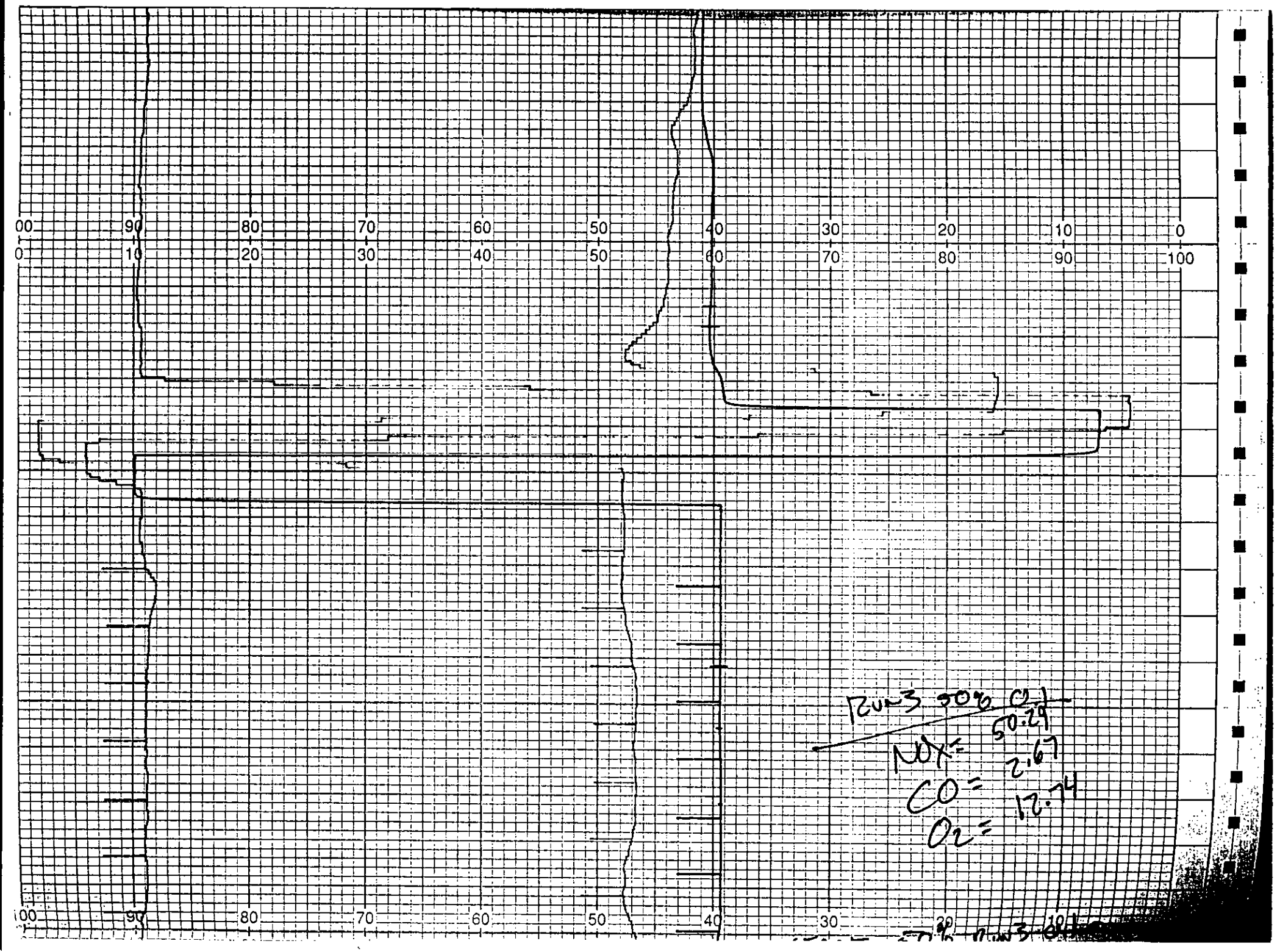
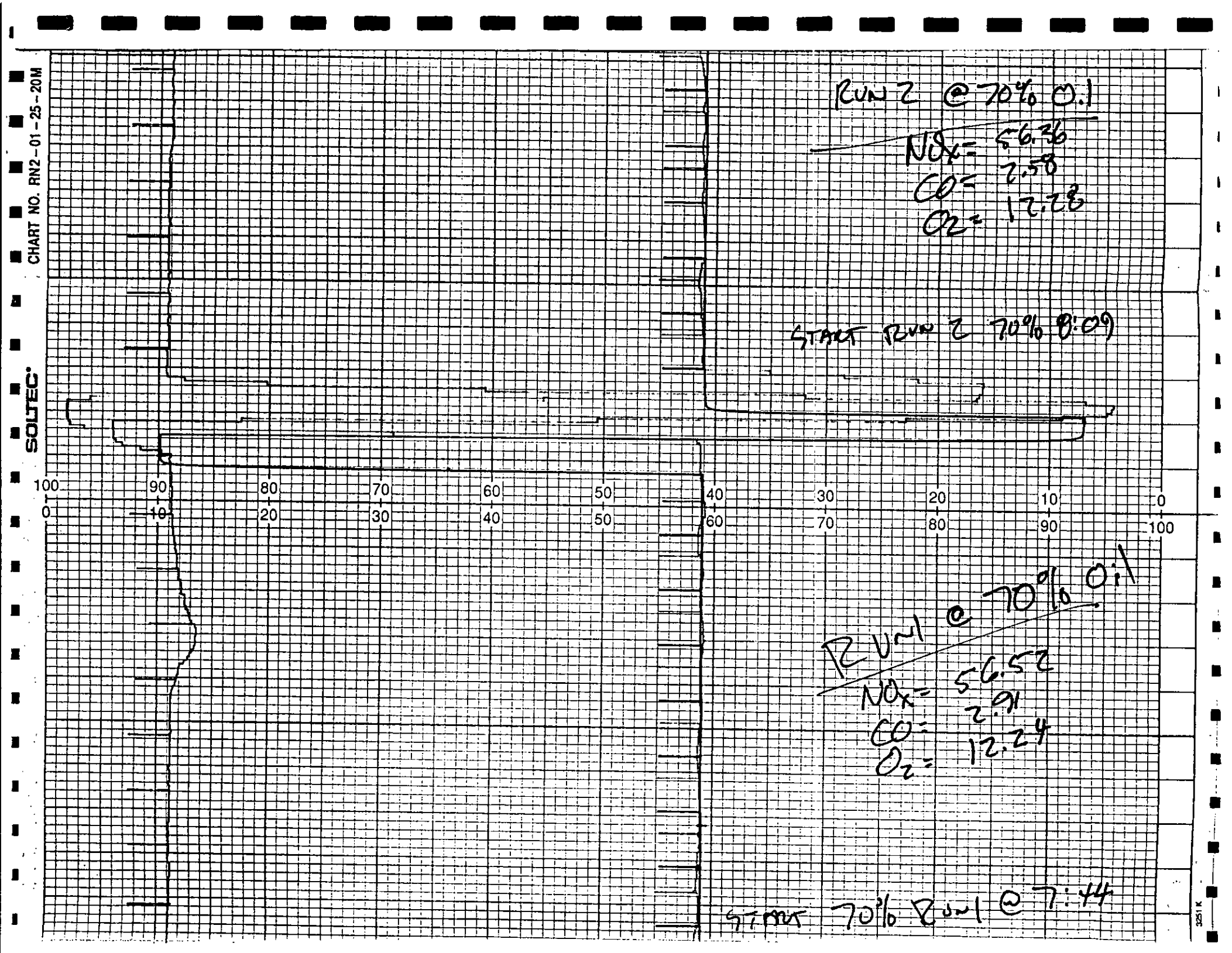
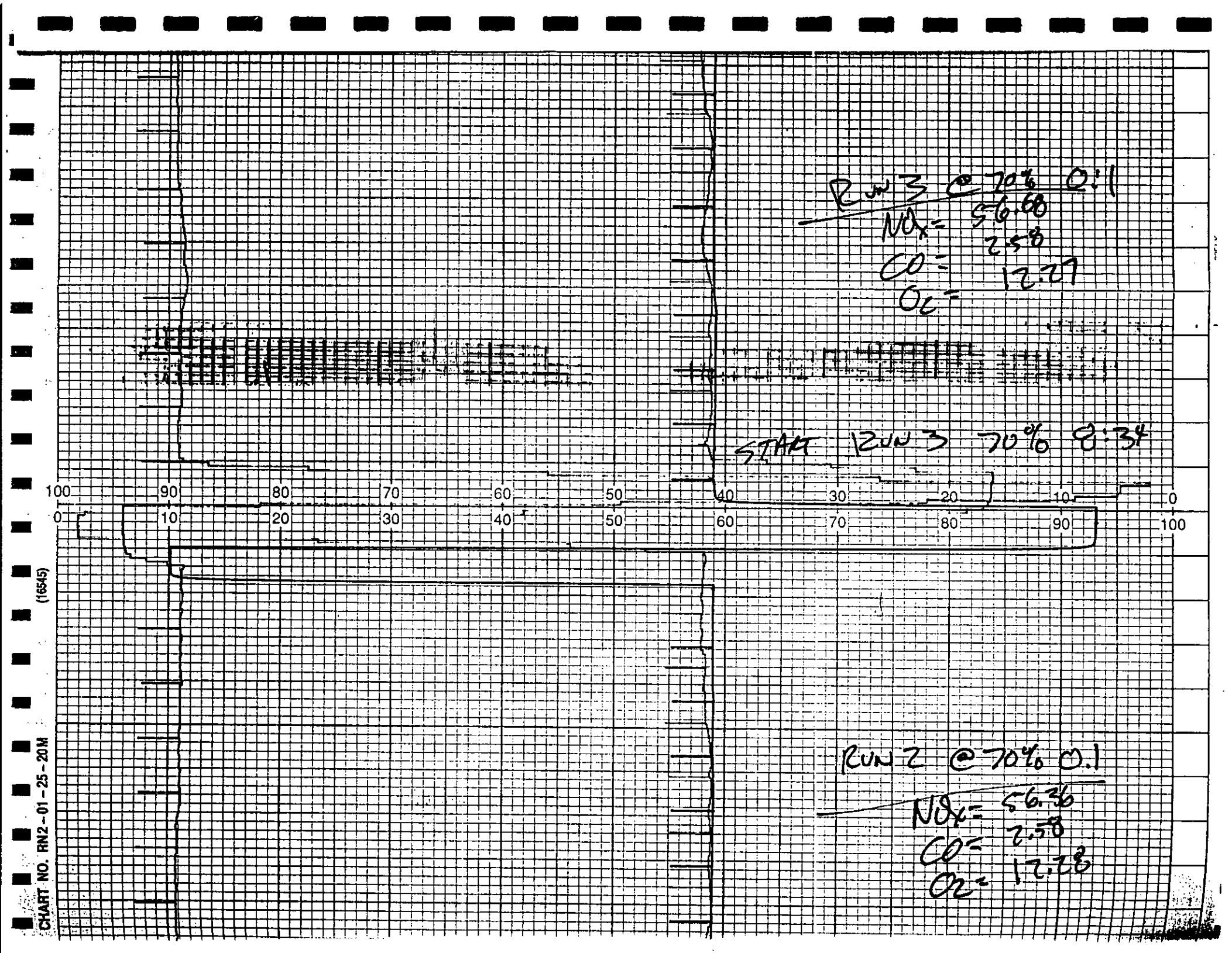


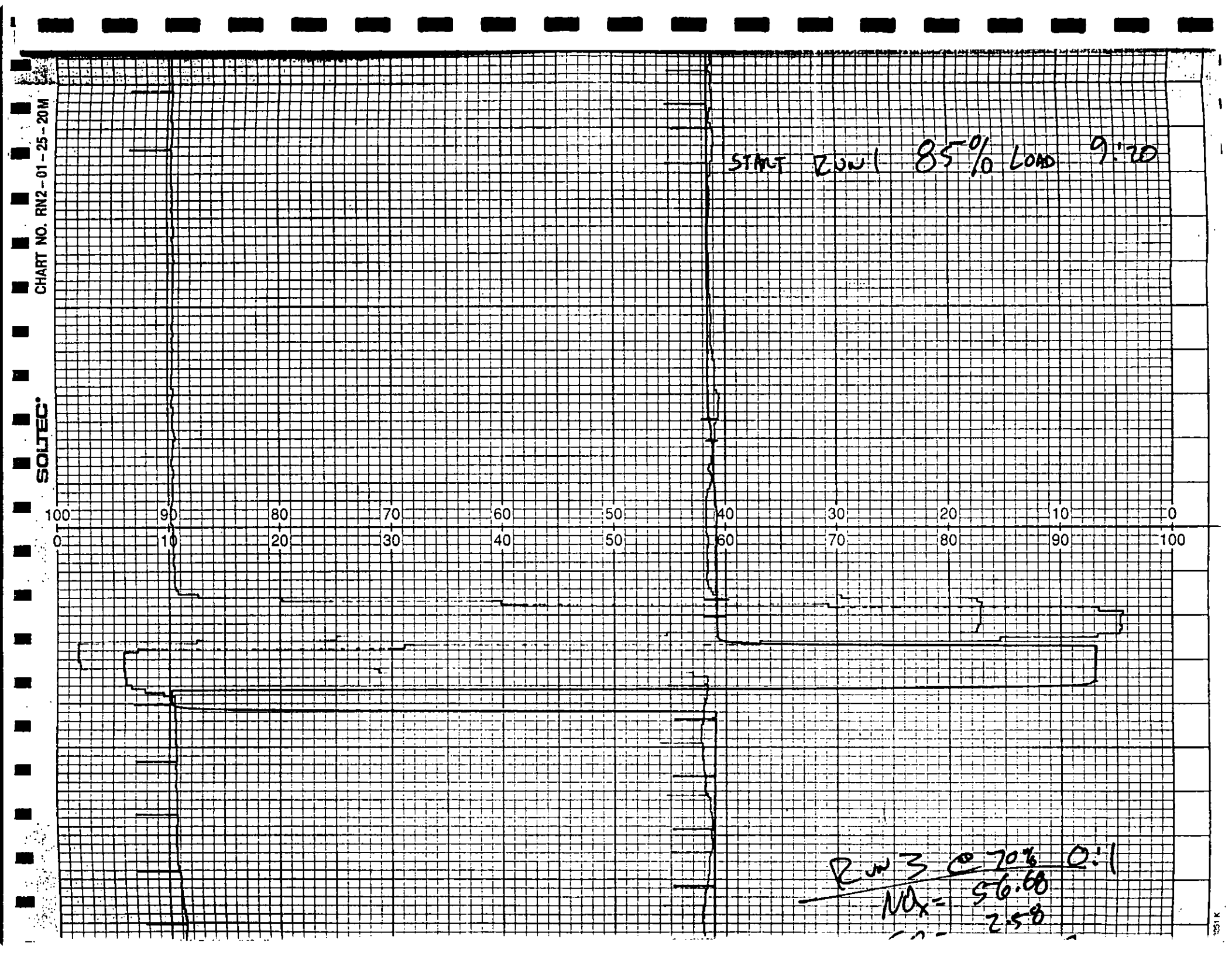
CHART NO. RN2-01-25-20M
SOLTEC
START 50% Run @ 6:11
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx - 53.68
CO - 2.46
O2 - 12.47

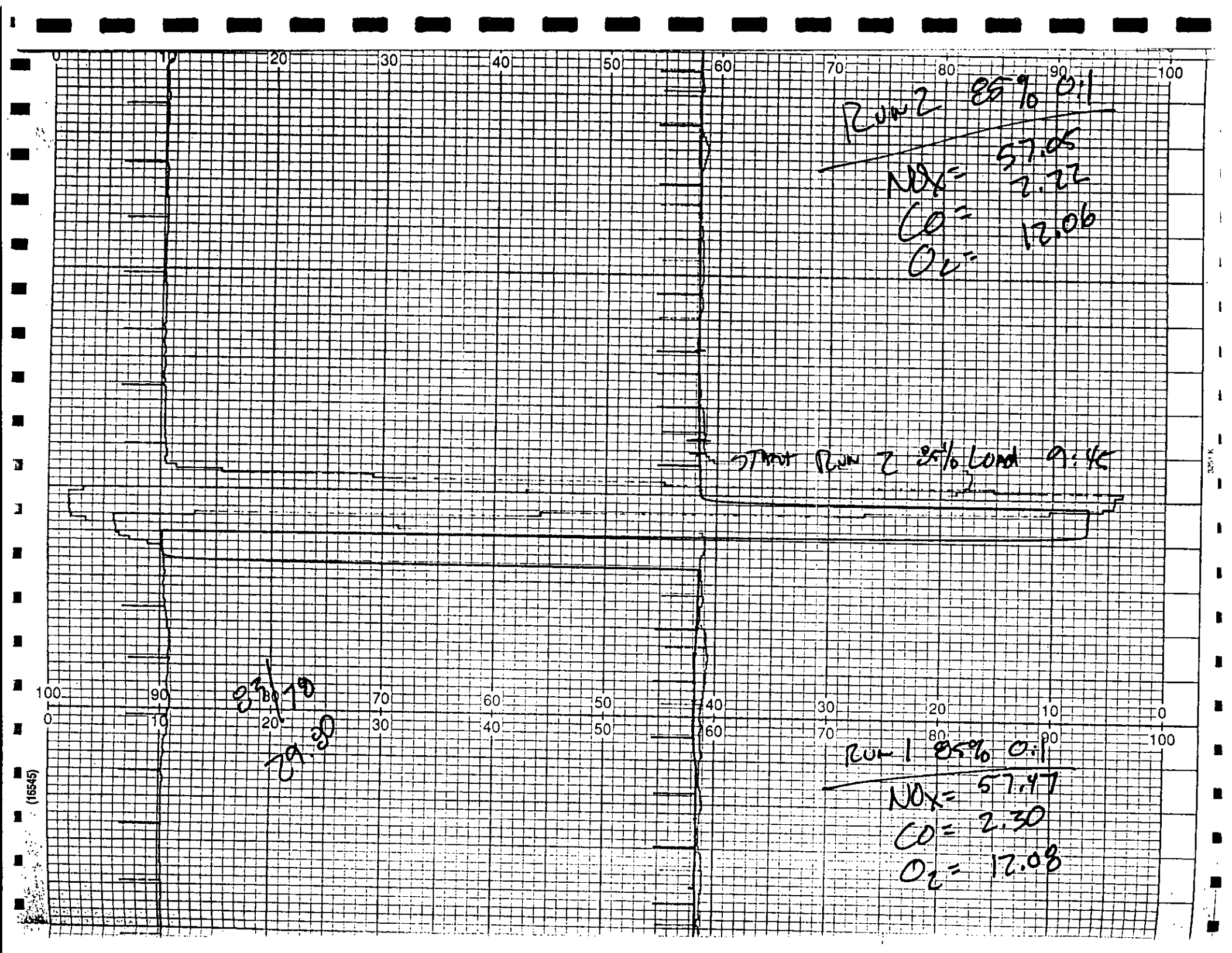

START 50% Run3 0.1 @ 7:01
Run 2 50% 0.1
NOx = 50.66
CO = 2.87
O2 = 12.5%
START 50% Run2 0.1 @ 6:36
Run 1 50% 0.1
NOx = 49.10
3.30

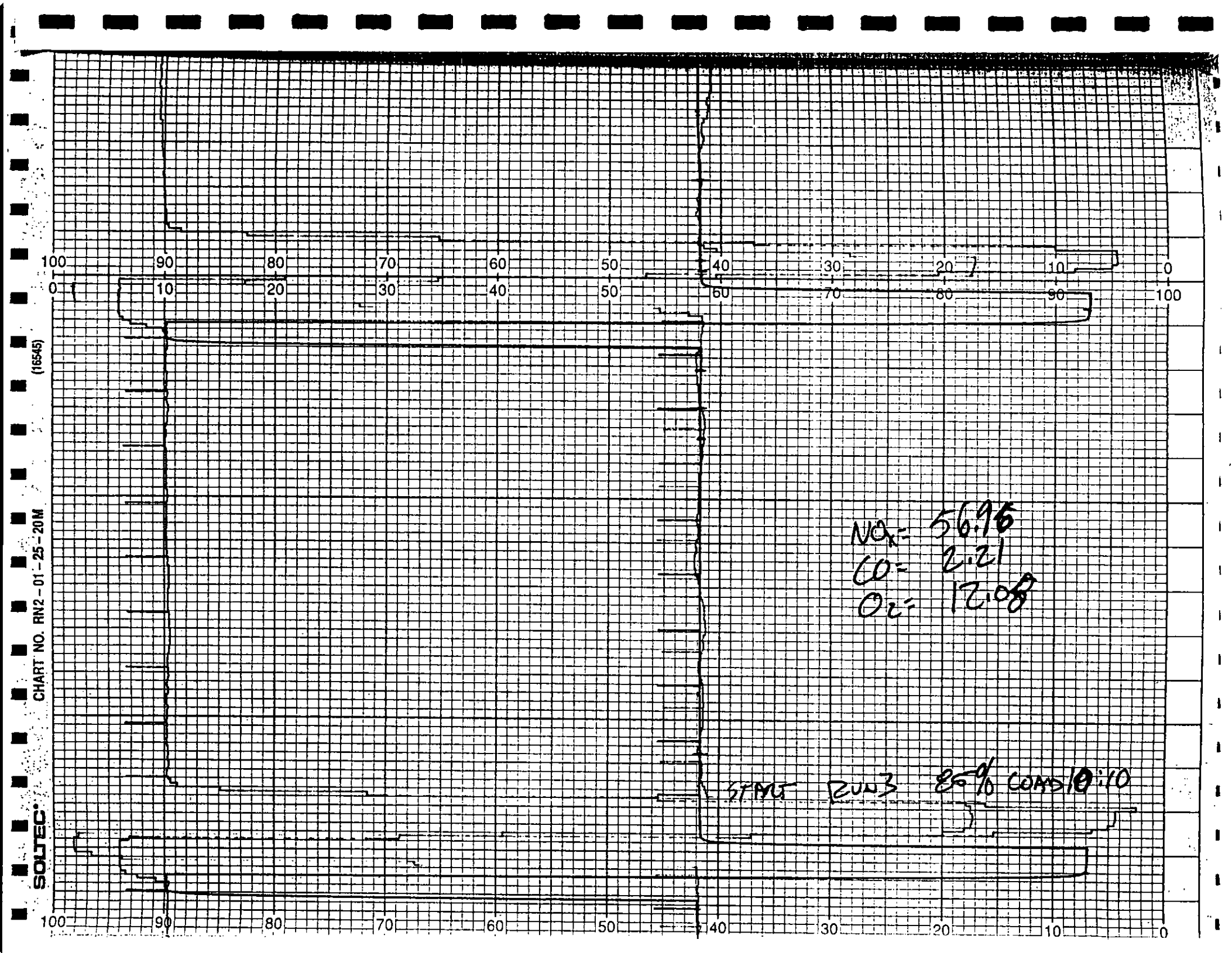

Run 3 50% O2
NOX = 50.29
CO = 2.67
O2 = 12.74

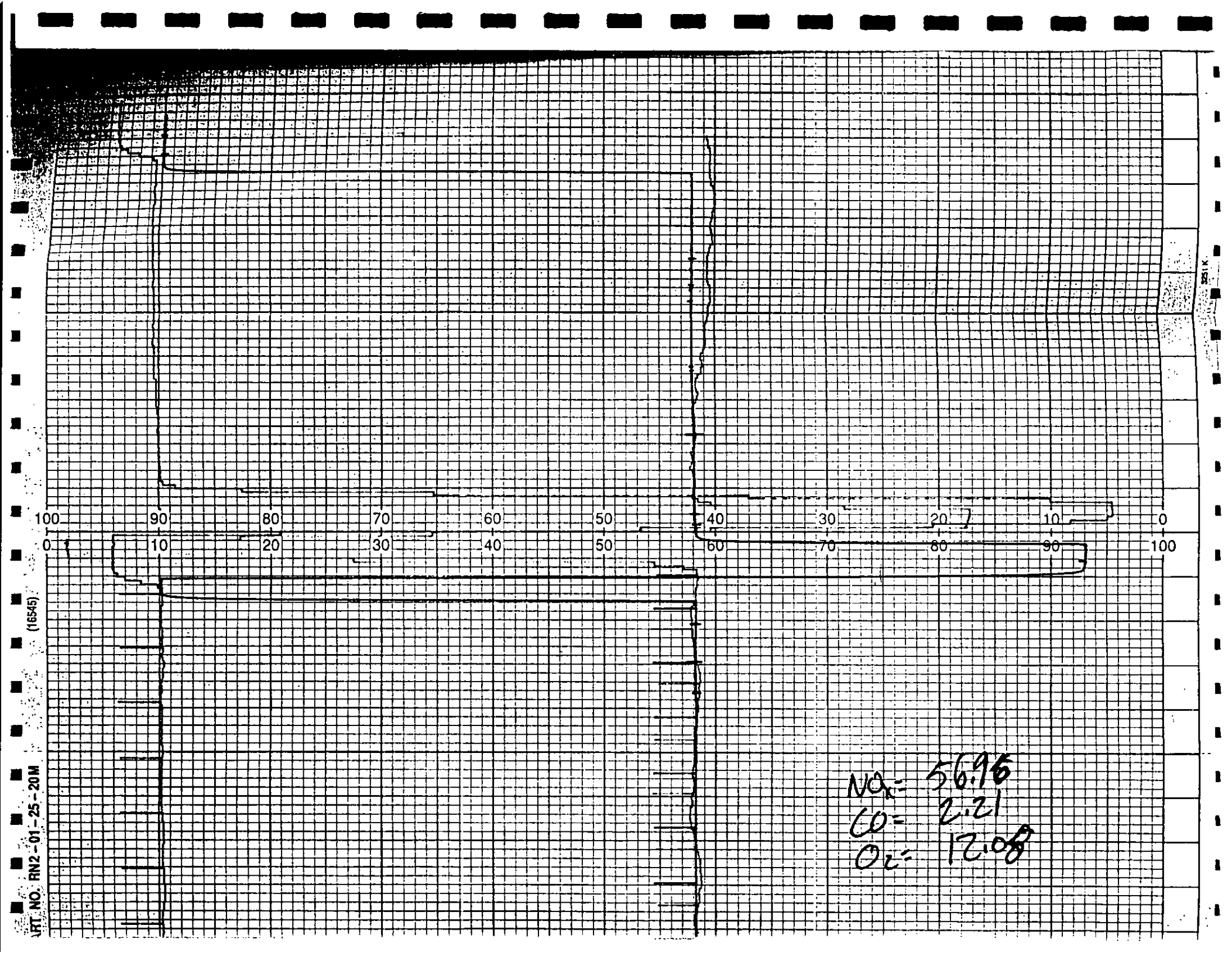

SOLTEC
CHART NO. RN2-01-25-20M
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
RUN 2 @ 70% 0.1
NOx= 56.36
CO= 7.58
O2= 12.28
START RUN 2 70% 8:09
RUN 1 @ 70% 0:1
NOx= 56.52
CO= 2.91
O2= 12.24
START 70% RUN 1 @ 7:44

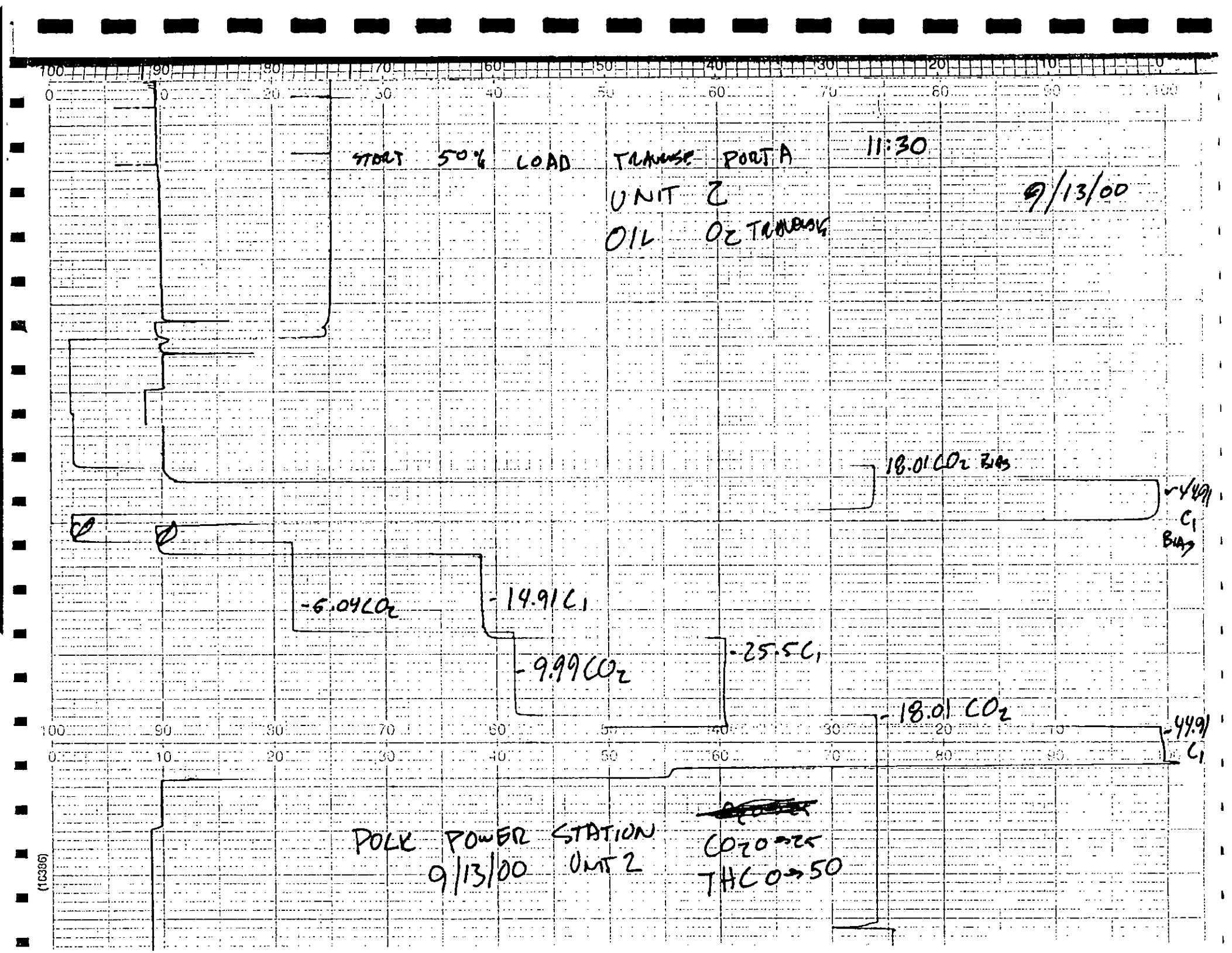

RUN 3 @ 70% 0:11
NOx = 56.66
CO = 2.58
O2 = 12.27
START RUN 3 70% 8:34
RUN 2 @ 70% 0:1
NOx = 56.36
CO = 2.58
O2 = 12.28
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
(16545)
CHART NO. RN2-01-25-20M

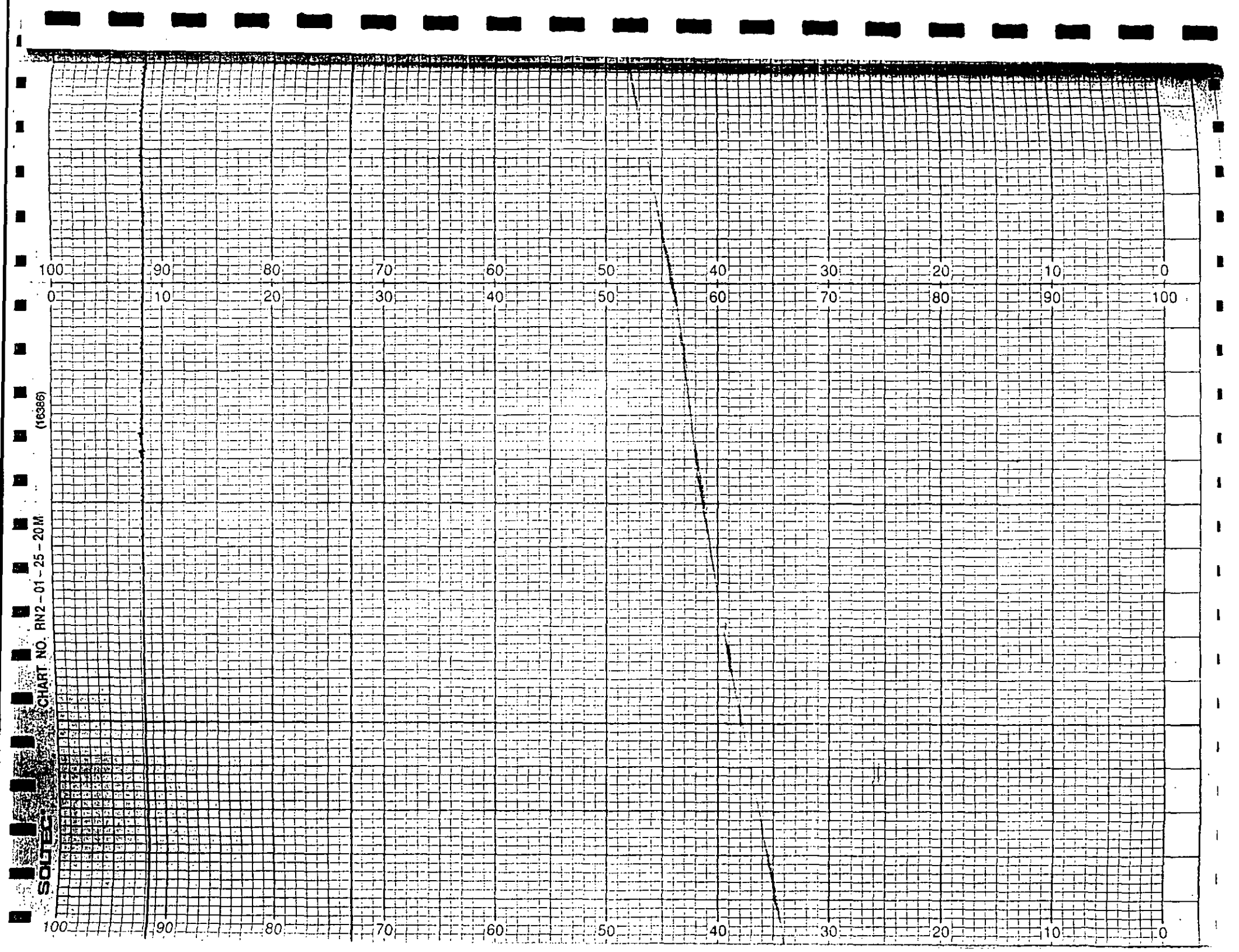

SOLTEC
CHART NO. RN2-01-25-20M
START RUN 85% LOAD 9:20
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
RUN @ 70% 0:1
NOx = 56.60
2-8

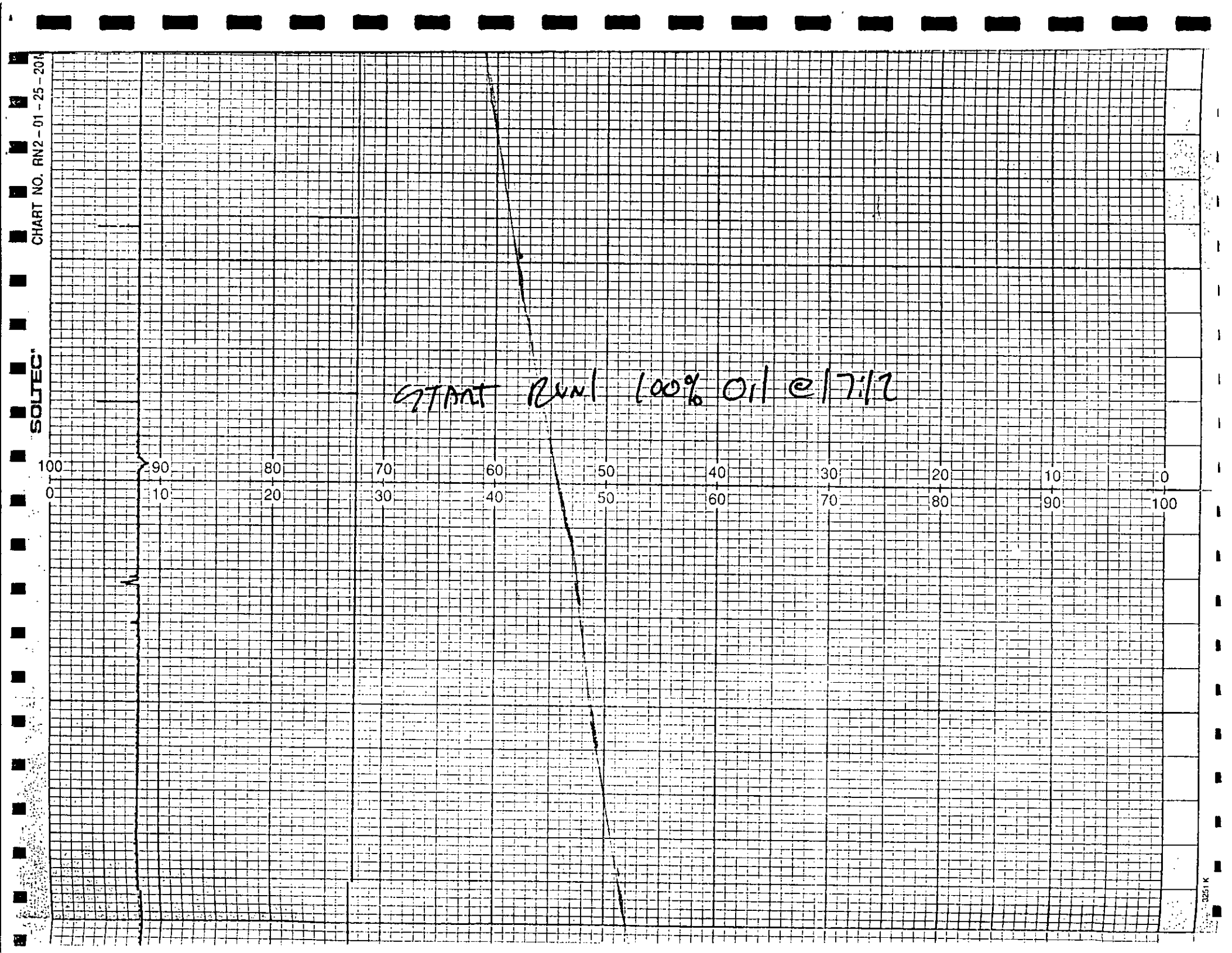

Run 2 85% O:1
NOx = 57.05
CO = 2.22
O2 = 12.06
Run 2 85% Load 9:45
Run 1 85% O:1
NOx = 57.47
CO = 2.30
O2 = 12.08

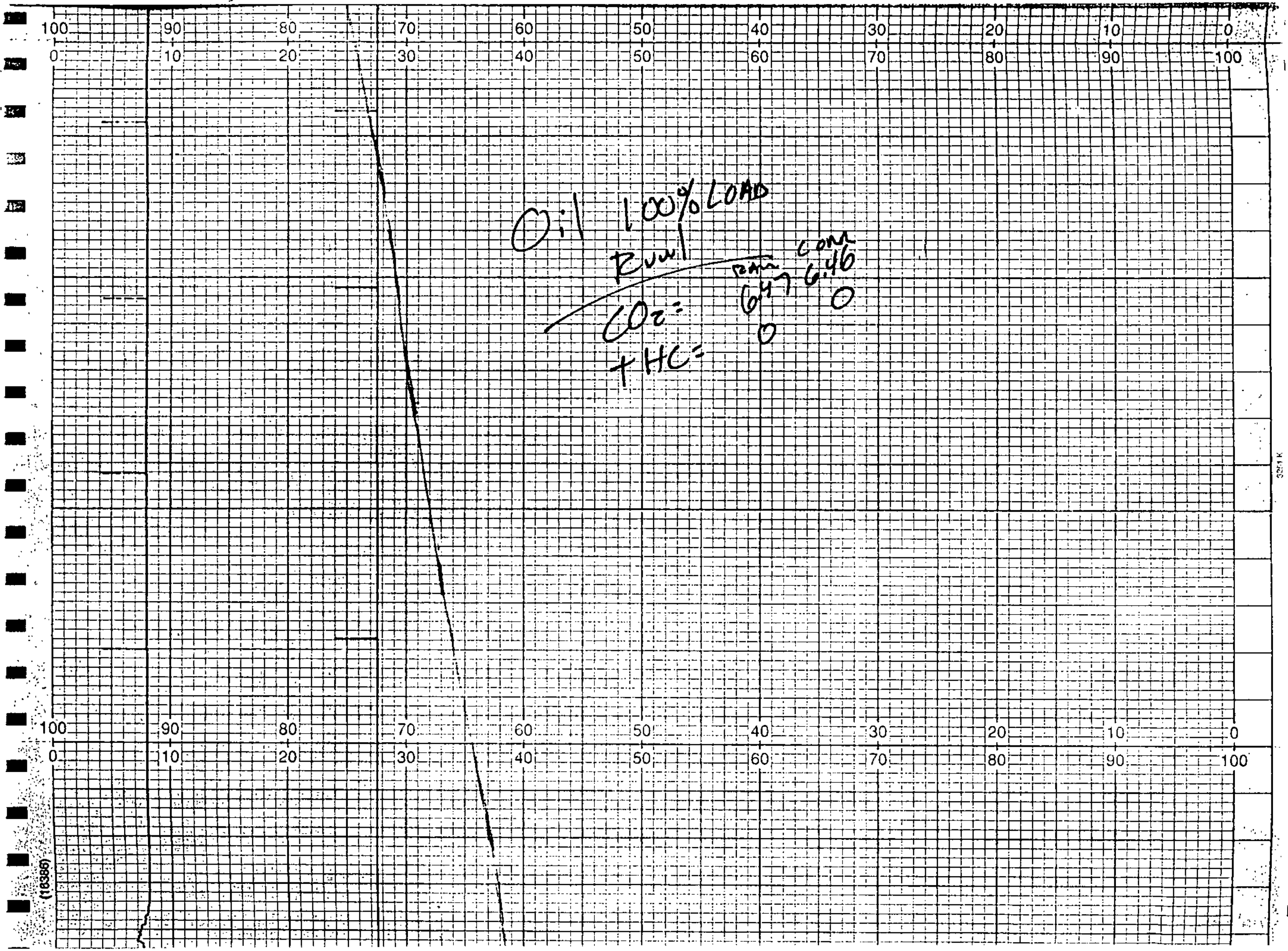

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx = 56.96
CO = 2.21
O2 = 12.08
START RUN 3 85% COMP 10:10
SOLTEC (16545)
CHART NO. RN2-01-25-20M

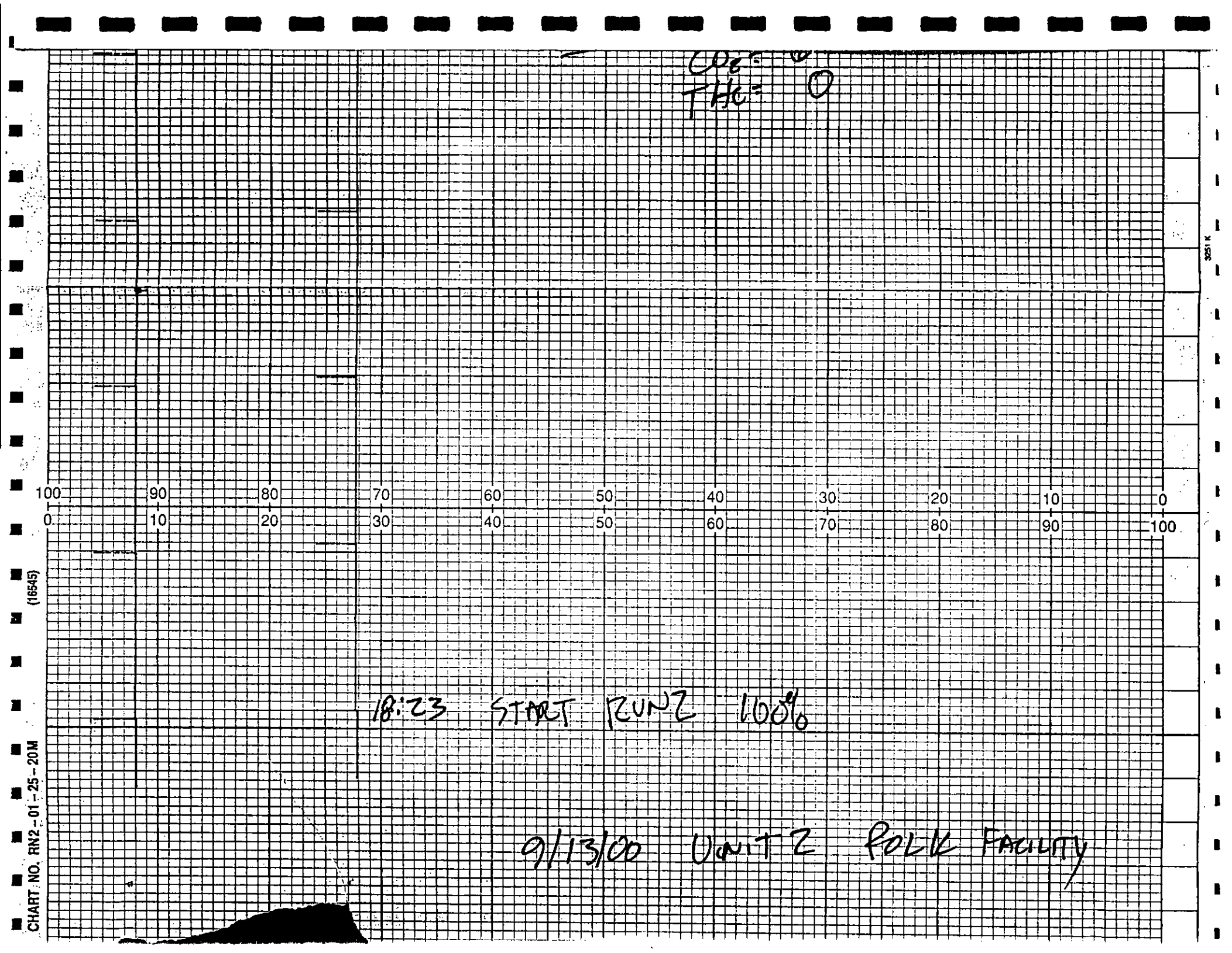

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
NOx= 56.96
CO= 2.21
O2= 12.08
(16545)
RT. NO. RN2-01-25-20M


START 50% LOAD TRAVERSE PORT A
11:30
9/13/00
UNIT 2
O2 TRAVERSE
18.01 CO2 BIAS
-44.9 C1 BIAS
-6.04 CO2
-14.91 C1
-9.99 CO2
-25.5 C1
-18.01 CO2
-44.9 C1
POLK POWER STATION
9/13/00
UNIT 2
CO 0→25
THC 0→50
(10386)


100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
SOLTEC (16386) CHART NO. RN2-01-25-20M


SOLTEC
CHART NO. RN2-01-25-20M
START RUN 100% OIL @ 17:12
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
Oil 100% LOAD
Run 1
RAW CORR
CO2 = 6.47 6.46
THC = 0 0
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
(16386)


CO: 0
THC: 0
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
18:23 START RUN2 100%
9/13/00 UNIT 2 POLK FACILITY
CHART NO. RN2-01-25-20M
(16545)
3251 K

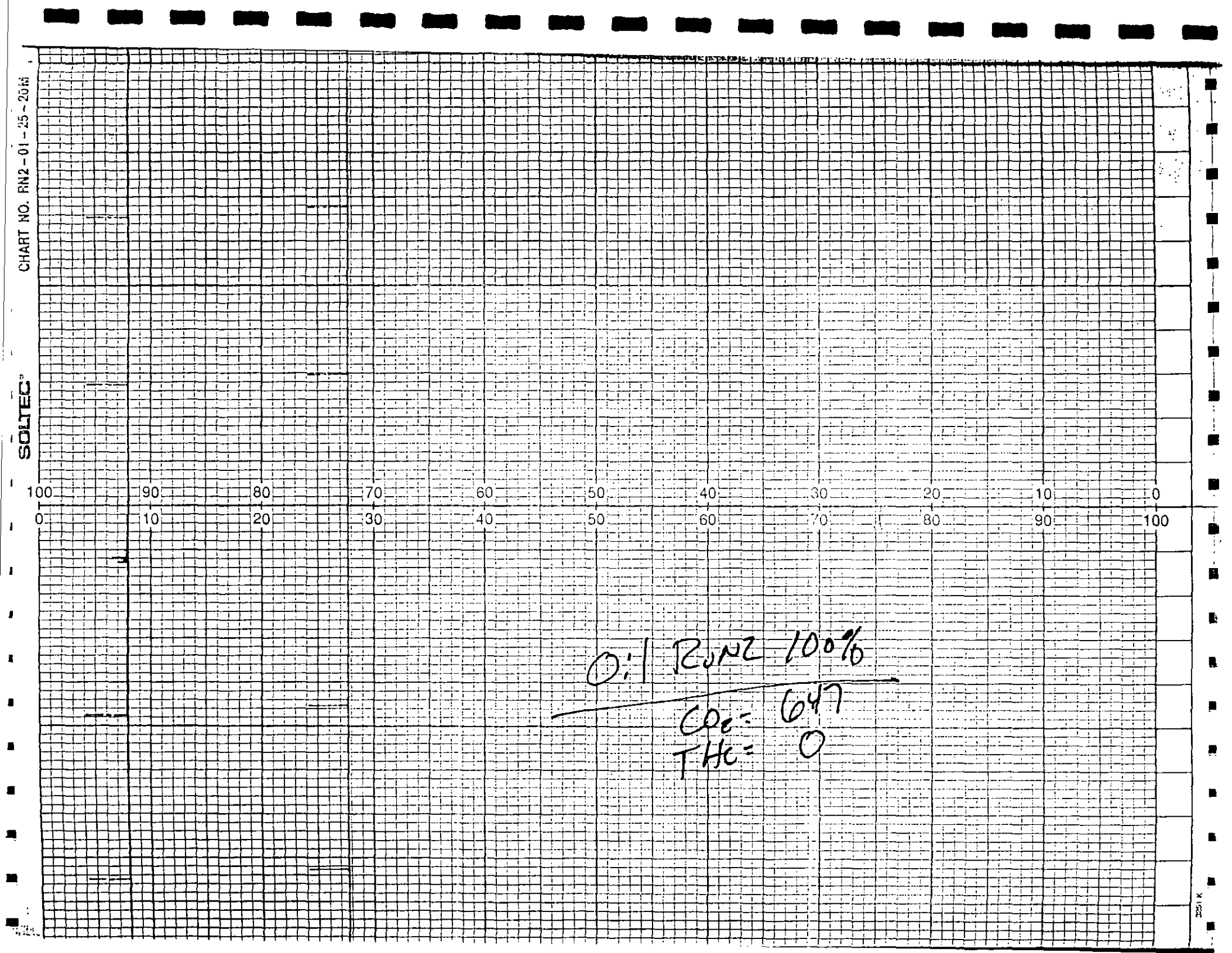
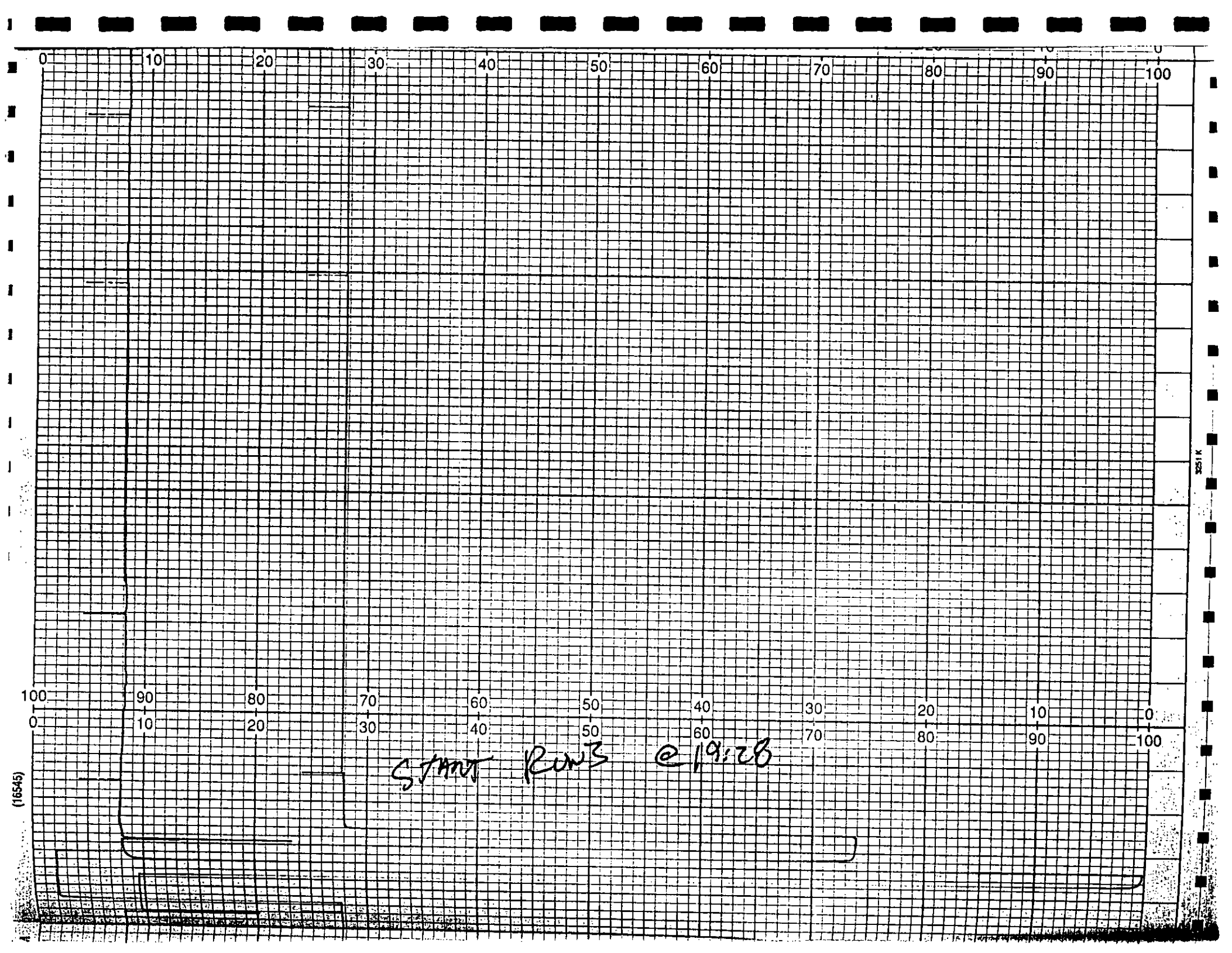
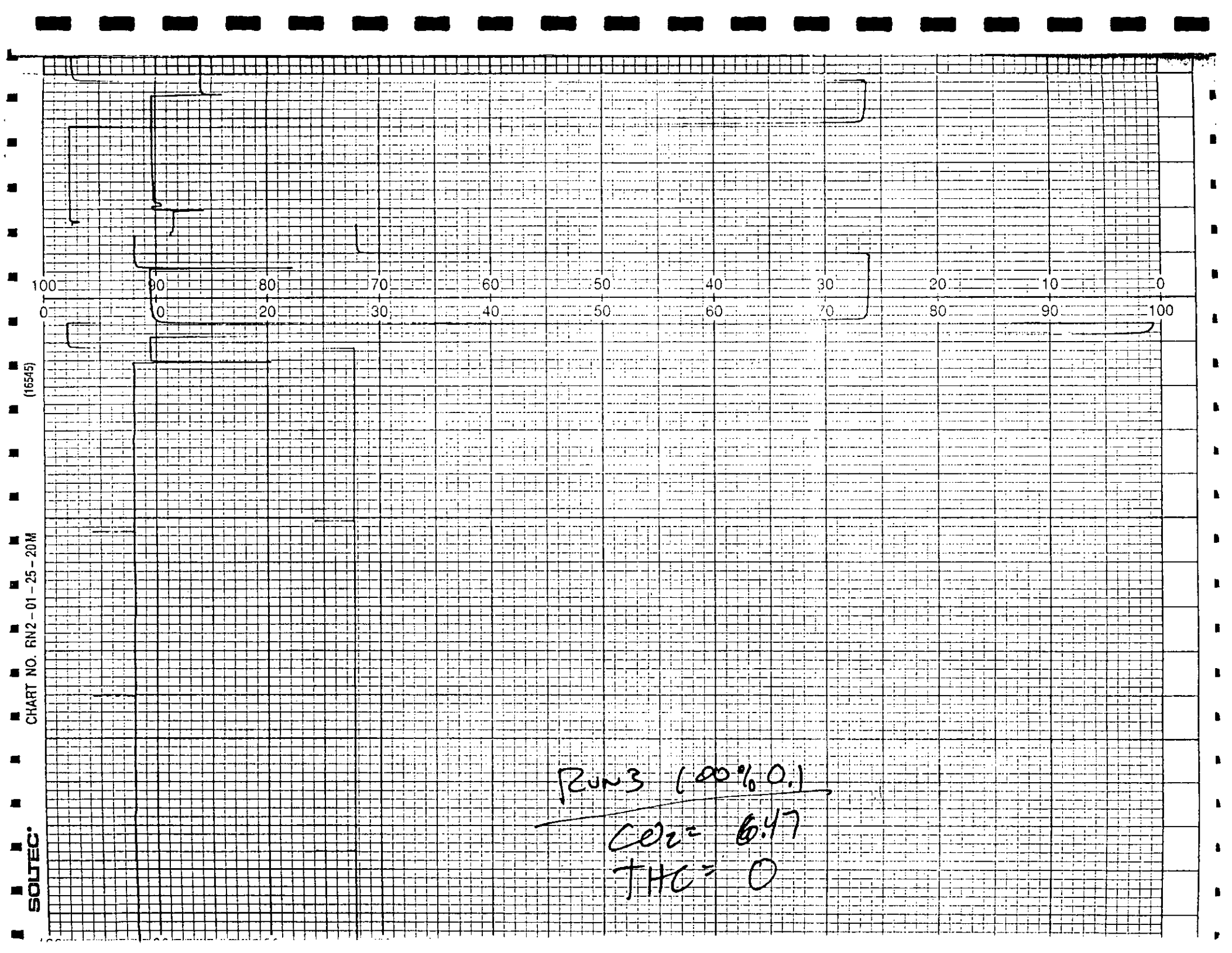
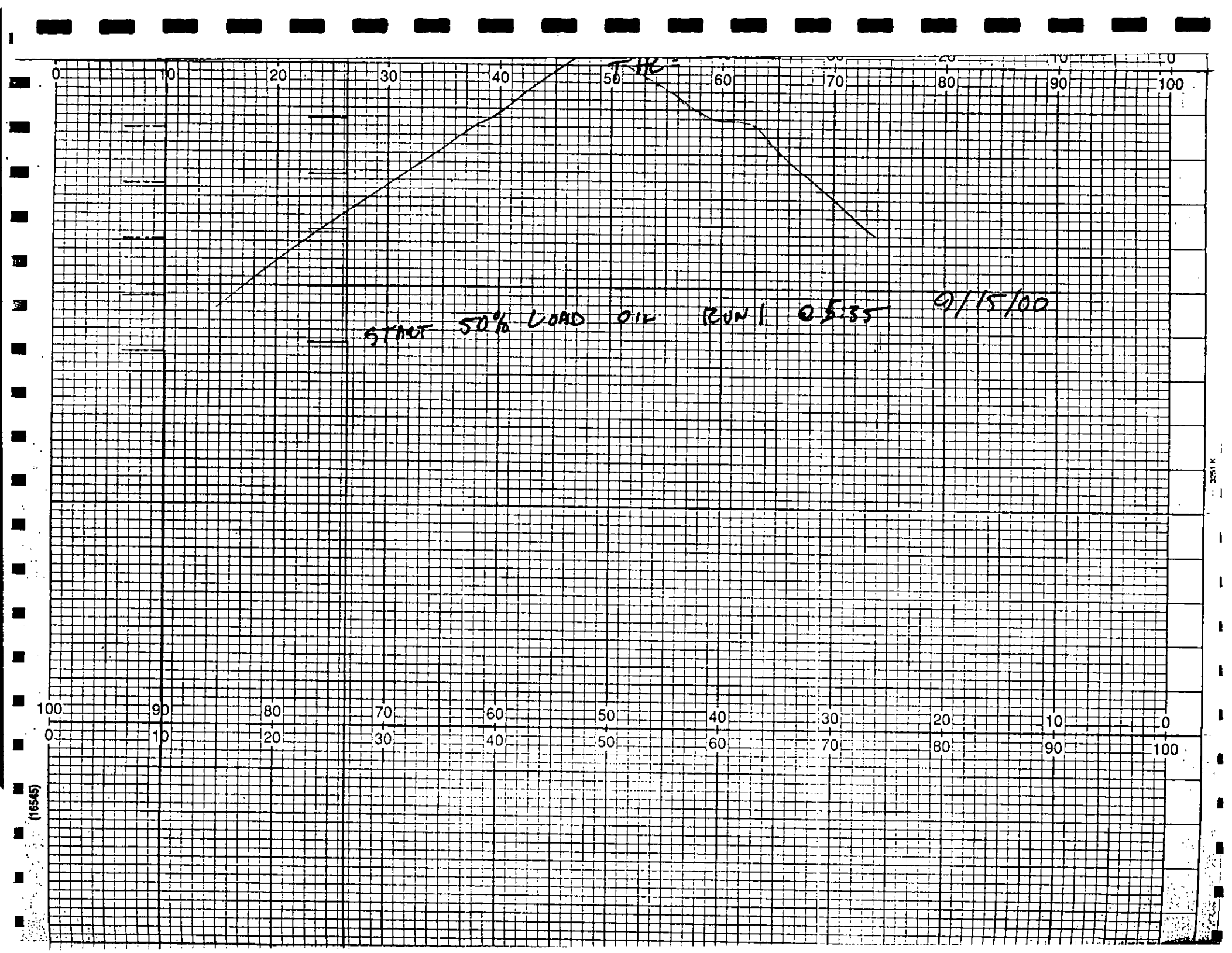
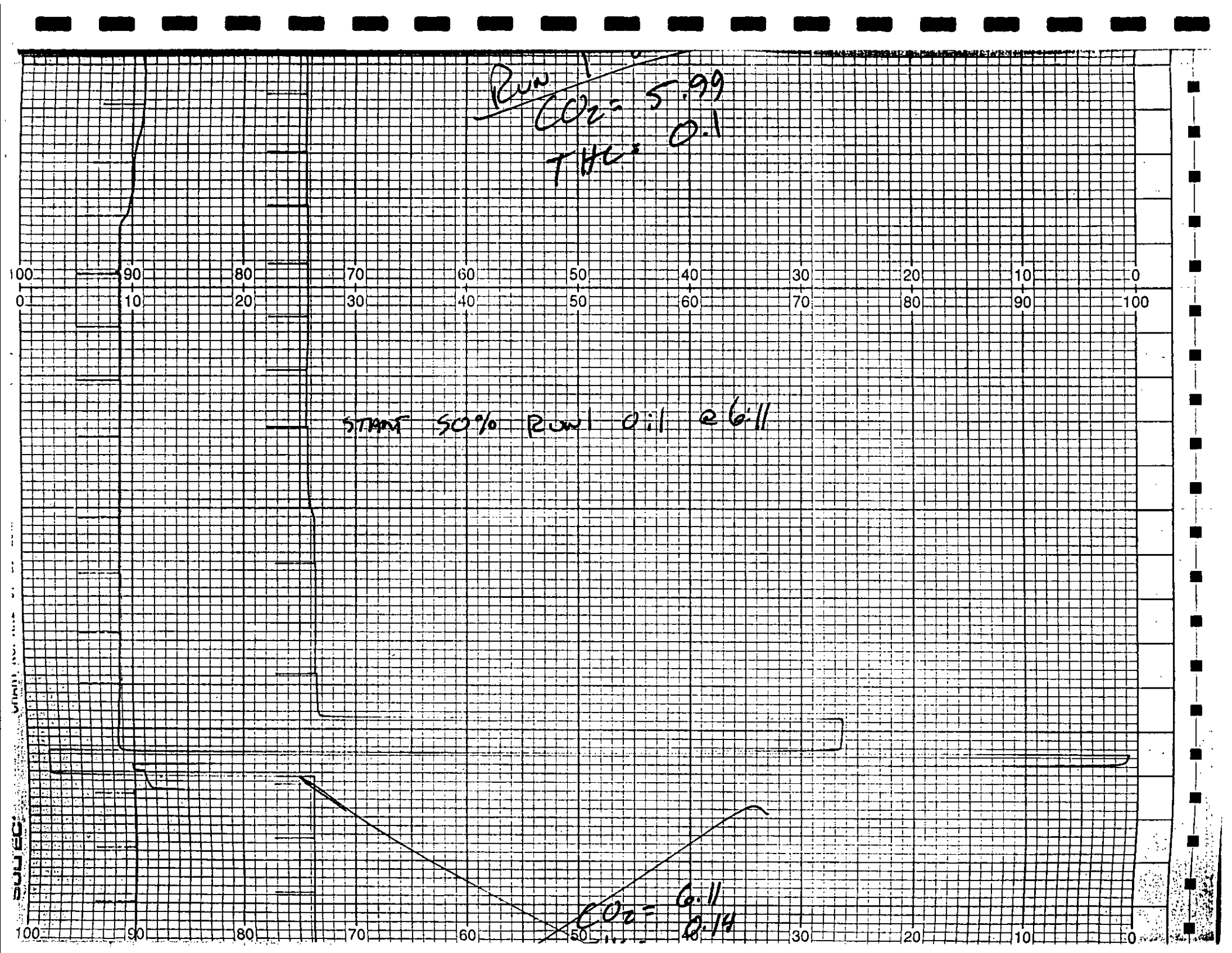


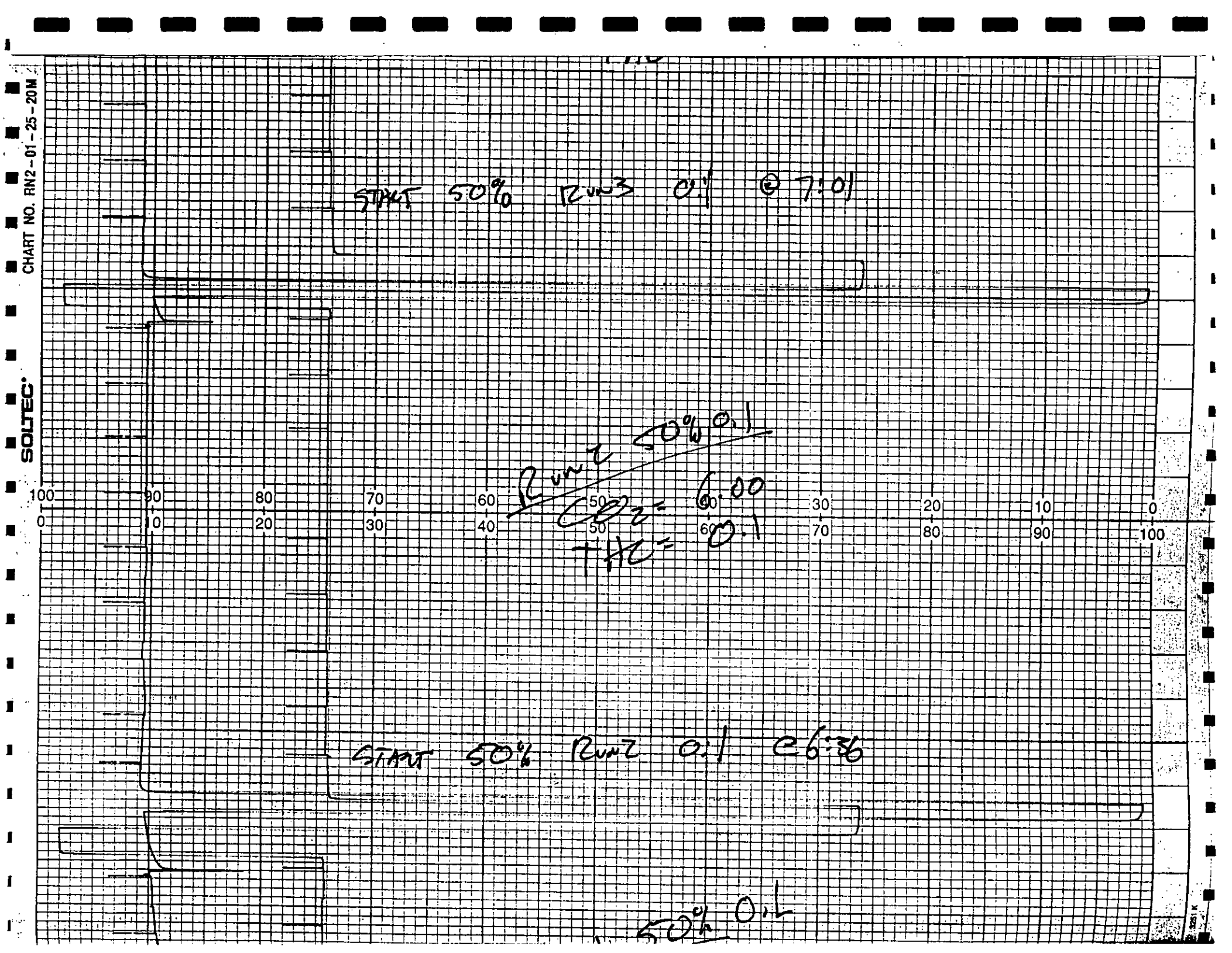
CHART NO. RN2-01-25-20M
SOLTEC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
0:1 RUN2 100%
CO2= 647
THC= 0

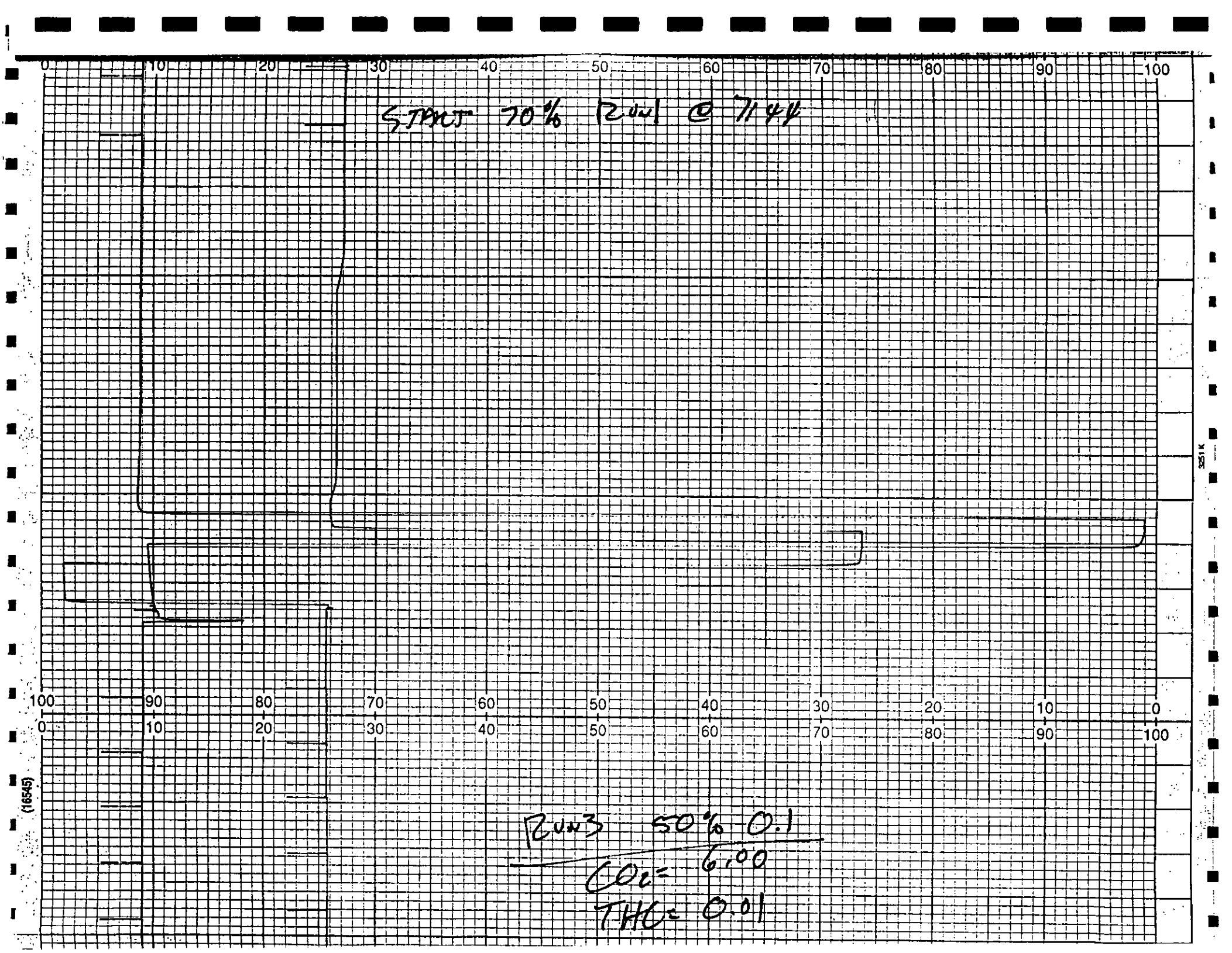

0
10
20
30
40
50
60
70
80
90
100
START RUNS @ 19:28
(16545)

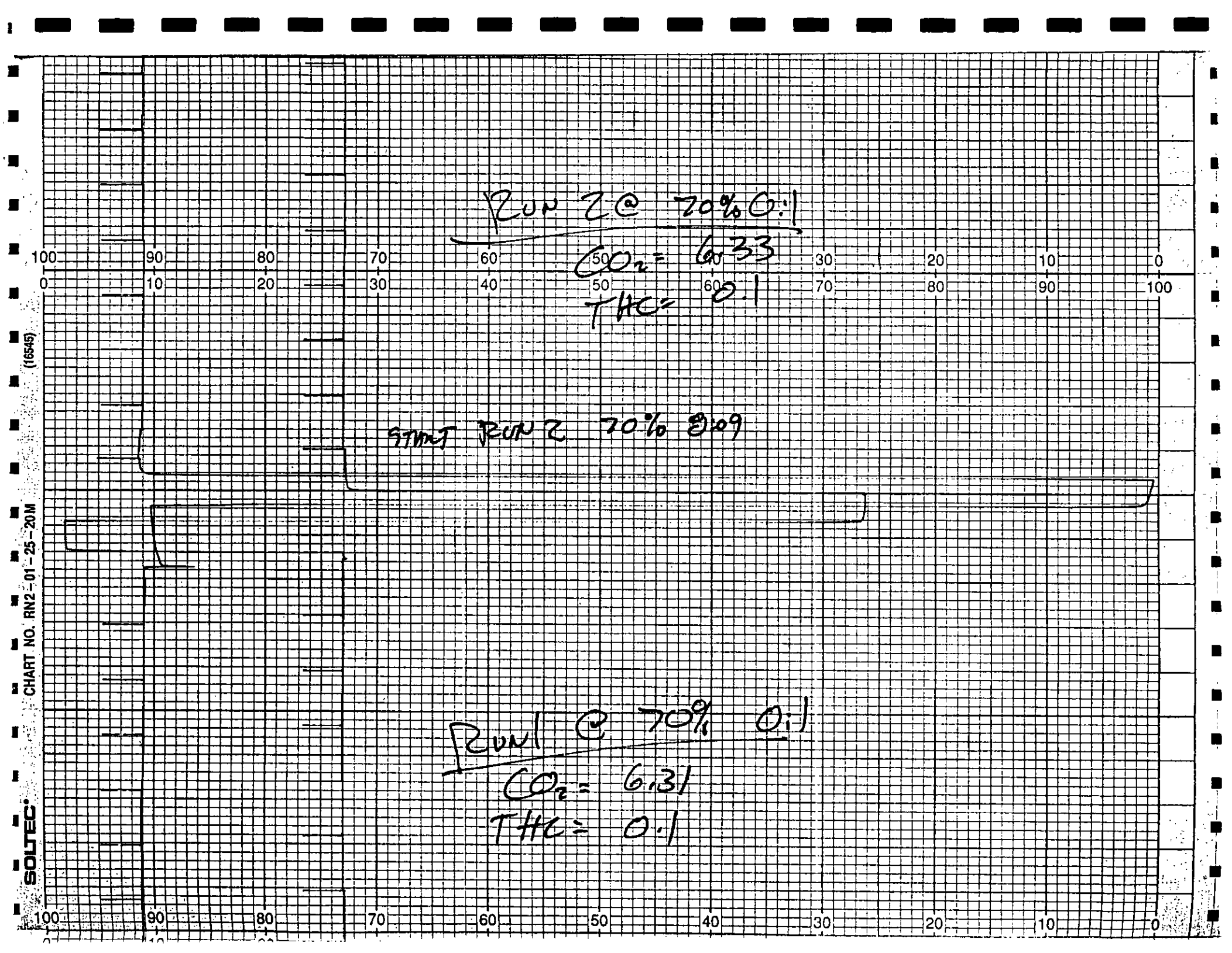

100 90 80 70 60 50 40 30 20 10 0
0 20 30 40 50 60 70 80 90 100
(16545)
CHART NO. RN2-01-25-20M
SOLTEC
RUN 3 (00% 0.1
CO2 = 6.47
THC = 0

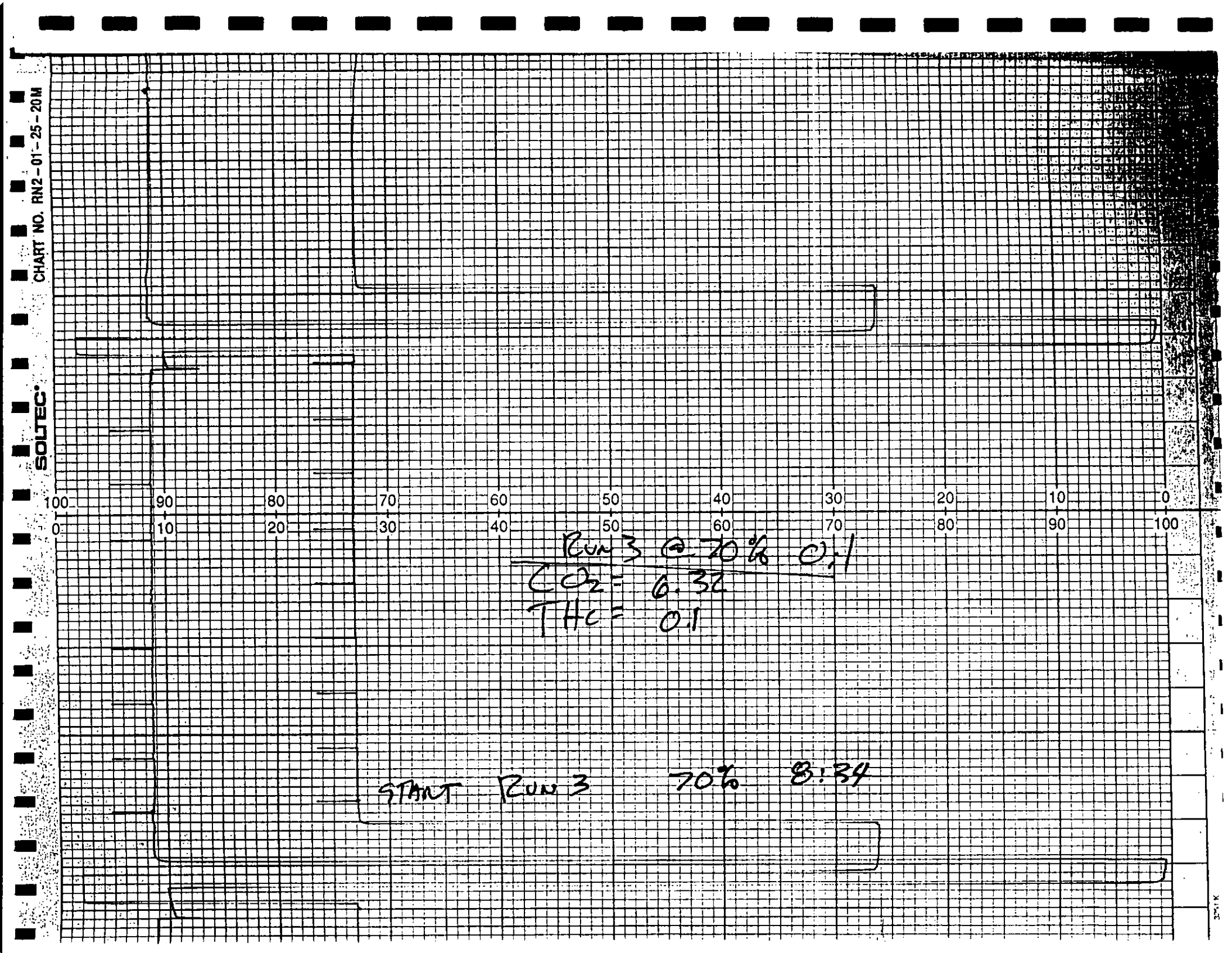

TIME
START 50% LOAD OIL RUN 1 05:55 9/15/00

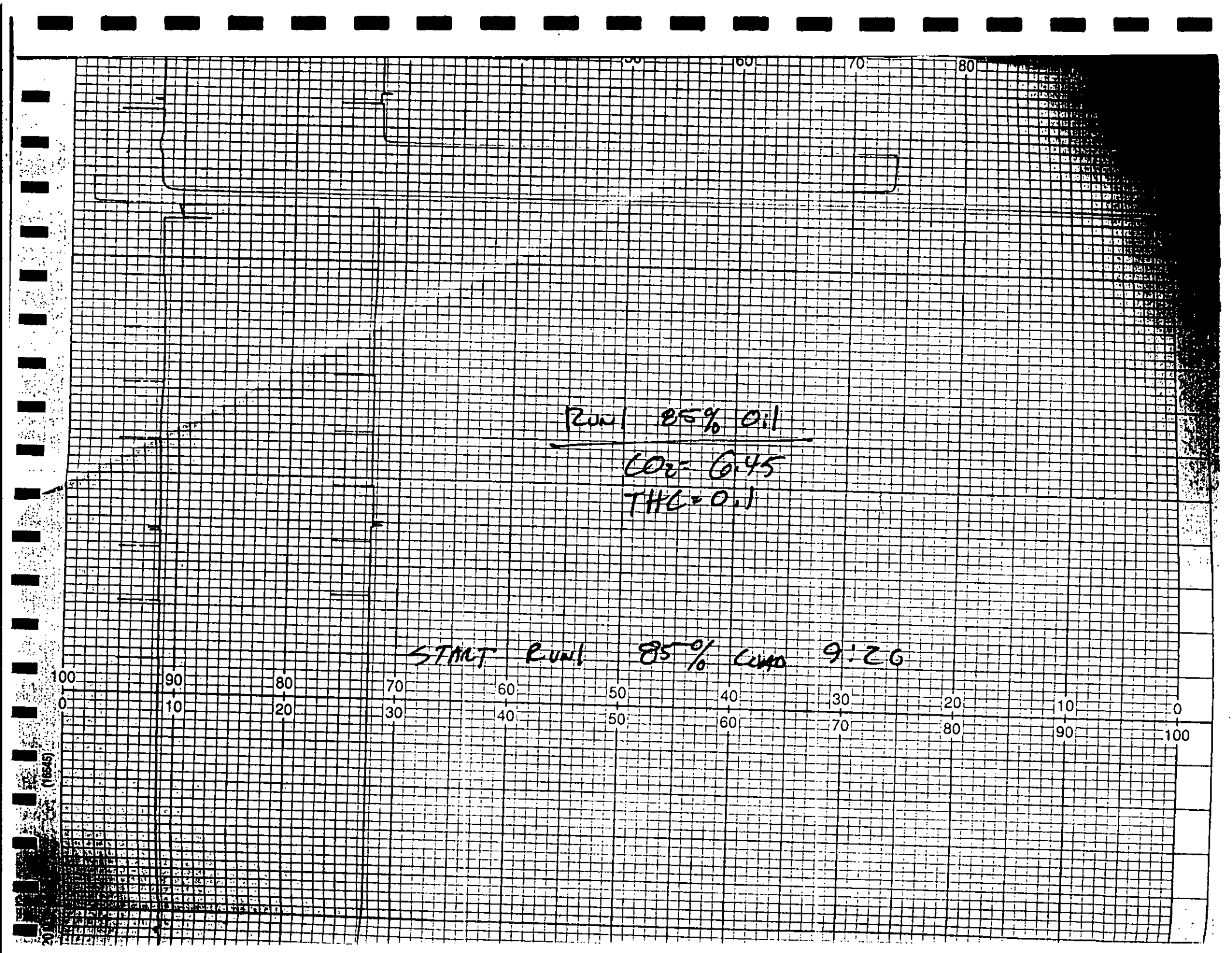

Run 1
CO2 = 5.99
THC = 0.1
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
START 50% Run 0:11 26.11
CO2 = 6.11
0.14

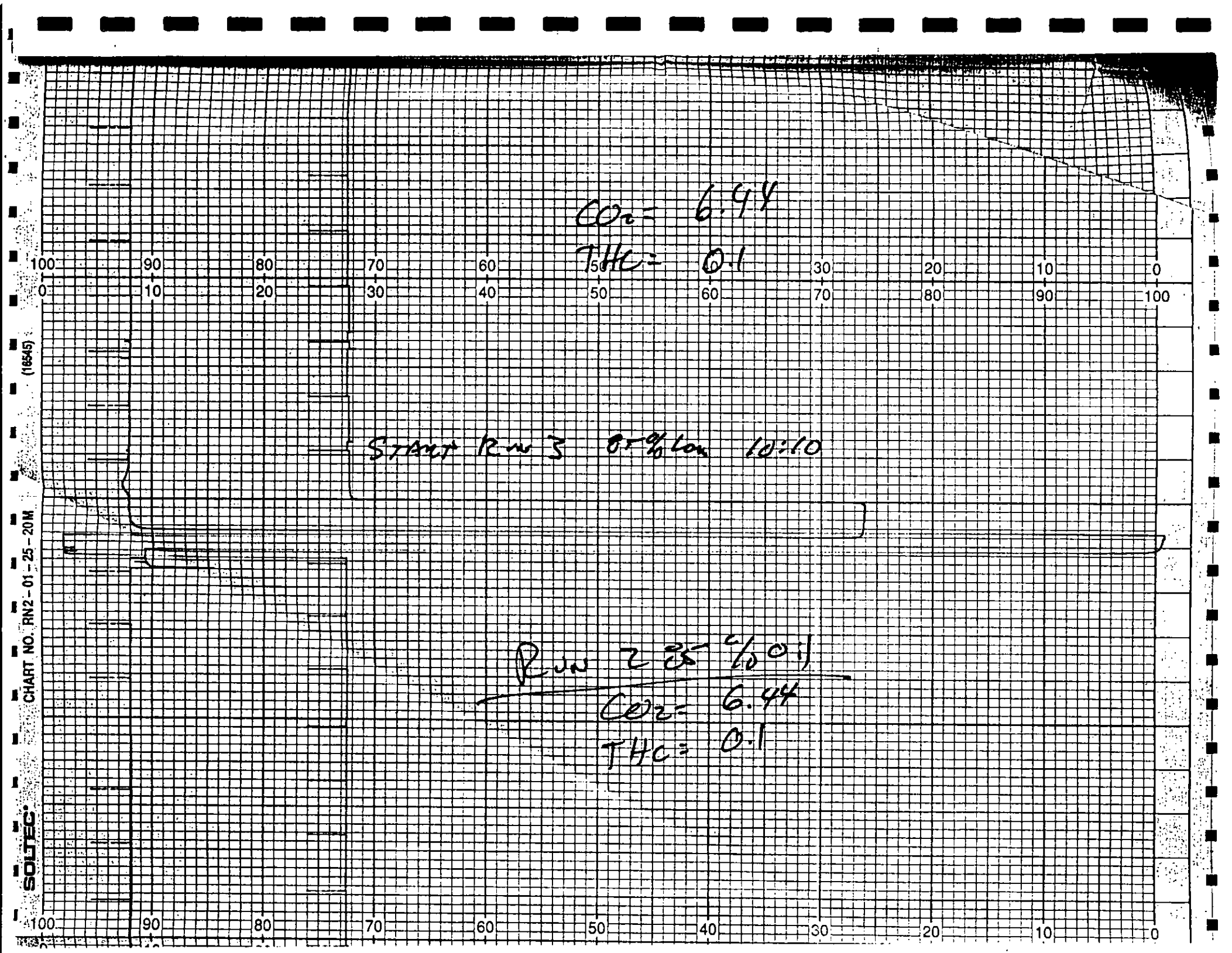

SOLTEC
CHART NO. RN2-01-25-20M
START 50% RUN3 0.1 @ 7:01
RUN2 50% 0.1
CO2= 6.00
THC= 0.1
START 50% RUN2 0.1 @ 6:36
50% 0.1


0 10 20 30 40 50 60 70 80 90 100
START 70% RUN1 @ 7:44
RUN3 50% 0.1
CO= 6.00
THC= 0.01
(16545)
3251 K


Run 2 @ 70% 0:1
CO_2 = 6.33
THC = 0.1
START RUN 2 70% 0:09
Run 1 @ 70% 0:1
CO_2 = 6.31
THC = 0.1
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
SOLTEC
CHART NO. RN2 - 01 - 25 - 20M
(16545)


SOLTEC
CHART NO. RN2-01-25-20M
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
RUN 3 @ 70% 0.1
CO_2 = 6.32
THC = 0.1
START RUN 3 70% 8:34


Run 85% oil
CO2 = 6.45
THC = 0.1
START Run 85% comp 9:26


CO2 = 6.44
THC = 0.1
START RUN 3 0% Load 10:10
RUN 2 25% Load
CO2 = 6.44
THC = 0.1
SOLTEC
CHART NO. RN2-01-25-20M
(16545)

APPENDIX G:
OPACITY OBSERVATIONS

EPA Method Used: (Circle One)
Method 9 | Method 22 | Other:

Company Name	Polk CNTY Electric/Tampa Electric
Facility Name	Polk CNTY Power Station
Street Address	9995 State Rd 37 South
City	Mulberry
State	FL
Zip	33860

Process	Turbine	Unit#	02
Operating Mode	100% load		
Control Equipment	Steam/water & oil injection	Operating Mode	Full

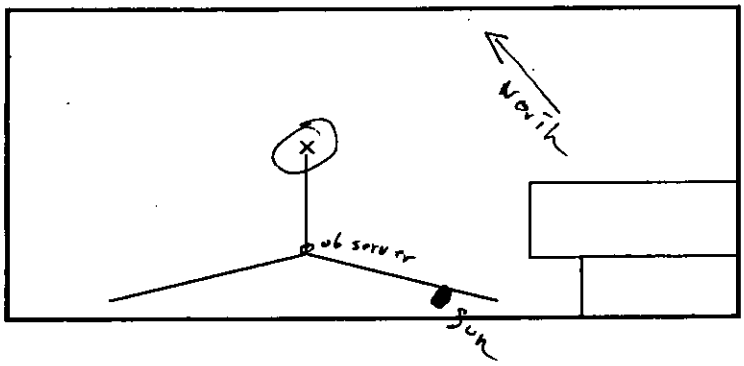
Describe Emiss. Pt.: Turbine Stack, Circular

Height of Emiss. Pt. Start	~150'	End	Same
Hgt of Emiss. Pt. Rel. to Observer Start	~150'	End	Same
Distance to Emiss. Pt. Start	~400'	End	Same
Direction to Emiss. Pt. (Degrees) Start	45°	End	Same
Vertical Angle to Obs. Pt. Start	30°	End	Same
Direction to Obs. Pt. (Degrees) Start	45°	End	Same

Distance and Direction to Observation Point from Emission Point: Start 10 FT up End Same

Describe Emissions Start	None	End	Same
Emission Color Start	N/A	End	
Water Droplet Plume	Attached	Detached	(None)

Describe Plume Background Start	Partly cloudy sky	End	Same
Background Color Start	Blue	End	Same
Sky Conditions Start	Partly cloudy	End	Same
Wind Speed Start	0-5 mph	End	Same
Wind Direction Start	Variable	End	Same
Ambient Temp. Start	90°	End	Same
Wet Bulb Temp.	79°	R.H. %	



Form #					Page	Of
0	I	L	0	1	1	1

Continued on VEO Form Number:

Observation Date	Time Zone	Start Time	Stop Time
9/13/00	EST	5:15 pm	6:25

Min/Sec	0	15	30	45	Min/Sec	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

Observer's Name	Jeremiah Sarrell
Observer's Signature	
Date	9/13/00
Organization	Cubix Corp
Certified By	TNRCC
Date	4/00

Additional Information:

EPA Method Used: (Circle One)
Method 9 — Method 22 — Other:

Form #	O	I	L	02	Page 1	Of 1
Continued on VEO Form Number						

Company Name: Polk Cnty Electric / Tampa Electric
Facility Name: Polk Cnty Power Station
Street Address: 9975 State Rd 37 South
City: Mulberry State: FL Zip: 33860

Process	Unit#	Operating Mode
Turbine	02	100% load
Control Equipment: Water injection	oil	Operating Mode: Full

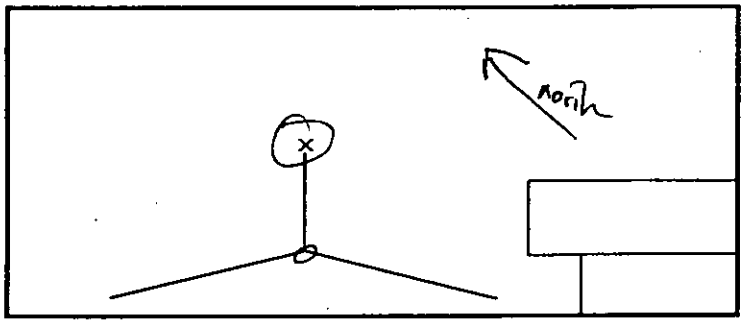
Describe Emiss. Pt.: Circular Turbine Stack

Height of Emiss. Pt.	Hgt of Emiss. Pt. Rel. to Observer
Start ~150 End Same	Start ~150 End Same
Distance to Emiss. Pt.	Direction to Emiss. Pt. (Degrees)
Start ~400 End Same	Start 45° End Same

Vertical Angle to Obs. Pt.	Direction to Obs. Pt. (Degrees)
Start ~30° End Same	Start 45° End
Distance and Direction to Observation Point from Emission Point	
Start 10ft up End	

Describe Emissions: Start None End Same
Emission Color: Start N/A End Same
Water Droplet Plume: Attached Detached (None?)

Describe Plume Background: Start partly cloudy sky End Same
Background Color: Start Blue End Same
Sky Conditions: Start partly cloudy End Same
Wind Speed: Start 5-10 mph End Same
Wind Direction: Start Variable End Same
Ambient Temp.: Start 91° End Same
Wet Bulb Temp.: 79°
R.H. %



Observation Date	Time Zone	Start Time	Stop Time
9/13/00	EST	6:35	7:40

Min/Sec	0	15	30	45	Min/Sec	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

Observer's Name: Jerchjah Jervell
Observer's Signature: [signature] Date: 9/13/00
Organization: Cubix Corp.
Certified By: TNRCC Date: 4/00

Additional Information

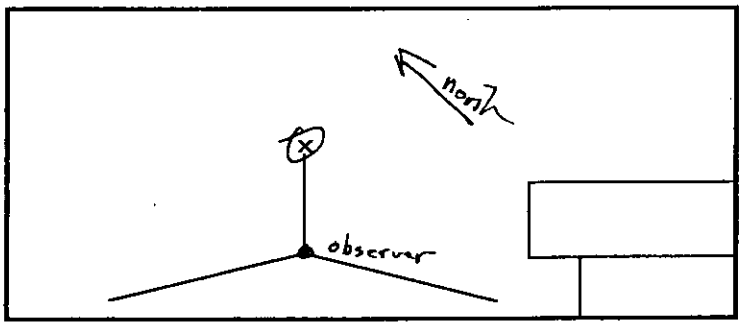
EPA Method Used: (Circle One)
Method 9 | Method 22 | Other:

Company Name: Polk city Electric/ Tampa Elec.
Facility Name: Polk County Power Station
Street Address: 7225 Stair Rd 37 South
City: Mulberry | State: FL | Zip: 33860

Process	Unit#	Operating Mode
Turbine	02	Full load
Control Equipment: Water Injection	0:1	Operating Mode: Full

Describe Emiss. Pt.: Circular Turbine Stack

Height of Emiss. Pt. Start ~150' End Same	Hgt of Emiss. Pt. Rel. to Observer Start ~150 End Same
Distance to Emiss. Pt. Start ~480' End Same	Direction to Emiss. Pt. (Degrees) Start 45° End Same
Vertical Angle to Obs. Pt. Start 30° End Same	Direction to Obs. Pt. (Degrees) Start 45° End Same
Distance and Direction to Observation Point from Emission Point Start 10 FT Up End Same	
Describe Emissions Start None End Same	
Emission Color Start N/A End	Water Droplet Plume Attached Detached (None)
Describe Plume Background Start Clear Sky End Same	
Background Color Start Blue End Same	Sky Conditions Start Few clouds End Same
Wind Speed Start 5-10 mph End Same	Wind Direction Start Variable End Same
Ambient Temp. Start 88 End Same	Wet Bulb Temp. 79 / R.H. %



Sun

Form # 0 1 L 0 3 | Page 1 Of 1
Continued on VEO Form Number

Observation Date: 9/13/00 | Time Zone: EST | Start Time: 7:45 | Stop Time: 8:45

Min/Sec	0	15	30	45	Min/Sec	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	1	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

Observer's Name: Jeremiah Jarrell
Observer's Signature: [signature] | Date: 9/13/00
Organization: Cubix Corp
Certified By: TNRCC | Date: 4/00

Additional Information

APPENDIX H:
OPERATIONAL DATA

	Generator Output	Mean Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	Discharge Temp °F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Ha	Losses H2O
9/15/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM
End Time	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 06:11:00	79.28125	1198.512451	13.54400539	672.3125	100.7079468	125.5237656	48.64352798	17.93491745	1.324195977	Tag not found: -5	29.61144257	1.97155869
15-Sep-00 06:12:00	80.86405945	1198.375	13.53060246	673.4545288	100.4275665	126.2103882	48.65221024	17.9347477	1.325495133	Tag not found: -5	29.61150742	1.970351219
15-Sep-00 06:13:00	81.289505	1199.634155	13.51720047	674.1363525	100.25	126.8970108	48.66089249	17.93457794	1.326798771	Tag not found: -5	29.61157227	1.969143867
15-Sep-00 06:14:00	81.05955505	1200.201904	13.50379753	673.9626465	100.25	126.9136581	48.66957474	17.93440819	1.328101088	Tag not found: -5	29.61163712	1.967936397
15-Sep-00 06:15:00	80.765625	1200.310425	13.49039459	673.75	100.1176453	126.8120804	48.67825699	17.93423843	1.329407996	Tag not found: -5	29.61170387	1.966729045
15-Sep-00 06:16:00	80.45726776	1200.035278	13.47699165	673.75	100.6301651	126.710495	48.68693924	17.93406868	1.330717503	Tag not found: -5	29.6176872	1.965521693
15-Sep-00 06:17:00	80.78222656	1200.167603	13.46358967	673.75	100.3822327	126.6089172	48.69562149	17.93389893	1.332029523	Tag not found: -5	29.61183357	1.964314222
15-Sep-00 06:18:00	80.69921875	1199.641113	13.45018673	673.75	100.25	126.5073395	48.70430374	17.93373108	1.333344394	Tag not found: -5	29.61189842	1.963106871
15-Sep-00 06:19:00	80.46875	1199.483643	13.43678379	673.75	100.25	126.4057541	48.71298599	17.93356133	1.334661747	Tag not found: -5	29.61196327	1.961899519
15-Sep-00 06:20:00	80.63541412	1199.55127	13.4255228	673.75	100.25	126.3041763	48.72166824	17.93339157	1.335768583	Tag not found: -5	29.61202812	1.960692048
15-Sep-00 06:21:00	80.7265625	1199.618774	13.47637177	673.5144043	100.25	126.2025986	48.73035049	17.93322182	1.330715873	Tag not found: -5	29.61209297	1.959484696
15-Sep-00 06:22:00	80.3046875	1199.686401	13.52722073	673.25	100.25	126.1010132	48.73903275	17.93305206	1.325701149	Tag not found: -5	29.61215973	1.958277225
15-Sep-00 06:23:00	79.86399841	1199.861816	13.57806873	673.25	100.5914612	125.9994354	48.747715	17.93288231	1.320724078	Tag not found: -5	29.61222458	1.957069874
15-Sep-00 06:24:00	79.546875	1199.822388	13.62891769	673.25	100.75	125.8978577	48.75639725	17.93271255	1.315784053	Tag not found: -5	29.61228943	1.955862522
15-Sep-00 06:25:00	80.29771423	1199.918579	13.6797657	673.25	100.9375	125.7962723	48.7650795	17.9325428	1.310880843	Tag not found: -5	29.61235428	1.954655051
15-Sep-00 06:26:00	80.14316559	1200.060181	13.71444988	673.1833496	100.75	125.6946945	48.77376175	17.93237495	1.307553355	Tag not found: -5	29.61241913	1.9534477
15-Sep-00 06:27:00	80.10958862	1200.20166	13.69602203	672.9611206	100.75	125.5931168	48.78244781	17.9322052	1.309300259	Tag not found: -5	29.61248398	1.952240348
15-Sep-00 06:28:00	79.52807617	1200.414063	13.67759418	672.21875	100.75	125.5229797	48.79113007	17.93203545	1.311051871	Tag not found: -5	29.61254883	1.951032877
15-Sep-00 06:29:00	78.59375	1199.918213	13.65916729	672.1875	100.75	125.7987137	48.79981232	17.93186569	1.312808117	Tag not found: -5	29.61261368	1.949825525
15-Sep-00 06:30:00	79.3340683	1199.345337	13.64073944	672.4171143	100.75	126.0744478	48.80849457	17.93169594	1.3145892	Tag not found: -5	29.61268044	1.948618054
15-Sep-00 06:31:00	80.12631989	1199.851074	13.62231159	671.6875	100.75	126.3501816	48.81717682	17.93152618	1.316335048	Tag not found: -5	29.61274529	1.947410703
Average	80.23227038	1199.743397	13.55903353	673.2159889	100.5140246	126.1868998	48.7303514	17.93322173	1.322663931	#DIV/0!	29.6120937	1.959484674

	Generator Output	Mean Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	Discharge Temp °F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Ha	Losses H2O
9/15/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM	9/15/00 6:36 AM
End Time	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM	9/15/00 6:56 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 06:36:00	80.29458618	1200.096191	13.53017235	673.2870483	100.5909119	126.3819199	48.86058807	17.93067932	1.325236579	Tag not found: -5	29.61306953	1.941373706
15-Sep-00 06:37:00	80.94458008	1200.158813	13.5117445	673.25	100.3486862	126.3700562	48.86927032	17.93050957	1.327031426	Tag not found: -5	29.61313629	1.940166354
15-Sep-00 06:38:00	80.57630157	1200.221558	13.49331665	673.25	100.546051	126.3581848	48.87795258	17.93033981	1.328831175	Tag not found: -5	29.61320114	1.938958883
15-Sep-00 06:39:00	80.94366455	1200.284302	13.4748888	673.25	100.7434235	126.3463211	48.88663483	17.93017006	1.330635846	Tag not found: -5	29.61326599	1.937751532
15-Sep-00 06:40:00	81.26438904	1200.518799	13.45646095	673.25	100.2807893	126.3344574	48.89531708	17.93000031	1.33244546	Tag not found: -5	29.61333084	1.93654418
15-Sep-00 06:41:00	80.328125	1200.638428	13.4380331	673.25	100.7423096	126.3225861	48.90399933	17.92983246	1.334260179	Tag not found: -5	29.61339569	1.935336709
15-Sep-00 06:42:00	81.16858673	1199.949341	13.41960526	673.25	100.5596771	126.3107224	48.91268158	17.9296627	1.33607974	Tag not found: -5	29.61346054	1.934129357
15-Sep-00 06:43:00	80.21875	1199.67688	13.40117741	673.25	100.366127	126.298851	48.92136383	17.92949295	1.337904305	Tag not found: -5	29.61352539	1.932922006
15-Sep-00 06:44:00	80.9026413	1199.657593	13.38032722	672.75	100.25	126.2869873	48.93004608	17.9293232	1.339768437	Tag not found: -5	29.61359215	1.931714535
15-Sep-00 06:45:00	80.68629456	1199.638184	13.35735798	672.7098389	100.25	126.275116	48.93872833	17.92915344	1.34226794	Tag not found: -5	29.613657	1.930507183
15-Sep-00 06:46:00	80.875	1199.680542	13.33438873	672.75	100.25	126.2632523	48.94741058	17.92898369	1.344567347	Tag not found: -5	29.61372185	1.929299712
15-Sep-00 06:47:00	80.53646088	1199.855713	13.31141853	672.75	100.1766281	126.2513809	48.95609283	17.92881393	1.346874782	Tag not found: -5	29.6137867	1.92809236
15-Sep-00 06:48:00	80.3859787	1199.952026	13.28844929	673.1906738	99.7529068	126.2395172	48.96477509	17.92864418	1.349190097	Tag not found: -5	29.61385155	1.926885009
15-Sep-00 06:49:00	80.5	1199.979126	13.26548004	672.75	100.25	126.2276535	48.97345734	17.92847633	1.351513573	Tag not found: -5	29.6139164	1.925677538
15-Sep-00 06:50:00	80.55952454	1199.992188	13.24250984	672.75	100.25	126.2157822	48.98213959	17.92830658	1.353845064	Tag not found: -5	29.61398125	1.924470186
15-Sep-00 06:51:00	80.61904907	1200.049683	13.2195406	672.916687	100.25	126.2039185	48.99082184	17.92813683	1.356184558	Tag not found: -5	29.614048	1.923262835
15-Sep-00 06:52:00	80.13038635	1200.259888	13.1965704	673.25	100.3080521	126.1920471	48.9995079	17.92796707	1.358532295	Tag not found: -5	29.61411285	1.922055364
15-Sep-00 06:53:00	80.01171875	1200.380005	13.28171921	673.25	100.4204102	126.1801834	49.00819016	17.92779732	1.349809994	Tag not found: -5	29.6141777	1.920848012
15-Sep-00 06:54:00	79.91459656	1200.469971	13.42622852	673.25	100.5327682	126.1683121	49.01687241	17.92762756	1.335269062	Tag not found: -5	29.61424255	1.919640541
15-Sep-00 06:55:00	80.06406403	1200.4375	13.43843555	673.7285767	100.645134	126.1564484	49.02555466	17.92745781	1.334043515	Tag not found: -5	29.6143074	1.918433189
15-Sep-00 06:56:00	80.13326263	1200.329834	13.45141029	673.5142822	100.75	126.144577	49.03423691	17.92728806	1.332744126	Tag not found: -5	29.61437225	1.917225838
Average	80.52656955	1200.106027	13.37710644	673.1236718	100.3935169	126.2632512	48.94741149	17.92898396	1.340344929	#DIV/0!	29.61372158	1.929299763

	Generator Output	Mean Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	Discharge Temp °F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Ha	Losses H2O
9/15/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM
End Time	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 07:01:00	79.34163666	1200.657837	13.54532337	673.1278076	100.75	125.7827968	49.07764816	17.92644119	1.323441361	Tag not found: -5	29.61469841	1.911188841
15-Sep-00 07:02:00	78.9108963	1200.192871	13.56410599	672.8189697	100.75	125.1179047	49.08633041	17.92627144	1.321596238	Tag not found: -5	29.61476326	1.90998137
15-Sep-00 07:03:00	80.52661896	1199.503296	13.5828886	673.75	100.75	125.3588333	49.09501266	17.92610168	1.319756217	Tag not found: -5	29.61482811	1.908774018
15-Sep-00 07:04:00	79.72016907	1200.092163	13.60167122	673.7949219	101.3125	125.6821136	49.10368492	17.92593193	1.317921279	Tag not found: -5	29.61489296	1.907566667

15-Sep-00 07:05:00	80.57421875	1200.130493	13.62045383	673.8847046	101.3125	126.0053864	49.11237717	17.92576408	1.316091542	Tag not found: -5	29.61495972	1.906359196	
15-Sep-00 07:06:00	80.23567963	1199.750732	13.62118721	673.9745483	100.515625	126.3087845	49.12105942	17.92559433	1.31600822	Tag not found: -5	29.61502457	1.905151844	
15-Sep-00 07:07:00	80.87812805	1199.626587	13.60715389	674.0643921	101.0106735	126.2345276	49.12974167	17.92542458	1.317352969	Tag not found: -5	29.61508942	1.903944492	
15-Sep-00 07:08:00	80.69062805	1199.553589	13.59311962	674.1541748	100.75	126.1602707	49.13842392	17.92525482	1.318700587	Tag not found: -5	29.61515427	1.902737021	
15-Sep-00 07:09:00	80.74687195	1199.604126	13.5790863	674.2440186	101.2466049	126.0880138	49.14710617	17.92508507	1.320050898	Tag not found: -5	29.61521912	1.90152967	
15-Sep-00 07:10:00	80.58853912	1200.140625	13.56505203	673.4014893	100.7524261	126.0117569	49.15578842	17.92491531	1.321404096	Tag not found: -5	29.61528397	1.900322318	
15-Sep-00 07:11:00	80.765625	1200.549438	13.55101871	672.75	100.2582397	125.9375	49.16447067	17.92474556	1.322760003	Tag not found: -5	29.61534882	1.899114847	
15-Sep-00 07:12:00	79.63570404	1200.516846	13.53698444	672.75	100.75	125.8904495	49.17315292	17.92457771	1.324118956	Tag not found: -5	29.61541557	1.897907495	
15-Sep-00 07:13:00	79.41001129	1200.484253	13.52295113	672.75	100.2987823	125.843399	49.18183517	17.92440796	1.325480495	Tag not found: -5	29.61548042	1.896700025	
15-Sep-00 07:14:00	79.16239929	1200.45166	13.50891685	672.630188	100.75	125.7963486	49.19051743	17.9242382	1.326844957	Tag not found: -5	29.61554527	1.895492673	
15-Sep-00 07:15:00	79.23069763	1200.418823	13.49488354	671.8613892	100.75	125.7492905	49.19919968	17.92406845	1.328212163	Tag not found: -5	29.61561012	1.894285321	
15-Sep-00 07:16:00	78.95491791	1200.385986	13.48084927	671.6875	100.75	125.70224	49.20788193	17.9238987	1.329582309	Tag not found: -5	29.61567497	1.89307785	
15-Sep-00 07:17:00	78.90274811	1200.158569	13.46681595	671.6875	100.75	125.6551895	49.21656799	17.99123383	1.3359679	Tag not found: -5	29.61573982	1.891870499	
15-Sep-00 07:18:00	79.140625	1199.94165	13.45278168	671.729187	100.75	125.608139	49.22525024	18.10678864	1.345951274	Tag not found: -5	29.61580467	1.890663147	
15-Sep-00 07:19:00	78.734375	1199.795898	13.43874836	671.3649292	100.7738876	125.5610886	49.2339325	18.22234154	1.355955261	Tag not found: -5	29.61587143	1.889455676	
15-Sep-00 07:20:00	78.85530853	1200.188965	13.42471409	672.1875	100.9041977	125.5140381	49.24261475	18.33789444	1.36598026	Tag not found: -5	29.61593628	1.888248324	
15-Sep-00 07:21:00	78.98488617	1200.560669	13.41068077	672.1875	101.0345078	125.4669876	49.251297	18.45344734	1.376026143	Tag not found: -5	29.61600113	1.887040854	
Average	**79.71384212**	**1200.128813**	**13.53187556**	**672.8952724**	**100.8057117**	**125.7844315**	**49.16447158**	**17.99592509**	**1.329962054**	**#DIV/0!**	**29.61534963**	**1.899114864**	

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor Discharge Press	Inlet Guide	Vane	Water Injection Rate	Water	Fuel	Specific Humidity	Barometric		Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Psia	Angle	Deg	lbs/sec		Ratio	lbs water/ lbs air	Pressure	Hg	Losses	H2O
9/15/2000																	
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904			2TMSFI914			2TMDMI915	2TMSPI909		2TMSPDI912	
Start Time	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM			9/15/00 7:44 AM		9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM		9/15/00 7:44 AM	
End Time	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM			9/15/00 8:04 AM		9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM		9/15/00 8:04 AM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min			1 min		1 min	1 min	1 min		1 min	
15-Sep-00 07:44:00	112.4078691	1177.828125	16.31008148	690.6875	85.74177551	150.7863464	55.74423218			23.69594574		1.452840427	Tag not found: -5	29.6174984		1.859270811	
15-Sep-00 07:45:00	112.8032227	1178.576904	16.29463387	690.8772583	85.64308929	150.7988739	55.75820923			23.69429016		1.454116144	Tag not found: -5	29.6176325		1.85806334	
15-Sep-00 07:46:00	112.3946838	1178.033081	16.27918434	691.1849365	85.54441071	150.8114014	55.77219009			23.69263268		1.455394335	Tag not found: -5	29.6176281		1.856855989	
15-Sep-00 07:47:00	112.6875	1177.948853	16.26373482	691.4926147	85.44572449	150.8239288	55.78616714			23.69097519		1.456674955	Tag not found: -5	29.61769295		1.855648637	
15-Sep-00 07:48:00	112.437973	1178.5	16.26072311	691.2092285	85.34703827	150.8364716	55.80014801			23.6893177		1.456842819	Tag not found: -5	29.6177597		1.854441166	
15-Sep-00 07:49:00	112.4095612	1177.679688	16.2654438	691.2329712	85.38246155	150.848999	55.81412506			23.68766022		1.4563181	Tag not found: -5	29.61782455		1.853233814	
15-Sep-00 07:50:00	112.6650391	1177.633911	16.27016449	691.6875	85.50591278	150.8615265	55.82810593			23.68600273		1.455793686	Tag not found: -5	29.6178894		1.852026463	
15-Sep-00 07:51:00	112.5234375	1177.771729	16.27488708	691.8797607	85.62937164	150.874054	55.84208298			23.68434525		1.455269405	Tag not found: -5	29.61795425		1.850818992	
15-Sep-00 07:52:00	112.1920929	1177.898438	16.27960777	692.25	85.75283051	150.8865967	55.85606003			23.68268776		1.454745599	Tag not found: -5	29.6180191		1.84961164	
15-Sep-00 07:53:00	111.8671875	1178.326416	16.28432846	691.6875	85.8125	150.8991241	55.87004089			23.68103027		1.454222096	Tag not found: -5	29.61808395		1.848404169	
15-Sep-00 07:54:00	112.28125	1178.240845	16.28904915	692.0374756	85.8125	150.9116516	55.88401794			23.67937279		1.453698897	Tag not found: -5	29.6181488		1.847196817	
15-Sep-00 07:55:00	112.1953125	1178.283325	16.42694855	691.6875	86.70581218	150.9241791	55.89799881			23.6777153		1.441394623	Tag not found: -5	29.61821558		1.845989466	
15-Sep-00 07:56:00	112.5464172	1178.334595	16.68151093	691.6875	85.88232422	150.9367218	55.91197586			23.67605782		1.419299362	Tag not found: -5	29.61828041		1.844781995	
15-Sep-00 07:57:00	112.1078736	1179.192017	16.2215786	691.6875	85.99871063	150.9492493	55.92595673			23.67440224		1.459438864	Tag not found: -5	29.61834526		1.843574643	
15-Sep-00 07:58:00	111.8929672	1179.118042	16.58754349	691.7335815	86.11508942	150.9617767	55.93993378			23.67274475		1.427139876	Tag not found: -5	29.61841011		1.842367291	
15-Sep-00 07:59:00	112.1875	1178.279419	16.58701134	692.418687	86.2314682	150.9743042	55.95391464			23.67108727		1.427085735	Tag not found: -5	29.61847496		1.841159821	
15-Sep-00 08:00:00	111.9284821	1178.53125	16.58647919	692.488084	86.34784698	150.9868469	55.96789189			23.66942978		1.427031591	Tag not found: -5	29.61853981		1.839952469	
15-Sep-00 08:01:00	112.3203125	1179.28125	16.58594704	692.0267944	86.17550659	150.9993744	55.98187256			23.66777229		1.426977443	Tag not found: -5	29.61860466		1.838744998	
15-Sep-00 08:02:00	112.8147354	1177.848267	16.58541298	691.5567017	85.91530609	151.0133057	55.99584961			23.66611481		1.426923456	Tag not found: -5	29.61867142		1.837537646	
15-Sep-00 08:03:00	112.4149323	1177.758911	16.58488083	691.078125	85.65510559	151.0273132	56.00983047			23.66445732		1.426869301	Tag not found: -5	29.61873627		1.836330295	
15-Sep-00 08:04:00	112.6491241	1178.241089	16.58434868	691.1875	85.39489746	151.0413361	56.02380753			23.66279984		1.426815143	Tag not found: -5	29.61880112		1.835122824	
Average	**112.3679559**	**1178.252874**	**16.40492857**	**691.60832**	**85.81140391**	**150.8120658**	**55.88401958**			**23.67937342**		**1.443566279**	**#DIV/0!**	**29.61814962**		**1.847196823**	

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor Discharge Press	Inlet Guide	Vane	Water Injection Rate	Water	Fuel	Specific Humidity	Barometric		Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Psia	Angle	Deg	lbs/sec		Ratio	lbs water/ lbs air	Pressure	Hg	Losses	H2O
9/15/2000																	
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904			2TMSFI914			2TMDMI915	2TMSPI909		2TMSPDI912	
Start Time	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM			9/15/00 8:09 AM		9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM		9/15/00 8:09 AM	
End Time	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM			9/15/00 8:29 AM		9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM		9/15/00 8:29 AM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min			1 min		1 min	1 min	1 min		1 min	
15-Sep-00 08:08:00	112.8018494	1177.1875	16.56958199	690.1875	85.27302551	151.1113739	56.09370041			23.65451241		1.427586551	Tag not found: -5	29.61912727		1.829085827	
15-Sep-00 08:10:00	112.4736633	1177.625	16.52821159	689.7477417	85.15460205	151.1253967	56.10768127			23.65285683		1.431059658	Tag not found: -5	29.61919212		1.827878475	
15-Sep-00 08:11:00	112.4439316	1177.8125	16.46481895	689.8821411	85.03618622	151.1394043	56.12165833			23.65119934		1.438468837	Tag not found: -5	29.61925697		1.826671124	
15-Sep-00 08:12:00	112.4328537	1177.229126	16.40142822	690.1020508	84.91776276	151.1534119	56.13563919			23.64954185		1.441919663	Tag not found: -5	29.61932182		1.825463653	
15-Sep-00 08:13:00	112.474762	1177.559326	16.33803558	690.5721436	84.79933929	151.1674194	56.14961624			23.64788437		1.447412955	Tag not found: -5	29.61938667		1.824256301	
15-Sep-00 08:14:00	112.8068771	1177.296875	16.27464485	690.2000122	85.3125	151.181427	56.16359711			23.64622688		1.452948872	Tag not found: -5	29.61945152		1.823048949	
15-Sep-00 08:15:00	112.7904434	1177.119751	16.21125221	690.8349609	85.03125	151.139328	56.17757416			23.6445694		1.458528255	Tag not found: -5	29.61951637		1.821841478	
15-Sep-00 08:16:00	112.9131622	1177.356201	16.14786148	691.2195435	85.09124756	151.054306	56.19155502			23.64291191		1.464151271	Tag not found: -5	29.61958313		1.820634127	
15-Sep-00 08:17:00	112.7013855	1177.507813	16.24020576	691.604187	84.88624908	150.9692993	56.20553207			23.64125443		1.455723823	Tag not found: -5	29.61964798		1.819426775	
15-Sep-00 08:18:00	113.046875	1177.174438	16.3467083	691.9191284	84.890625	150.8842926	56.21950912			23.63959694		1.446138055	Tag not found: -5	29.61971283		1.818219304	
15-Sep-00 08:19:00	112.6349411	1177.463013	16.45321063	691.8482056	85.3125	150.7992706	56.23348999			23.63793945		1.436676385	Tag not found: -5	29.61977768		1.817011952	
15-Sep-00 08:20:00	112.3618393	1177.333374	16.55971336	692.25	85.48046875	150.7142639	56.24746704			23.63628197		1.427336419	Tag not found: -5	29.61984253		1.815804482	
15-Sep-00 08:21:00	112.7558365	1176.854126	16.6662159	692.6171875	85.71484375	150.6292572	56.26144791			23.63462448		1.418115824	Tag not found: -5	29.61990738		1.81459713	
15-Sep-00 08:22:00	112.5815234	1178.625	16.67522621	691.6875	85.8125	150.6524506	56.27542496			23.632967		1.417250159	Tag not found: -5	29.61997223		1.813388778	
15-Sep-00 08:23:00	112.7890625	1177.984375	16.39609337	692.166687	85.8125	150.6813507	56.28940582			23.63131142		1.441276948	Tag not found: -5	29.62003708		1.812182307	
15-Sep-00 08:24:00	112.109375	1177.90625	16.37285587	692.1237183	85.99013519	150.7102509	56.30338287			23.62965393		1.443238905	Tag not found: -5	29.62010384		1.810974956	
15-Sep-00 08:25:00	112.5529251	1177.9375	16.31946754	691.895813	85.8125	150.739151	56.31736374			23.62799644		1.447841137	Tag not found: -5	29.62016869		1.809767604	
15-Sep-00 08:26:00	112.4437485	1178.583374	16.24644661	691.9143066	85.90371704	150.7680511	56.33134079			23.62633896		1.454246552	Tag not found: -5	29.62023354		1.808560133	
15-Sep-00 08:27:00	112.90625	1177.195801	16.17342567	691.791687	86.35979462	150.7969513	56.34532166			23.62468147		1.460709806	Tag not found: -5	29.62029839		1.807352781	

15-Sep-00 08:28:00	112.9920883	1177.221191	16.12766647	692.25	85.8125	150.8258514	56.35929871	23.62302399	1.46475152	Tag not found: -5	29.62036324	1.80614531	
15-Sep-00 08:29:00	112.9644852	1178.319458	16.15086365	692.25	85.8125	150.8547363	56.37327957	23.6213665	1.462545101	Tag not found: -5	29.62042809	1.804937959	
Average	112.6646609	1177.585333	16.36493974	691.3840245	85.43794033	150.9093926	56.23348981	23.63794	1.444567938	#DIV/0!	29.61977759	1.817011924	

	Generator Output	Mean Turbine Exhaust Temp °F	Fuel Oil Flow	Compressor Discharge Temp °F	Compressor Inlet Temperature °F	Compressor Discharge Press Psia	Inlet Guide Vane Angle Deg	Water Injection Rate lbs/sec	Water Fuel Ratio	Specific Humidity lbs water/ lbs air	Barometric Pressure Hg	Air Inlet Losses	Duct H2O
9/15/2000	MW		Lbs/sec										
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912	
Start Time	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	
End Time	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	
15-Sep-00 08:34:00	112.5130234	1178.375	16.30213928	692.25	86.375	150.9992371	56.44317245	23.61307907	1.448485055	Tag not found: -5	29.62075424	1.798900962	
15-Sep-00 08:35:00	112.3605804	1177.740845	16.35054398	692.25	86.375	151.0281372	56.45714951	23.61142159	1.444075599	Tag not found: -5	29.62081909	1.79769361	
15-Sep-00 08:36:00	112.4265594	1177.789063	16.39894676	692.3109741	86.375	151.0570374	56.47113037	23.60976601	1.439712339	Tag not found: -5	29.62088394	1.796486139	
15-Sep-00 08:37:00	112.4968719	1178.048584	16.39089966	692.6768188	86.375	151.0859375	56.48510742	23.60810852	1.440318043	Tag not found: -5	29.62094879	1.795278788	
15-Sep-00 08:38:00	112.660397	1178.731689	16.33968544	692.904541	86.375	151.1148224	56.49908829	23.60645103	1.444731058	Tag not found: -5	29.62101555	1.794071436	
15-Sep-00 08:39:00	113.0270844	1178.199951	16.28846931	693.1772461	86.375	151.1437225	56.51306534	23.60479355	1.449171994	Tag not found: -5	29.6210804	1.792863965	
15-Sep-00 08:40:00	112.4424515	1178.420288	16.23725319	693.25	86.375	151.1726227	56.5270462	23.60313606	1.453640945	Tag not found: -5	29.62114525	1.791656613	
15-Sep-00 08:41:00	112.25	1178.277832	16.18853951	692.75	86.375	151.2015228	56.54102325	23.60147858	1.457912776	Tag not found: -5	29.6212101	1.790449262	
15-Sep-00 08:42:00	112.3625031	1177.800049	16.17481995	692.75	86.42071533	151.230423	56.55500412	23.59982109	1.459046912	Tag not found: -5	29.62127495	1.789241791	
15-Sep-00 08:43:00	113.0701875	1178.529419	16.16110229	692.416687	86.50643158	151.2593231	56.56898117	23.5981636	1.4601828	Tag not found: -5	29.6213398	1.788034439	
15-Sep-00 08:44:00	112.8203125	1178.275024	16.14738274	692.972229	86.5921402	151.2882233	56.58295822	23.59650612	1.461320791	Tag not found: -5	29.62140465	1.786826968	
15-Sep-00 08:45:00	112.4160156	1177.949585	16.13366508	693.25	86.67785645	151.3171234	56.59693909	23.59484863	1.462460545	Tag not found: -5	29.62147141	1.785619617	
15-Sep-00 08:46:00	112.595932	1177.760986	16.11994743	693.75	86.76357269	151.3460236	56.61091614	23.59319115	1.463602238	Tag not found: -5	29.62153625	1.784412265	
15-Sep-00 08:47:00	112.8515625	1177.548096	16.10622787	694.0707397	86.84928894	151.3749084	56.624897	23.59153366	1.46474605	Tag not found: -5	29.6216011	1.783204794	
15-Sep-00 08:48:00	112.5885391	1177.962524	16.09251022	694.25	87.12228394	151.4038086	56.63887405	23.58987617	1.465891638	Tag not found: -5	29.62166595	1.781997442	
15-Sep-00 08:49:00	112.5061417	1178.287476	16.07879068	694.25	87.47554016	151.4327087	56.65285492	23.5882206	1.467039474	Tag not found: -5	29.6217308	1.780790091	
15-Sep-00 08:50:00	112.4429398	1179.034912	16.09760475	694.25	87.64464569	151.4616089	56.66683197	23.58656311	1.465221906	Tag not found: -5	29.62179565	1.77958262	
15-Sep-00 08:51:00	112.5197906	1178.838501	16.13268471	694.25	87.53749847	151.490509	56.68081284	23.58490562	1.461933091	Tag not found: -5	29.6218605	1.778375268	
15-Sep-00 08:52:00	113.1138382	1178.453125	16.16776276	694.25	87.51249695	151.5194092	56.69478989	23.58324814	1.458658721	Tag not found: -5	29.62192726	1.777167797	
15-Sep-00 08:53:00	112.5319138	1178.140625	16.20284271	694.192688	87.51308441	151.5483093	56.70877075	23.58159065	1.455398356	Tag not found: -5	29.62199211	1.775960445	
15-Sep-00 08:54:00	113.203125	1178.979126	16.23792076	694.0038452	87.6875	151.5772095	56.7227478	23.57993317	1.45215225	Tag not found: -5	29.62205696	1.774753094	
Average	112.6295119	1178.24489	16.20713043	693.3440842	86.82395499	151.2882204	56.58296004	23.59650648	1.455984885	#DIV/0!	29.62140547	1.786827019	

	Generator Output	Mean Turbine Exhaust Temp °F	Fuel Oil Flow	Compressor Discharge Temp °F	Compressor Inlet Temperature °F	Compressor Discharge Press Psia	Inlet Guide Vane Angle Deg	Water Injection Rate lbs/sec	Water Fuel Ratio	Specific Humidity lbs water/ lbs air	Barometric Pressure Hg	Air Inlet Losses	Duct H2O
9/15/2000	MW		Lbs/sec										
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912	
Start Time	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	
End Time	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	
15-Sep-00 09:20:00	136.0352783	1155.637817	18.6291256	709.8070068	81.8125	169.8159332	61.70550537	27.35626793	1.468467631	Tag not found: -5	29.62375069	1.743360758	
15-Sep-00 09:21:00	136.7312469	1155.773315	18.58774948	710.2045288	81.8125	169.8327332	61.72175217	27.35513115	1.471675265	Tag not found: -5	29.62381554	1.742153406	
15-Sep-00 09:22:00	136.6445007	1155.908936	18.54637527	709.625	81.46556091	169.8495331	61.73800278	27.35399246	1.474896957	Tag not found: -5	29.62388039	1.740945935	
15-Sep-00 09:23:00	136.3733215	1156.044434	18.50500107	710.6875	81.77916718	169.866333	61.75425339	27.35285568	1.478133159	Tag not found: -5	29.62394524	1.739738584	
15-Sep-00 09:24:00	136.265625	1155.956787	18.46362495	710.6875	81.65194702	169.8831329	61.770504	27.3517189	1.481384017	Tag not found: -5	29.62401009	1.738531232	
15-Sep-00 09:25:00	135.9254456	1155.834839	18.42225075	711.2219849	81.37671661	169.8999481	61.78675461	27.35058022	1.484649221	Tag not found: -5	29.62407494	1.737323781	
15-Sep-00 09:26:00	136.8020782	1155.944458	18.38087654	711.428894	81.93112183	169.916748	61.80300522	27.34944344	1.487929228	Tag not found: -5	29.62413979	1.736116409	
15-Sep-00 09:27:00	136.3299103	1155.996948	18.33950043	711.6358032	82.1607132	169.933548	61.81925583	27.34830475	1.491224085	Tag not found: -5	29.62420464	1.734908938	
15-Sep-00 09:28:00	136.1087799	1156.049438	18.35602188	711.6875	82.40778351	169.9503479	61.83550644	27.34716797	1.48981997	Tag not found: -5	29.62427139	1.733701587	
15-Sep-00 09:29:00	136.296875	1156.101807	18.38144875	711.6049805	82.80978394	169.9671478	61.85175705	27.34603119	1.487697274	Tag not found: -5	29.62433624	1.732494235	
15-Sep-00 09:30:00	136.296875	1156.154297	18.40687561	711.3137207	82.20324707	169.9839478	61.86800766	27.3448925	1.485580339	Tag not found: -5	29.62440109	1.731286764	
15-Sep-00 09:31:00	136.2389984	1156.182007	18.43230438	711.3153076	81.94561005	170.0007477	61.88425827	27.34375572	1.483469194	Tag not found: -5	29.62446594	1.730079412	
15-Sep-00 09:32:00	136.5219727	1156.16687	18.45773125	711.5408938	82.375	170.0175476	61.90050507	27.34261894	1.481364019	Tag not found: -5	29.62453079	1.728872061	
15-Sep-00 09:33:00	136.6781311	1156.151855	18.48315811	711.6875	82.375	170.0343628	61.91675568	27.34148026	1.479264533	Tag not found: -5	29.62459564	1.72768459	
15-Sep-00 09:34:00	136.1927032	1156.136841	18.50858688	711.6875	82.375	170.0511627	61.93300629	27.34034348	1.477170767	Tag not found: -5	29.62466049	1.726457238	
15-Sep-00 09:35:00	135.9581451	1156.068726	18.53401375	711.5443115	82.48332977	170.0679626	61.9492569	27.33920479	1.475082794	Tag not found: -5	29.62472725	1.725249767	
15-Sep-00 09:36:00	136.2881012	1155.808838	18.55944061	711.3619995	82.23213959	170.0847626	61.96550751	27.33806801	1.473000646	Tag not found: -5	29.6247921	1.724042416	
15-Sep-00 09:37:00	136.3783875	1155.793701	18.58486938	711.347229	82.83244324	170.1015625	61.98175812	27.33693123	1.470924044	Tag not found: -5	29.62485695	1.722835064	
15-Sep-00 09:38:00	136.7410126	1155.992798	18.61029625	711.1875	82.61968231	170.1183624	61.99800873	27.33579254	1.468853165	Tag not found: -5	29.6249218	1.721627593	
15-Sep-00 09:39:00	136.2359314	1155.905762	18.63572311	711.2410889	82.40691376	170.1351624	62.01425934	27.33465576	1.466788039	Tag not found: -5	29.62498685	1.720420241	
15-Sep-00 09:40:00	136.2828064	1155.664673	18.5976162	711.9375	82.84687805	170.1519775	62.03050995	27.33351707	1.469732292	Tag not found: -5	29.62481689	1.71921289	
Average	136.3488631	1155.965483	18.49631382	711.1788214	82.18585895	169.9839507	61.86800621	27.34489305	1.478433649	#DIV/0!	29.62438974	1.731286804	

	Generator Output	Mean Turbine Exhaust Temp °F	Fuel Oil Flow	Compressor Discharge Temp °F	Compressor Inlet Temperature °F	Compressor Discharge Press Psia	Inlet Guide Vane Angle Deg	Water Injection Rate lbs/sec	Water Fuel Ratio	Specific Humidity lbs water/ lbs air	Barometric Pressure Hg	Air Inlet Losses	Duct H2O
9/15/2000	MW		Lbs/sec										
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912	
Start Time	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	
End Time	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	

15-Sep-00 09:45:00	136.3190765	1155.457642	18.41259384	711.9836426	82.47499847	170.2359772	62.11175919	27.32783127	1.484192369	N/A	29.62367821	1.721455574
15-Sep-00 09:46:00	135.9736786	1155.447754	18.45566177	712.9067383	82.67500305	170.2527771	62.1280098	27.32669258	1.480667175	N/A	29.62344933	1.722041607
15-Sep-00 09:47:00	136.3130341	1155.437988	18.49873161	712.4541626	82.875	170.2695923	62.14426041	27.3255558	1.477158346	N/A	29.62322235	1.72262764
15-Sep-00 09:48:00	136.7226563	1155.852905	18.54179955	712.0493164	82.7693634	170.2863922	62.16051102	27.32441711	1.473665868	N/A	29.62299347	1.723213673
15-Sep-00 09:49:00	136.4233246	1155.602051	18.58486938	712.96875	82.66373444	170.3031921	62.17676163	27.32328033	1.470189527	N/A	29.62276649	1.723799706
15-Sep-00 09:50:00	136.7406311	1155.554565	18.62793732	712.9375	82.66760254	170.3199921	62.19301224	27.32214355	1.466729412	N/A	29.62253761	1.724385738
15-Sep-00 09:51:00	136.9150085	1155.50708	18.67100716	713.4541016	82.73486328	170.336792	62.20926285	27.32100487	1.463285009	N/A	29.62231064	1.724971771
15-Sep-00 09:52:00	136.5920715	1155.459595	18.71407509	713.0842896	82.80213165	170.3535919	62.22551346	27.31986809	1.45985671	N/A	29.62208176	1.725557804
15-Sep-00 09:53:00	136.9137573	1155.412231	18.76074219	714.036438	82.8693924	170.3703918	62.24176025	27.3187294	1.45616464	N/A	29.62185478	1.726143837
15-Sep-00 09:54:00	136.8765564	1155.525513	18.8112545	714	83.50485992	170.3871918	62.25801086	27.31759262	1.45219409	N/A	29.6216259	1.72672987
15-Sep-00 09:55:00	136.6968689	1156.219849	18.86176682	713.4894409	83.58258057	170.404007	62.27426147	27.31645584	1.448244807	N/A	29.62139702	1.727315903
15-Sep-00 09:56:00	136.6391754	1156.36853	18.91227722	714.3684082	83.66030121	170.4208069	62.29051208	27.31531715	1.444316864	N/A	29.62117004	1.727901936
15-Sep-00 09:57:00	136.6575775	1156.433228	18.23141098	713.8421021	83.63114166	170.4376068	62.3067627	27.31418037	1.498193442	N/A	29.62094116	1.728487968
15-Sep-00 09:58:00	136.757309	1156.497803	18.03756332	713.171875	83.54443359	170.4544067	62.32301331	27.31304359	1.514231335	N/A	29.62071419	1.729074001
15-Sep-00 09:59:00	136.7194214	1155.775024	18.35075951	712.9375	83.45773315	170.4712067	62.33926392	27.31190491	1.488325587	N/A	29.62048531	1.729660153
15-Sep-00 10:00:00	136.6690216	1155.627441	18.6639576	712.3098145	83.37102509	170.4880066	62.35551453	27.31076813	1.463289229	N/A	29.62025833	1.730246186
15-Sep-00 10:01:00	136.6186218	1155.851929	18.68053246	711.8311157	83.28431702	170.5048065	62.37176514	27.30962944	1.461929927	N/A	29.62002945	1.730832219
15-Sep-00 10:02:00	136.9268341	1155.868286	18.64476204	712.895813	83.19761658	170.5216217	62.38801575	27.30849266	1.464673703	N/A	29.61980247	1.731418252
15-Sep-00 10:03:00	136.885849	1155.976318	18.60899162	712.375	83.1875	170.5384216	62.40426254	27.30735588	1.467428028	N/A	29.61957359	1.732004285
15-Sep-00 10:04:00	136.5473022	1156.084351	18.57322311	712.3291626	82.73046875	170.5552216	62.42051315	27.30621719	1.470192708	N/A	29.61934662	1.732590318
15-Sep-00 10:05:00	136.2087708	1156.192383	18.5374527	712.0863037	82.92717743	170.5639343	62.43676376	27.30508041	1.472968312	N/A	29.61911774	1.733176351
Average	**136.6245975**	**1155.816784**	**18.58006523**	**712.9291178**	**83.07672591**	**170.403816**	**62.27426238**	**27.3164553**	**1.470376042**	**N/A**	**29.62139793**	**1.727315942**

	Generator Output	Mean Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	Discharge Temp °F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Hg	Losses H2O
9/15/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/15/00 10:10 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM
End Time	9/15/00 10:30 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min

COULD NOT READ FROM PI

UNIT 2
COMBUSTION TURBINE DATA FROM SEPTEMBER 13, 2000

From	To	Mean Turbine Exhaust Temp °F	Fuel Gas Flow lbs./sec	Compressor discharge Temp °F	Compressor inlet Temp °F	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle Deg	Water Injection Rate lbs./sec
11:30	13:46	1200.05	13.48	685.28	180.97	80.13	127.64	50.27	16.14
13:55	14:15	1199.92	13.42	687.63	110.2	80.27	128	50.65	16.9
14:24	14:44	1200.02	13.45	688.55	111.48	79.41	127.4	50.78	17.28
17:12	18:12	1132.64	20.79	757.7	89.83	159.71	195.29	78.16	32.52
18:23	19:23	1132.02	20.77	755.45	88.84	159.95	195.33	77.9	31.81
19:28	20:28	1131.93	20.79	752.65	87.56	159.84	195.06	77.68	31.79

From	To	Water fuel ratio	Specific Humidity lbs. water/ lbs. air	Barometric Pressure Hg	Air inlet Duct Losses H2O
11:30	13:46	1.19	N/A	29.65	1.52
13:55	14:15	1.25	N/A	29.63	1.98
14:24	14:44	1.28	N/A	29.63	2.13
17:12	18:12	1.56	N/A	29.58	2.14
18:23	19:23	1.53	N/A	29.59	2.1
19:28	20:28	1.52	N/A	29.6	2.07

Eastern Standard time

	Generator Output	Mean Turbine Exhaust Temp	Fuel Oil Flow	Compressor Discharge Temp	Compressor Inlet Temperature	Compressor Discharge Press	Inlet Guide Vane Angle	Water Injection Rate	Water Fuel Ratio	Specific Humidity	Barometric Pressure	Air Inlet Duct Losses	Duct H2O
9/13/2000	MW	°F	Lbs/sec	°F	°F	Psia	Deg	lbs/sec		lbs water/ lbs air	Hg		
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912	
Start Time	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	
End Time	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	
13-Sep-00 11:30:00	79.50682068	1200.155151	13.48599911	682.265625	107.8125	126.8742905	49.98443604	15.72771358	1.166225317	Tag not found: -5	29.67537308	1.156688809	
13-Sep-00 11:31:00	80.0567627	1200.180664	13.50200653	682.5	108.0763855	126.8658066	49.9887619	15.73333549	1.165259064	Tag not found: -5	29.67511177	1.161984563	
13-Sep-00 11:32:00	79.4963913	1199.971802	13.48775959	682.5	107.5243912	126.8573227	49.99308395	15.73895645	1.166906657	Tag not found: -5	29.67485237	1.167280316	
13-Sep-00 11:33:00	79.02777863	1199.677734	13.47351265	682.5	107.6348648	126.8488388	49.99740601	15.74457836	1.168557805	Tag not found: -5	29.67459106	1.17257607	
13-Sep-00 11:34:00	79.77812195	1199.467163	13.45926571	683	107.8125	126.8403549	50.00173187	15.75019932	1.170212377	Tag not found: -5	29.67432976	1.177871823	
13-Sep-00 11:35:00	79.48348236	1199.629028	13.44501877	682.6228027	108.4027786	126.831871	50.00605392	15.75582027	1.171870456	Tag not found: -5	29.67407036	1.183167577	
13-Sep-00 11:36:00	79.4609375	1199.790894	13.43077278	683.1491089	107.8125	126.8233871	50.01037979	15.76144218	1.17353204	Tag not found: -5	29.67380905	1.18846333	
13-Sep-00 11:37:00	79.76852417	1199.948608	13.41652584	683.5	107.8125	126.8149033	50.01470184	15.76706314	1.175197166	Tag not found: -5	29.67354774	1.193759084	
13-Sep-00 11:38:00	79.21398163	1200.350464	13.4022789	683.5	108.1201935	126.8064194	50.0190239	15.77268505	1.176865902	Tag not found: -5	29.67328835	1.199054837	
13-Sep-00 11:39:00	79.59505463	1200.476563	13.38803196	683	108.3125	126.7979355	50.02334976	15.77830601	1.178538119	Tag not found: -5	29.67302704	1.204350591	
13-Sep-00 11:40:00	79.93891907	1200.110229	13.37378502	683.1690869	108.3125	126.7894516	50.02767181	15.78392696	1.180213899	Tag not found: -5	29.67276573	1.209646344	
13-Sep-00 11:41:00	79.57142639	1199.8396	13.35953808	683.4411621	108.3125	126.7809677	50.03199768	15.78954887	1.181893325	Tag not found: -5	29.67250633	1.214942098	
13-Sep-00 11:42:00	79.23046875	1200.027344	13.34529114	683.4903564	108.3125	126.7724838	50.03631973	15.79516983	1.183576264	Tag not found: -5	29.67224503	1.220237851	
13-Sep-00 11:43:00	79.56432343	1200.359009	13.3310442	682.7592773	108.3125	126.7639999	50.04064178	15.80079174	1.185262673	Tag not found: -5	29.67198563	1.225533605	
13-Sep-00 11:44:00	79.95898438	1200.151489	13.31679726	682.7622681	108.3125	126.7555161	50.04496765	15.8064127	1.186953018	Tag not found: -5	29.67172432	1.230829358	
13-Sep-00 11:45:00	79.69723511	1200.383789	13.30384064	683.2540894	108.3125	126.7470322	50.0492897	15.81203365	1.188531499	Tag not found: -5	29.67146301	1.236125112	
13-Sep-00 11:46:00	79.49181366	1200.335205	13.29819775	683.734375	108.3125	126.7385483	50.05361557	15.81765556	1.189458592	Tag not found: -5	29.67120361	1.241420865	
13-Sep-00 11:47:00	79.59022522	1200.005493	13.2925539	683.7999878	107.9136887	126.7300644	50.05793762	15.82327652	1.190386485	Tag not found: -5	29.67094231	1.246716619	
13-Sep-00 11:48:00	79.96320343	1200.194458	13.28691006	683.5	108.2708359	126.7215805	50.06225967	15.82889843	1.191315239	Tag not found: -5	29.670681	1.252012372	
13-Sep-00 11:49:00	79.41903687	1200.434937	13.28126621	683.5	108.2998428	126.7130966	50.06656554	15.83451939	1.19224471	Tag not found: -5	29.6704216	1.257308125	
13-Sep-00 11:50:00	79.45891571	1200.394775	13.27562332	683.5	108.1732559	126.7046127	50.07090759	15.84014034	1.193174886	Tag not found: -5	29.67016029	1.262603879	
13-Sep-00 11:51:00	79.91030121	1199.987549	13.26997948	683.427063	108.0466766	126.6961288	50.07523346	15.84576225	1.194106011	Tag not found: -5	29.66989899	1.267899632	
13-Sep-00 11:52:00	79.70117188	1199.754517	13.26433563	683.114563	107.9200974	126.687645	50.07955551	15.85138321	1.195037856	Tag not found: -5	29.66963959	1.273195386	
13-Sep-00 11:53:00	79.125	1199.77478	13.25869179	683.5	108.3125	126.6791534	50.08387756	15.85700512	1.195970566	Tag not found: -5	29.66937828	1.278491139	
13-Sep-00 11:54:00	79.61595917	1199.672119	13.2530489	683.0164185	108.3125	126.6706696	50.08820343	15.86262608	1.196903912	Tag not found: -5	29.66911697	1.283786893	
13-Sep-00 11:55:00	79.29427338	1199.569336	13.24740505	683.2194824	108.3125	126.6621857	50.09252548	15.86824703	1.19783814	Tag not found: -5	29.66885757	1.289082646	
13-Sep-00 11:56:00	79.53954315	1200.113525	13.24176121	683.4634399	108.3359375	126.6537018	50.09685135	15.87386894	1.198773237	Tag not found: -5	29.66859627	1.2943784	
13-Sep-00 11:57:00	79.52040863	1200.355591	13.34141159	683.5	108.50457	126.6452179	50.1011734	15.8794899	1.190240612	Tag not found: -5	29.66833496	1.299674153	
13-Sep-00 11:58:00	79.39286041	1200.188843	13.5511196	684.2249756	108.3584213	126.636734	50.10549545	15.88511181	1.172236098	Tag not found: -5	29.66807556	1.304969907	
13-Sep-00 11:59:00	78.99919891	1200.394775	13.5235157	684.25	108.4385757	126.6282501	50.10982132	15.89073277	1.175044501	Tag not found: -5	29.66781425	1.31026566	
13-Sep-00 12:00:00	78.97515869	1200.404053	13.4959116	684.3408813	108.875	126.763918	50.11414337	15.89635468	1.177864464	Tag not found: -5	29.66755295	1.315561414	
13-Sep-00 12:01:00	78.95111847	1200.087891	13.4683075	683.5	108.875	126.9891815	50.11846924	15.90197563	1.180695914	Tag not found: -5	29.66729355	1.320857167	
13-Sep-00 12:02:00	79.47480011	1199.368042	13.44070339	683.7000122	108.875	127.214447	50.12279128	15.90759659	1.183538995	Tag not found: -5	29.66703224	1.326152921	
13-Sep-00 12:03:00	80.32545471	1199.527832	13.41309929	684.189209	107.9136887	127.4397049	50.12711334	15.9132185	1.186393849	Tag not found: -5	29.66677094	1.331448674	
13-Sep-00 12:04:00	80.59222412	1199.696899	13.38549519	684.2211304	108.752327	127.6649704	50.13143921	15.91883945	1.189260407	Tag not found: -5	29.66651154	1.336744428	
13-Sep-00 12:05:00	80.2767868	1199.720825	13.35789108	684.2438965	108.5728073	127.7205887	50.13576126	15.92446136	1.192138884	Tag not found: -5	29.66625023	1.342040181	
13-Sep-00 12:06:00	80.0200882	1199.579956	13.35121822	684.5	108.3932877	127.7573547	50.14008713	15.93008232	1.193155715	Tag not found: -5	29.66598892	1.347335935	
13-Sep-00 12:07:00	80.75676727	1199.948853	13.35351563	684.2142944	108.3125	127.7941208	50.14440918	15.93570328	1.193371373	Tag not found: -5	29.66572952	1.352631688	
13-Sep-00 12:08:00	80.6947937	1200.418701	13.35581303	684.5	108.3125	127.8308792	50.14873123	15.94132519	1.193587029	Tag not found: -5	29.66546822	1.357927442	
13-Sep-00 12:09:00	80.6635437	1199.830688	13.35811138	684.0769043	108.3125	127.8676453	50.1530571	15.94694614	1.193802454	Tag not found: -5	29.66520691	1.363223195	
13-Sep-00 12:10:00	80.6322937	1199.9375	13.36040878	684.5401611	108.3125	127.9044113	50.15737915	15.95256805	1.194017961	Tag not found: -5	29.66494751	1.368518949	
13-Sep-00 12:11:00	80.72933197	1200.04541	13.36270714	685.0625	108.3125	127.9411774	50.16170502	15.95818901	1.194233238	Tag not found: -5	29.6646862	1.373814702	
13-Sep-00 12:12:00	81.0642395	1199.842651	13.36500454	685.0625	107.9375	127.9779434	50.16602707	15.96380997	1.194448526	Tag not found: -5	29.6644249	1.379110456	
13-Sep-00 12:13:00	80.58522797	1199.401367	13.47460938	685.229187	108.3125	128.0147095	50.17034912	15.96943188	1.185149894	Tag not found: -5	29.6641655	1.384406328	
13-Sep-00 12:14:00	81.08016968	1200.116455	13.59198952	685.2340698	108.3125	128.0514679	50.17467499	15.97505283	1.175328513	Tag not found: -5	29.66390419	1.389702082	
13-Sep-00 12:15:00	80.90625	1199.854126	13.60247231	685.1291504	108.3125	128.0882416	50.17899704	15.98067474	1.174836043	Tag not found: -5	29.66364288	1.394997835	
13-Sep-00 12:16:00	80.90625	1199.4375	13.61295414	684.734375	108.2215881	128.125	50.18332291	15.9862957	1.174344344	Tag not found: -5	29.66338348	1.400293589	
13-Sep-00 12:17:00	80.80942535	1199.63147	13.62343693	684.5	107.8125	128.1617584	50.18764496	15.99191666	1.173853319	Tag not found: -5	29.66312218	1.405589342	
13-Sep-00 12:18:00	81.234375	1199.790894	13.63391876	685.4582378	107.25	128.1843109	50.19196701	15.99753857	1.173363201	Tag not found: -5	29.66286087	1.410885096	
13-Sep-00 12:19:00	80.85473633	1200.122192	13.64440155	685.0625	108.0711212	128.1737061	50.19629288	16.00316048	1.172873755	Tag not found: -5	29.66260147	1.416180849	
13-Sep-00 12:20:00	80.77119446	1199.959473	13.65488338	684.640625	108.3125	128.1631012	50.20061493	16.00878143	1.172385071	Tag not found: -5	29.66234016	1.421476603	
13-Sep-00 12:21:00	80.51583099	1199.5	13.65019512	685.0625	108.3125	128.1524811	50.2049408	16.01440239	1.173199522	Tag not found: -5	29.66207886	1.426772356	
13-Sep-00 12:22:00	80.4375	1200.016479	13.63847637	685.1929321	108.3125	128.1418762	50.20926285	16.02002335	1.174619724	Tag not found: -5	29.66181946	1.43206811	
13-Sep-00 12:23:00	80.58888245	1200.37439	13.62675762	685.5625	109.375	128.1312561	50.2135849	16.0256443	1.176042368	Tag not found: -5	29.66155815	1.437363863	
13-Sep-00 12:24:00	80.51696193	1199.871826	13.61503887	685.125	108.3125	128.1206512	50.21791077	16.03126717	1.177467602	Tag not found: -5	29.66129684	1.442659618	
13-Sep-00 12:25:00	80.44906142	1199.910522	13.60332012	685.4924316	108.6968079	128.1100311	50.22223282	16.03688812	1.178895151	Tag not found: -5	29.66103745	1.44795537	
13-Sep-00 12:26:00	80.37918091	1200.214111	13.59160137	685.3475342	108.7045441	128.0994263	50.22655869	16.04250908	1.180325161	Tag not found: -5	29.66077614	1.453251123	

13-Sep-00 12:27:00	80.40483856	1200.4375	13.57988262	685.2025757	108.875	128.0888214	50.23088074	16.04613004	1.18175764	Tag not found: -5	29.66051483	1.458546877
13-Sep-00 12:28:00	80.46827898	1200.041626	13.56816387	685.0625	107.8521805	128.0762013	50.23520279	16.05375099	1.183192593	Tag not found: -5	29.66025543	1.46384263
13-Sep-00 12:29:00	80.5	1200.484375	13.55644512	685.2443237	108.3125	128.0675964	50.23952866	16.05937386	1.184630168	Tag not found: -5	29.65999413	1.469138384
13-Sep-00 12:30:00	80.60198212	1200.350952	13.54472637	685.0625	108.3125	128.0569783	50.24385071	16.06499481	1.186070089	Tag not found: -5	29.65973282	1.474434137
13-Sep-00 12:31:00	80.74427795	1199.431763	13.53300762	685.0625	108.3125	128.0463715	50.24817657	16.07061577	1.187512504	Tag not found: -5	29.65947342	1.479729891
13-Sep-00 12:32:00	80.765625	1200.265625	13.52128887	684.4677124	108.3125	128.0357668	50.25249863	16.07623672	1.188957419	Tag not found: -5	29.65921211	1.485025644
13-Sep-00 12:33:00	81.03057098	1199.724976	13.50957012	684.5	108.3125	128.0251465	50.25682068	16.08185768	1.190404842	Tag not found: -5	29.65895081	1.490321398
13-Sep-00 12:34:00	80.78648088	1200.083496	13.49785137	684.8952637	108.3125	128.0145416	50.26114655	16.08748055	1.191854918	Tag not found: -5	29.65869141	1.495617151
13-Sep-00 12:35:00	81.40429688	1200.374512	13.48613262	684.5661621	108.3648224	128.0039215	50.2654686	16.0931015	1.193307374	Tag not found: -5	29.6584301	1.500912905
13-Sep-00 12:36:00	81.20999908	1200.184814	13.47441387	685.2697949	108.625	127.9933167	50.26979446	16.09872246	1.194762358	Tag not found: -5	29.65816879	1.506208658
13-Sep-00 12:37:00	80.74342346	1200.520874	13.46269512	685.4910889	108.3125	127.9827042	50.27411652	16.10434341	1.19621987	Tag not found: -5	29.65790939	1.511504412
13-Sep-00 12:38:00	80.72767476	1200.015625	13.45097637	685.5625	108.3125	127.9720917	50.27843857	16.10996437	1.197679925	Tag not found: -5	29.65764809	1.516800165
13-Sep-00 12:39:00	80.68347168	1199.798096	13.43925762	685.7851978	108.3125	127.9614792	50.28276443	16.11558723	1.199142668	Tag not found: -5	29.65738878	1.522095919
13-Sep-00 12:40:00	80.63906097	1199.91748	13.42753887	685.9678955	108.3125	127.9508667	50.28708649	16.12120819	1.200607821	Tag not found: -5	29.65712738	1.527391672
13-Sep-00 12:41:00	80.38476563	1199.75	13.41582012	686.3890381	108.5337067	127.9402618	50.29141235	16.12682915	1.202075535	Tag not found: -5	29.65686607	1.532687426
13-Sep-00 12:42:00	80.765625	1199.779419	13.40410137	687.0625	108.875	127.9296494	50.29573441	16.1324501	1.203545815	Tag not found: -5	29.65660477	1.537983179
13-Sep-00 12:43:00	80.765625	1199.584106	13.39238262	686.6831665	108.875	127.9190369	50.30005646	16.13807297	1.20501881	Tag not found: -5	29.65634537	1.543278933
13-Sep-00 12:44:00	80.99182892	1199.649048	13.38066387	686.4053345	108.875	127.9084244	50.30438232	16.14369392	1.206494243	Tag not found: -5	29.65608406	1.548574686
13-Sep-00 12:45:00	80.453125	1200.224976	13.36894512	686.2022095	108.886261	127.8978119	50.30870438	16.14931488	1.207972262	Tag not found: -5	29.65582466	1.55387044
13-Sep-00 12:46:00	80.88017273	1200.479492	13.35722637	686.1659546	108.9259949	127.8871994	50.31303024	16.15493584	1.209452875	Tag not found: -5	29.65556335	1.559166193
13-Sep-00 12:47:00	80.76841736	1200.395874	13.34634269	686.3997192	108.9657288	127.8765945	50.31735229	16.16055679	1.209229452	Tag not found: -5	29.65530205	1.564461946
13-Sep-00 12:48:00	80.65666199	1199.835938	13.40643692	685.4818726	109.0054626	127.8669357	50.32167435	16.16617966	1.205852066	Tag not found: -5	29.65504265	1.5697577
13-Sep-00 12:49:00	80.9200592	1200.410034	13.4485321	685.7999878	109.0451965	127.8574448	50.32600021	16.17180061	1.202495595	Tag not found: -5	29.65478134	1.575053453
13-Sep-00 12:50:00	80.17702484	1200.495117	13.49062634	686.0625	109.0849304	127.8479614	50.33032227	16.17742157	1.199160155	Tag not found: -5	29.65452003	1.580349207
13-Sep-00 12:51:00	79.78284454	1200.164185	13.53272152	685.5625	109.1246719	127.8384705	50.33464813	16.18304253	1.195845381	Tag not found: -5	29.65426064	1.58564496
13-Sep-00 12:52:00	79.6875	1199.865479	13.5748187	686.0625	109.1644058	127.8289871	50.33897018	16.18868348	1.192551166	Tag not found: -5	29.65399933	1.590940714
13-Sep-00 12:53:00	79.35546875	1200.032593	13.61691093	685.8028564	109.2041397	127.8194962	50.34329224	16.19428635	1.189277541	Tag not found: -5	29.65373802	1.596236467
13-Sep-00 12:54:00	79.8203125	1200.199829	13.65900612	685.5625	109.2438736	127.8100128	50.3476181	16.1999073	1.18602387	Tag not found: -5	29.65347862	1.601532221
13-Sep-00 12:55:00	80.06944275	1200.36792	13.70110035	685.1280518	109.2836075	127.8005219	50.35194016	16.20552826	1.182790276	Tag not found: -5	29.65321732	1.606827974
13-Sep-00 12:56:00	79.88600922	1199.660034	13.74319553	684.8911133	109.3233414	127.7910309	50.35626602	16.21114922	1.179576408	Tag not found: -5	29.65295601	1.612123728
13-Sep-00 12:57:00	79.97681427	1200.033203	13.78528976	685.5625	109.3630829	127.7815475	50.36058807	16.21677017	1.176382249	Tag not found: -5	29.65269661	1.617419481
13-Sep-00 12:58:00	79.63632202	1200.415771	13.80583191	685.0625	109.4081955	127.7720566	50.36491013	16.22239304	1.175039153	Tag not found: -5	29.6524353	1.622715235
13-Sep-00 12:59:00	79.4739151	1200.5625	13.79404449	685.0625	109.4704361	127.7625732	50.36923599	16.22801399	1.17645075	Tag not found: -5	29.652174	1.628010988
13-Sep-00 13:00:00	79.10336304	1200.268799	13.78225708	685.0625	109.5326767	127.7530823	50.37355804	16.23363495	1.177864762	Tag not found: -5	29.6519146	1.633306742
13-Sep-00 13:01:00	79.56973267	1200.168091	13.77046967	685.0721436	109.5949173	127.7435989	50.37788391	16.23925591	1.179281194	Tag not found: -5	29.65165329	1.638602495
13-Sep-00 13:02:00	79.3208847	1199.587158	13.75868225	684.9622803	109.6571579	127.734108	50.38220596	16.24487686	1.180700053	Tag not found: -5	29.65139198	1.643898249
13-Sep-00 13:03:00	79.609375	1200.375	13.74689484	685.3125	109.7193965	127.724617	50.38652802	16.25049973	1.182121484	Tag not found: -5	29.65113258	1.649194002
13-Sep-00 13:04:00	79.82793427	1200.416823	13.73510742	685.5665283	109.7816391	127.7151337	50.39085388	16.25612068	1.183545216	Tag not found: -5	29.65087128	1.654489756
13-Sep-00 13:05:00	79.13541412	1200.361572	13.72332001	686.1303711	109.8438797	127.7056427	50.39517593	16.26174164	1.184971394	Tag not found: -5	29.65060997	1.659785509
13-Sep-00 13:06:00	79.45883179	1199.553833	13.71153259	686.3446655	109.875	127.6961594	50.3995018	16.26736259	1.186400024	Tag not found: -5	29.65035057	1.665081263
13-Sep-00 13:07:00	79.66917419	1200.505859	13.69974518	686.5588989	109.875	127.6866684	50.40382385	16.27298355	1.187831112	Tag not found: -5	29.65008926	1.670377016
13-Sep-00 13:08:00	79.87950897	1200.593018	13.68795776	687.0317993	109.875	127.6771851	50.4081459	16.27860641	1.189264805	Tag not found: -5	29.64982796	1.67567277
13-Sep-00 13:09:00	79.82637787	1200.412354	13.67617035	686.883728	109.875	127.6676941	50.41247177	16.28422737	1.190700829	Tag not found: -5	29.64956856	1.680968523
13-Sep-00 13:10:00	79.63137817	1199.883301	13.66438293	687.3109131	109.875	127.6582031	50.41679382	16.28984833	1.192139331	Tag not found: -5	29.64930725	1.686264277
13-Sep-00 13:11:00	79.91874695	1199.990967	13.65259552	686.8828125	109.875	127.6487198	50.42111969	16.29546928	1.193580317	Tag not found: -5	29.64904594	1.69156003
13-Sep-00 13:12:00	79.63210297	1199.835571	13.64080811	685.9915771	109.875	127.6392288	50.42544174	16.30531502	1.195333509	Tag not found: -5	29.64878654	1.696855783
13-Sep-00 13:13:00	79.97350311	1199.786743	13.62902069	685.8125	109.875	127.6297455	50.42976379	16.31656837	1.197193015	Tag not found: -5	29.64852524	1.702151537
13-Sep-00 13:14:00	79.42842865	1200.087524	13.61723328	685.8125	109.875	127.6353455	50.43408966	16.32782173	1.199055741	Tag not found: -5	29.64826393	1.70744729
13-Sep-00 13:15:00	79.80628967	1200.258301	13.60018158	685.9084473	109.875	127.6560287	50.43841171	16.33907509	1.20138654	Tag not found: -5	29.64800453	1.712743044
13-Sep-00 13:16:00	79.7503891	1200.017822	13.57260132	686.2114868	109.8776321	127.676712	50.44273376	16.35032845	1.204656945	Tag not found: -5	29.64774323	1.718038797
13-Sep-00 13:17:00	79.9144516	1200.0271	13.54502106	686.0830688	110.0355301	127.697403	50.44705963	16.3615818	1.207940669	Tag not found: -5	29.64748192	1.72333467
13-Sep-00 13:18:00	79.76973724	1200.060425	13.5174408	686.7889404	110.125	127.7180862	50.45138168	16.37283707	1.211237934	Tag not found: -5	29.64722252	1.728630424
13-Sep-00 13:19:00	80.15304565	1199.697632	13.48986053	686.8125	110.125	127.7387695	50.45570755	16.38409042	1.21454854	Tag not found: -5	29.64696121	1.733926177
13-Sep-00 13:20:00	80.10496521	1200.088867	13.46228027	687.2446899	110.1714706	127.7594528	50.4600296	16.39534376	1.217872712	Tag not found: -5	29.64669991	1.739221931
13-Sep-00 13:21:00	79.57566833	1200.652832	13.43470001	687.375	110.2676315	127.7801437	50.46435165	16.40659714	1.221210531	Tag not found: -5	29.64644051	1.744517684
13-Sep-00 13:22:00	80.15156555	1200.028687	13.40711975	687.375	110.3637848	127.800627	50.46867752	16.41785049	1.224562083	Tag not found: -5	29.6461792	1.749813437
13-Sep-00 13:23:00	79.9421463	1200.182139	13.37953949	687.375	110.459938	127.8215103	50.47299957	16.42910385	1.227927453	Tag not found: -5	29.64591789	1.755109191
13-Sep-00 13:24:00	79.92853546	1200.296875	13.35195923	686.9658813	110.5560913	127.8422012	50.47732544	16.44035721	1.231306726	Tag not found: -5	29.64565849	1.760404944
13-Sep-00 13:25:00	79.9396286	1200.1875	13.32437897	686.6055908	110.6522446	127.8628845	50.48164749	16.45161057	1.234699989	Tag not found: -5	29.64539719	1.765700698
13-Sep-00 13:26:00	79.95072174	1200.1875	13.29679871	686.8125	110.125	127.8835678	50.48596954	16.46286392	1.238107326	Tag not found: -5	29.64513588	1.770996451
13-Sep-00 13:27:00	79.57327271	1200.153442	13.26921844	686.0827637	110.125	127.9042587	50.49029541	16.47411728	1.241528832	Tag not found: -5	29.64487648	1.776292205
13-Sep-00 13:28:00	79.76807513	1200.242676	13.24163818	686.2125244	110.125	127.924942	50.49461746	16.48537064	1.244964589	Tag not found: -5	29.64461517	1.781587958
13-Sep-00 13:29:00	80.5	1200.54541	13.21405792	685.9156494	110.125	127.9456253	50.49894333	16.4966259	1.248414832	Tag not found: -5	29.64435387	1.786883712
13-Sep-00 13:30:00	79.67816272	1199.791626	13.18647766	685.8125	110.0240402	127.9663086	50.50326538	16.50787926	1.251879363	Tag not found: -5	29.64409447	1.792179465
13-Sep-00 13:31:00	79.95833588	1200	13.1588974	687.0686035	109.8798065	127.9869995	50.50758743	16.51913261	1.255358417	Tag not found: -5	29.64383316	1.797475219
13-Sep-00 13:32:00	80.06523895	1200.155029	13.20264626	686.3878174	109.7355804	128.0076904	50.5119133	16.53038597	1.252050964	Tag not found: -5	29.64357185	1.802770972
13-Sep-00 13:33:00	79.97858429	1199.59375	13.44254875	686.4829712	110.3058014	128.0283661	50.51623535	16.54163933	1.230543376	Tag not found: -5	29.64331245	1.808066726
13-Sep-00 13:34:00	80.17524719	1199.518799	13.55901432	687.2906494	109.625	128.049057	50.52056122	16.55289268	1.22080354	Tag not found: -5	29.64305115	1.813362479
13-Sep-00 13:35:00	80.35839954	1199.625	13.55204201	686.4375	109.625	128.0668793	50.52488327	16.56414604	1.222262005	Tag not found: -5	29.64278984	1.818658233

13-Sep-00 13:36:00	80.74508667	1200.051514	13.54507065	686.9249878	109.625	128.0793762	50.52920532	16.5753994	1.223721686	Tag not found: -5	29.64253044	1.823953986	
13-Sep-00 13:37:00	81.4575882	1199.75	13.53809834	687.063313	109.6498413	128.0918732	50.53353119	16.58665276	1.225183356	Tag not found: -5	29.64226913	1.82924974	
13-Sep-00 13:38:00	80.87976837	1200.742065	13.53112602	686.9213867	109.7146301	128.1043701	50.53785324	16.59790611	1.226646333	Tag not found: -5	29.64200783	1.834545493	
13-Sep-00 13:39:00	81.08747864	1200.366089	13.52415466	686.8125	109.7794266	128.1168823	50.54217911	16.60915947	1.228110731	Tag not found: -5	29.64174843	1.839841247	
13-Sep-00 13:40:00	81.2951889	1200.448853	13.51718235	687.0792236	109.844223	128.1293793	50.54650116	16.62041283	1.229576727	Tag not found: -5	29.64148712	1.845137	
13-Sep-00 13:41:00	81.17169952	1200.213745	13.51021099	687.4074707	109.9090195	128.1418762	50.55082321	16.63186809	1.23104429	Tag not found: -5	29.64122581	1.850432754	
13-Sep-00 13:42:00	81.01809692	1200.326294	13.50323868	688.2821655	109.9738083	128.1543732	50.55514908	16.64292145	1.232513314	Tag not found: -5	29.64096642	1.855728507	
13-Sep-00 13:43:00	80.86449432	1200.136963	13.49626637	689.1178589	110.0386047	128.1668701	50.55947113	16.6541748	1.233983856	Tag not found: -5	29.64070511	1.861024261	
13-Sep-00 13:44:00	80.78279114	1200.494019	13.48929501	688.0714111	110.1034012	128.1793823	50.563797	16.66542816	1.23545583	Tag not found: -5	29.6404438	1.866320014	
13-Sep-00 13:45:00	80.91078949	1200.304688	13.48232269	688.375	110.125	128.1918793	50.56811905	16.67668152	1.236929415	Tag not found: -5	29.6401844	1.871615767	
13-Sep-00 13:46:00	80.1818161	1200.160767	13.47535133	688.1130981	110.125	128.2043762	50.5724411	16.68793488	1.238404437	Tag not found: -5	29.6399231	1.876911521	
Average	80.13243008	1200.058305	13.48284959	685.2756726	108.9662878	127.6389039	50.2784399	16.13550538	1.198844301	Tag not found: -5	29.65764832	1.516800154	

	Generator Output	Mean Turbine	Fuel Oil	Compressor Discharge Temp	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	°F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Hg	Losses H2O
9/13/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM
End Time	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 13:55:00	80.4375	1200.262817	13.69250011	686.6988525	109.914772	128.3168793	50.61135483	16.769217	1.226161538	Tag not found: -5	29.63757706	1.924573302	
13-Sep-00 13:56:00	80.59173584	1200.307983	13.68593788	687.6303101	109.7443161	128.3293762	50.61567688	16.80047035	1.227571723	Tag not found: -5	29.63731766	1.929869056	
13-Sep-00 13:57:00	80.39595795	1199.8125	13.67937469	687.375	109.7430573	128.3418732	50.62000275	16.81172371	1.228983348	Tag not found: -5	29.63705835	1.935164809	
13-Sep-00 13:58:00	80.12101746	1199.8125	13.65010834	687.875	110.4749985	128.3543701	50.6243248	16.82297707	1.232442751	Tag not found: -5	29.63679904	1.940460563	
13-Sep-00 13:59:00	80.4466629	1199.8125	13.61327267	687.875	110.5589294	128.3668823	50.62865067	16.83423042	1.23660422	Tag not found: -5	29.63653564	1.945756316	
13-Sep-00 14:00:00	80.34437561	1200.449951	13.576437	686.8636475	109.9319305	128.3793793	50.63297272	16.84548378	1.24078827	Tag not found: -5	29.63627434	1.95105207	
13-Sep-00 14:01:00	79.91601563	1199.787842	13.53960228	687.875	109.634903	128.3918762	50.63729477	16.85673714	1.244995	Tag not found: -5	29.63601303	1.956347823	
13-Sep-00 14:02:00	80.17153168	1200.286011	13.50276661	687.5335083	110.125	128.4043732	50.64162064	16.86799049	1.249224769	Tag not found: -5	29.63575363	1.961643577	
13-Sep-00 14:03:00	80.734375	1199.987549	13.46593189	687.6749878	110.125	128.4168701	50.64584269	16.87924385	1.25347759	Tag not found: -5	29.63549232	1.96693933	
13-Sep-00 14:04:00	80.67414093	1199.467163	13.42909622	687.375	110.125	128.4293823	50.65026855	16.89049911	1.257753972	Tag not found: -5	29.63523102	1.972235084	
13-Sep-00 14:05:00	81.14736176	1199.072876	13.39226151	687.375	110.125	128.3828125	50.65459061	16.90175247	1.262053647	Tag not found: -5	29.63497162	1.977530837	
13-Sep-00 14:06:00	80.99330139	1198.918701	13.35542583	688.6845093	110.125	128.2265625	50.65891266	16.91300583	1.266377129	Tag not found: -5	29.63471031	1.982826591	
13-Sep-00 14:07:00	81.03002167	1199.054199	13.31859112	687.9117432	110.6650009	128.0703125	50.66323853	16.92425919	1.270724436	Tag not found: -5	29.63444901	1.988122344	
13-Sep-00 14:08:00	80.95649719	1200.348267	13.28175545	688.3529663	109.9728241	127.9140625	50.66756058	16.93551254	1.275095947	Tag not found: -5	29.63418961	1.993418097	
13-Sep-00 14:09:00	80.11623383	1199.859375	13.25632763	687.875	110.1984177	127.7989655	50.67188644	16.9467659	1.278390696	Tag not found: -5	29.6339283	1.998713851	
13-Sep-00 14:10:00	79.73350525	1200.302124	13.25208378	687.1671143	110.3113708	127.7603073	50.6762085	16.95801926	1.279649264	Tag not found: -5	29.63366699	2.004009724	
13-Sep-00 14:11:00	79.64954834	1200.0625	13.24783993	686.9249878	110.424324	127.7218492	50.68053055	16.96927261	1.280908639	Tag not found: -5	29.63340759	2.009305477	
13-Sep-00 14:12:00	79.73165894	1199.837891	13.24359703	687.375	110.4375	127.682991	50.68485641	16.98052597	1.282168729	Tag not found: -5	29.63314629	2.014601231	
13-Sep-00 14:13:00	79.3125	1200.083374	13.23936318	687.484375	110.0999985	127.6443329	50.68917847	16.99177933	1.283429719	Tag not found: -5	29.63288498	2.019896984	
13-Sep-00 14:14:00	79.34583282	1200.375	13.23510933	687.9099121	110.6139679	127.6056671	50.69350433	17.00303268	1.284691517	Tag not found: -5	29.63262558	2.025192738	
13-Sep-00 14:15:00	79.63433075	1200.375	13.23086548	688.375	110.9375	127.567009	50.69782639	17.01428604	1.285954125	Tag not found: -5	29.63236427	2.030488491	
Average	80.27067166	1199.917911	13.42324943	687.6291388	110.2042291	128.1002826	50.65459061	16.90175165	1.259402239	#DIV/0!	29.63497098	1.977530871	

	Generator Output	Mean Turbine	Fuel Oil	Compressor Discharge Temp	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	°F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Hg	Losses H2O
9/13/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM
End Time	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 14:24:00	79.6442337	1199.684204	13.19267368	689.1985474	111.4375	127.2190704	50.73674011	17.11556816	1.297354014	Tag not found: -5	29.63001823	2.078150272	
13-Sep-00 14:25:00	79.08680725	1199.966675	13.18843079	688.8405151	111.4375	127.1804123	50.74106216	17.12682152	1.298624685	Tag not found: -5	29.62975693	2.083446026	
13-Sep-00 14:26:00	79.04051208	1200.174072	13.18418694	688.3233032	111.4375	127.1417542	50.74538422	17.13807487	1.299896229	Tag not found: -5	29.62949753	2.088741779	
13-Sep-00 14:27:00	79.24716187	1200.06665	13.20640469	687.8358643	111.4375	127.103096	50.74971008	17.14933014	1.298561611	Tag not found: -5	29.62923622	2.094037533	
13-Sep-00 14:28:00	79.24062347	1200.033203	13.26831532	689.0892944	111.4375	127.0644302	50.75403214	17.1605835	1.293350594	Tag not found: -5	29.62897491	2.099333286	
13-Sep-00 14:29:00	79.14687347	1200.430908	13.33022594	688.375	111.4375	127.1107407	50.758358	17.17183685	1.288187982	Tag not found: -5	29.62871552	2.10462904	
13-Sep-00 14:30:00	79.35137939	1200.280518	13.39213562	688.375	111.6100388	127.1615219	50.76268005	17.18309021	1.283073193	Tag not found: -5	29.62845421	2.109924793	
13-Sep-00 14:31:00	78.81568909	1200.4375	13.45404625	688.375	111.6875	127.2123032	50.76700211	17.19434357	1.278005386	Tag not found: -5	29.6281929	2.115220547	
13-Sep-00 14:32:00	79.078125	1200.625	13.45882225	688.1699829	111.6875	127.2630844	50.77132797	17.20559692	1.278388005	Tag not found: -5	29.6279335	2.1205163	
13-Sep-00 14:33:00	79.46923065	1200.578125	13.46262932	689.375	111.5803604	127.3138657	50.77565002	17.21685028	1.278862388	Tag not found: -5	29.6276722	2.125812054	
13-Sep-00 14:34:00	79.69999695	1199.963257	13.46643734	688.375	111.4543076	127.3646469	50.77997589	17.22810364	1.279336413	Tag not found: -5	29.62741089	2.131107807	
13-Sep-00 14:35:00	79.34901428	1200.194458	13.47024441	688.1685791	111.4375	127.4154282	50.78429794	17.23935699	1.27981026	Tag not found: -5	29.62715149	2.136403561	

13-Sep-00 14:36:00	79.56903839	1199.6875	13.4592886	687.8933716	111.1994019	127.4662094	50.78862	17.25061035	1.281688124	Tag not found: -5	29.62689018	2.141699314	
13-Sep-00 14:37:00	79.41168213	1200.046875	13.42282963	688.625	111.625	127.5169907	50.79294586	17.26186371	1.286007808	Tag not found: -5	29.62662888	2.146995068	
13-Sep-00 14:38:00	79.26592255	1199.662915	13.4008522	688.125	111.4375	127.5677719	50.79726791	17.27311707	1.288956613	Tag not found: -5	29.62636948	2.152290821	
13-Sep-00 14:39:00	79.31898499	1199.723267	13.48851681	688.5681763	111.7672424	127.6185532	50.80159378	17.28437233	1.281413856	Tag not found: -5	29.62610817	2.157586575	
13-Sep-00 14:40:00	79.16807556	1199.583496	13.57618237	688.6985474	111.4375	127.6693344	50.80591583	17.29562569	1.273968279	Tag not found: -5	29.62584686	2.162882328	
13-Sep-00 14:41:00	79.26537323	1199.848267	13.66384697	687.7750244	111.4375	127.7201157	50.81023788	17.30687904	1.266618331	Tag not found: -5	29.62558746	2.168178082	
13-Sep-00 14:42:00	80.0608902	1199.993042	13.75151157	688.708313	111.4375	127.7708969	50.81456375	17.3181324	1.259382093	Tag not found: -5	29.62532616	2.173473835	
13-Sep-00 14:43:00	80.01708221	1199.762451	13.83917618	689.6375122	111.4375	127.8216782	50.8188858	17.32938576	1.252197785	Tag not found: -5	29.62506485	2.178769588	
13-Sep-00 14:44:00	80.40600586	1199.680542	13.92684078	689.375	111.2306061	127.8724594	50.82321167	17.34063911	1.245123671	Tag not found: -5	29.62480545	2.184065342	
Average	79.41203344	1200.029663	13.45731417	688.5574777	111.4805694	127.408303	50.77997444	17.22810391	1.280418443	#DIV/0!	29.62741152	2.131107807	

	Generator Output	Mean Turbine	Fuel Oil	Compressor Discharge Temp	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	°F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Hg	Losses H2O
9/13/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM
End Time	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 17:12:00	159.875	1132.560791	20.97826385	757.2272949	89.96245575	195.5962524	78.10655212	32.86971283	1.566846192	Tag not found: -5	29.58622742	2.160736084
13-Sep-00 17:13:00	159.6096039	1132.605713	20.89511108	757.7232056	89.94087982	195.6262817	78.06301117	32.85830307	1.572535458	Tag not found: -5	29.58596611	2.160204411
13-Sep-00 17:14:00	159.203125	1132.650757	20.81195831	757.125	89.91930389	195.6563263	78.01946259	32.84689331	1.578270186	Tag not found: -5	29.58570671	2.159672737
13-Sep-00 17:15:00	159.03125	1132.699097	20.72880554	757.125	89.89772797	195.6863556	77.97592163	32.83548355	1.584050923	Tag not found: -5	29.5854454	2.159141064
13-Sep-00 17:16:00	159.1363983	1132.762085	20.64565277	756.6732788	89.87615204	195.7163849	77.93237305	32.82407379	1.589878225	Tag not found: -5	29.5851841	2.15860939
13-Sep-00 17:17:00	159.782547	1132.757202	20.5625	757.6392212	89.85457611	195.7464294	77.93167877	32.81266403	1.595752658	Tag not found: -5	29.5849247	2.158077717
13-Sep-00 17:18:00	159.7927246	1132.480957	20.69548035	758.1160889	89.83300018	195.7764587	77.99524689	32.80125427	1.584947714	Tag not found: -5	29.58466339	2.157546043
13-Sep-00 17:19:00	160.1322174	1131.879517	20.8284626	759.0430298	89.8125	195.806488	78.058815	32.78984451	1.574280596	Tag not found: -5	29.58440208	2.15701437
13-Sep-00 17:20:00	159.9626355	1132.30481	20.96144295	758.6875	89.8125	195.7896881	78.12238312	32.77843475	1.563748967	Tag not found: -5	29.58414268	2.156482697
13-Sep-00 17:21:00	160.078125	1132.460571	21.09442329	758.6875	89.8125	195.7611542	78.18595123	32.76702499	1.553350122	Tag not found: -5	29.58388138	2.155951023
13-Sep-00 17:22:00	159.84375	1132.487183	21.22740555	758.6875	89.8125	195.7326355	78.24951935	32.75561523	1.543081427	Tag not found: -5	29.58362007	2.15541935
13-Sep-00 17:23:00	160.0204773	1132.452148	21.36038589	758.5296021	89.8155899	195.7041016	78.31308746	32.74420547	1.532940727	Tag not found: -5	29.58336067	2.154887438
13-Sep-00 17:24:00	160.2317657	1132.403442	20.83595467	758.1875	89.83411407	195.6755829	78.35313416	32.73279572	1.570976528	Tag not found: -5	29.58309937	2.154355764
13-Sep-00 17:25:00	159.8600006	1132.573853	20.79380798	758.4067993	89.85264587	195.6470642	78.34812274	32.72138596	1.573612009	Tag not found: -5	29.58283806	2.153824091
13-Sep-00 17:26:00	159.9730988	1132.744263	20.7516613	758.381958	89.87117004	195.6185303	78.33911133	32.7099762	1.576258196	Tag not found: -5	29.58257866	2.153292418
13-Sep-00 17:27:00	160.0600891	1132.679565	20.70951462	758.7329712	89.88970184	195.5900116	78.33210754	32.69656644	1.578915153	Tag not found: -5	29.58231735	2.152760744
13-Sep-00 17:28:00	160.1470642	1132.606812	20.66787003	758.5992432	89.90822601	195.5614929	78.32509613	32.68715668	1.580015566	Tag not found: -5	29.58205605	2.152229071
13-Sep-00 17:29:00	160.2340546	1132.533936	20.62897034	757.7340088	89.92675018	195.532959	78.31808472	32.67574692	1.580143607	Tag not found: -5	29.58179665	2.151697397
13-Sep-00 17:30:00	160.2906494	1132.527954	20.67007065	758.4375	89.94528198	195.5044403	78.3110733	32.66433716	1.580272158	Tag not found: -5	29.58153534	2.151165724
13-Sep-00 17:31:00	160.3404388	1132.580444	20.66116905	758.4375	89.96380615	195.4759064	78.30406952	32.6529274	1.580400766	Tag not found: -5	29.58127403	2.15063405
13-Sep-00 17:32:00	160.0622449	1132.628174	20.91983032	758.4375	89.98233795	195.4473877	78.29705811	32.64151764	1.560314646	Tag not found: -5	29.58101463	2.150102377
13-Sep-00 17:33:00	160.1028442	1132.648926	20.3639431	758.4938965	90.00086212	195.418869	78.29004669	32.63010788	1.602347233	Tag not found: -5	29.58075333	2.149570704
13-Sep-00 17:34:00	159.9960938	1132.6698	20.82901192	758.7194824	90.01939392	195.3903351	78.28303528	32.61869812	1.566022347	Tag not found: -5	29.58049202	2.14903903
13-Sep-00 17:35:00	160.1057892	1132.426392	20.57019234	758.9375	90.03791809	195.3618164	78.27603149	32.60728836	1.585171778	Tag not found: -5	29.58023262	2.148507357
13-Sep-00 17:36:00	160.1365204	1132.331299	20.31137276	758.5041504	90.05644989	195.3332977	78.26902008	32.5958786	1.604809238	Tag not found: -5	29.57997131	2.147975683
13-Sep-00 17:37:00	160.4656219	1132.522705	21.14491844	758.9669189	90.07497406	195.3047638	78.26200867	32.58446884	1.541007071	Tag not found: -5	29.57971001	2.14744401
13-Sep-00 17:38:00	159.9852448	1132.169434	21.11678696	759.6375122	90.09350586	195.2762451	78.25500488	32.57305908	1.542519662	Tag not found: -5	29.57945061	2.146912336
13-Sep-00 17:39:00	159.9598236	1131.897339	21.08865356	759.6498413	90.11203003	195.2477112	78.24799347	32.56164932	1.544036428	Tag not found: -5	29.5791893	2.146380424
13-Sep-00 17:40:00	159.9375	1132.233887	21.06052208	758.4406128	90.1137085	195.2191925	78.24096206	32.55023956	1.545557106	Tag not found: -5	29.57892799	2.145848751
13-Sep-00 17:41:00	159.9375	1132.358276	21.03238869	757.9375	90.07606506	195.1906738	78.23397064	32.5388298	1.547081993	Tag not found: -5	29.57866859	2.145317078
13-Sep-00 17:42:00	160.0550385	1132.333374	21.0042572	758.3234863	90.038414	195.1621399	78.22696686	32.52742004	1.548610824	Tag not found: -5	29.57840729	2.144785404
13-Sep-00 17:43:00	159.8307648	1132.298828	20.97612381	758.5974731	90.00077057	195.1336212	78.21995544	32.51601028	1.550143896	Tag not found: -5	29.57814598	2.144253731
13-Sep-00 17:44:00	160.4791718	1132.217041	20.94799232	758.1017456	89.96312714	195.1051025	78.21294403	32.50460052	1.551680945	Tag not found: -5	29.57827568	2.143722057
13-Sep-00 17:45:00	160.0719452	1132.135376	20.91985893	757.9375	89.9254837	195.0765686	78.20593262	32.49319077	1.553222269	Tag not found: -5	29.57844182	2.143190384
13-Sep-00 17:46:00	160.1216583	1132.053589	20.89172745	757.9375	89.88784027	195.0480499	78.19892883	32.48178101	1.554767603	Tag not found: -5	29.57860565	2.14265871
13-Sep-00 17:47:00	159.8541718	1131.971802	20.86359406	757.9375	89.85019684	195.019516	78.19191742	32.47037125	1.556317246	Tag not found: -5	29.57877159	2.142127037
13-Sep-00 17:48:00	159.8671875	1131.890015	20.9831543	757.819458	89.81254578	194.9909973	78.18490601	32.45896149	1.546905724	Tag not found: -5	29.57893562	2.141595364
13-Sep-00 17:49:00	159.6183014	1132.257813	21.12877655	757.4821167	89.77490234	194.9624786	78.17790222	32.44755173	1.53570424	Tag not found: -5	29.57910156	2.14106369
13-Sep-00 17:50:00	159.7441406	1132.654907	20.92079926	757.336853	89.73725891	194.9339447	78.17089081	32.43614197	1.550425583	Tag not found: -5	29.57926559	2.140532017
13-Sep-00 17:51:00	159.5356903	1133.027954	20.86154366	757.125	89.69961548	194.905426	78.16387939	32.42473221	1.554282499	Tag not found: -5	29.57943153	2.140000343
13-Sep-00 17:52:00	158.6433868	1133.401123	20.80228996	756.8897095	89.66197205	194.8769073	78.15686798	32.41332245	1.558161265	Tag not found: -5	29.57959557	2.13946867
13-Sep-00 17:53:00	159.0161685	1133.581787	20.74303436	756.4608154	89.62432098	194.8963623	78.1498642	32.40190887	1.562062151	Tag not found: -5	29.57976151	2.138936996
13-Sep-00 17:54:00	159.2397766	1133.473511	20.68377876	756.2369385	89.58667755	194.9192657	78.14285278	32.39049911	1.565985572	Tag not found: -5	29.57992554	2.138405065
13-Sep-00 17:55:00	159.2305298	1133.365356	20.62452316	755.9431763	89.54903412	194.9421539	78.13584137	32.37908936	1.569931537	Tag not found: -5	29.58009148	2.137873411
13-Sep-00 17:56:00	159.4239655	1133.257202	20.56526947	756.625	89.51139069	194.9650421	78.12882996	32.3676796	1.573900096	Tag not found: -5	29.58025551	2.137341738
13-Sep-00 17:57:00	158.7238617	1133.117065	20.50601387	756.232666	89.47374725	194.9879456	78.12182617	32.35626984	1.577891737	Tag not found: -5	29.58042145	2.136810064
13-Sep-00 17:58:00	159.315979	1132.974731	20.42650414	756.625	89.43610382	195.0106337	78.11481476	32.34486008	1.583475071	Tag not found: -5	29.58058548	2.136278391

13-Sep-00 17:59:00	158.8312531	1132.927124	20.34082794	755.6384888	89.39845276	195.0337372	78.10780334	32.33345032	1.589563787	Tag not found: -5	29.58075142	2.135746717	
13-Sep-00 18:00:00	159.4080353	1133.100708	20.25515366	755.8411865	89.36080933	195.0566254	78.10079958	32.32204056	1.595744032	Tag not found: -5	29.58091545	2.135215044	
13-Sep-00 18:01:00	159.1313934	1133.238892	20.16947937	756.0439453	89.32316589	195.0795135	78.09378815	32.3106308	1.60195661	Tag not found: -5	29.58108139	2.134683371	
13-Sep-00 18:02:00	158.7436066	1133.297363	20.75569916	756.125	89.8125	195.102417	78.08677673	32.29922104	1.556161553	Tag not found: -5	29.58124542	2.134151697	
13-Sep-00 18:03:00	159.0093689	1133.243774	20.81554794	756.3863525	89.8125	195.1253052	78.07976532	32.28781128	1.551139147	Tag not found: -5	29.58141136	2.133620024	
13-Sep-00 18:04:00	159.3710938	1133.190186	20.87539673	756.6726516	89.8125	195.1481934	78.07276154	32.27640152	1.546145539	Tag not found: -5	29.58157539	2.13308835	
13-Sep-00 18:05:00	159.6458282	1133.243164	20.93524742	756.8324585	89.8168869	195.1710968	78.06575012	32.26499176	1.541180341	Tag not found: -5	29.58174133	2.132556677	
13-Sep-00 18:06:00	159.6956787	1132.587524	20.99509621	756.9920044	89.82785797	195.184906	78.05873871	32.253582	1.536243592	Tag not found: -5	29.58190536	2.132025003	
13-Sep-00 18:07:00	159.4916229	1132.477661	20.92460251	756.8977051	89.83882904	195.1757355	78.05172729	32.24217224	1.540873822	Tag not found: -5	29.5820713	2.13149333	
13-Sep-00 18:08:00	159.2890625	1132.390015	20.8519001	757.6875	89.84980011	195.1665802	78.04472351	32.23076248	1.545899065	Tag not found: -5	29.58223534	2.130961657	
13-Sep-00 18:09:00	159.6468811	1132.339111	20.77919769	756.890625	89.86077118	195.1574097	78.03659821	32.21935272	1.550558072	Tag not found: -5	29.58240128	2.130429983	
13-Sep-00 18:10:00	159.5251923	1132.567383	20.70649529	757.375	89.87174225	195.1482391	78.02810669	32.20794296	1.555451201	Tag not found: -5	29.58256531	2.129898071	
13-Sep-00 18:11:00	159.8719788	1132.784058	20.63379097	758.4375	89.88271332	195.1390839	78.01961517	32.1965332	1.560378956	Tag not found: -5	29.58273125	2.129366398	
13-Sep-00 18:12:00	159.9375	1132.924805	20.57264709	758.4375	89.89368439	195.1299133	78.01111603	32.18512344	1.564461943	Tag not found: -5	29.58289528	2.128834724	
Average	159.7164992	1132.638698	20.79470253	757.7012569	89.83613511	195.2975401	78.16395319	32.32741879	1.56439657	Tag not found: -5	29.58142584	2.144785467	

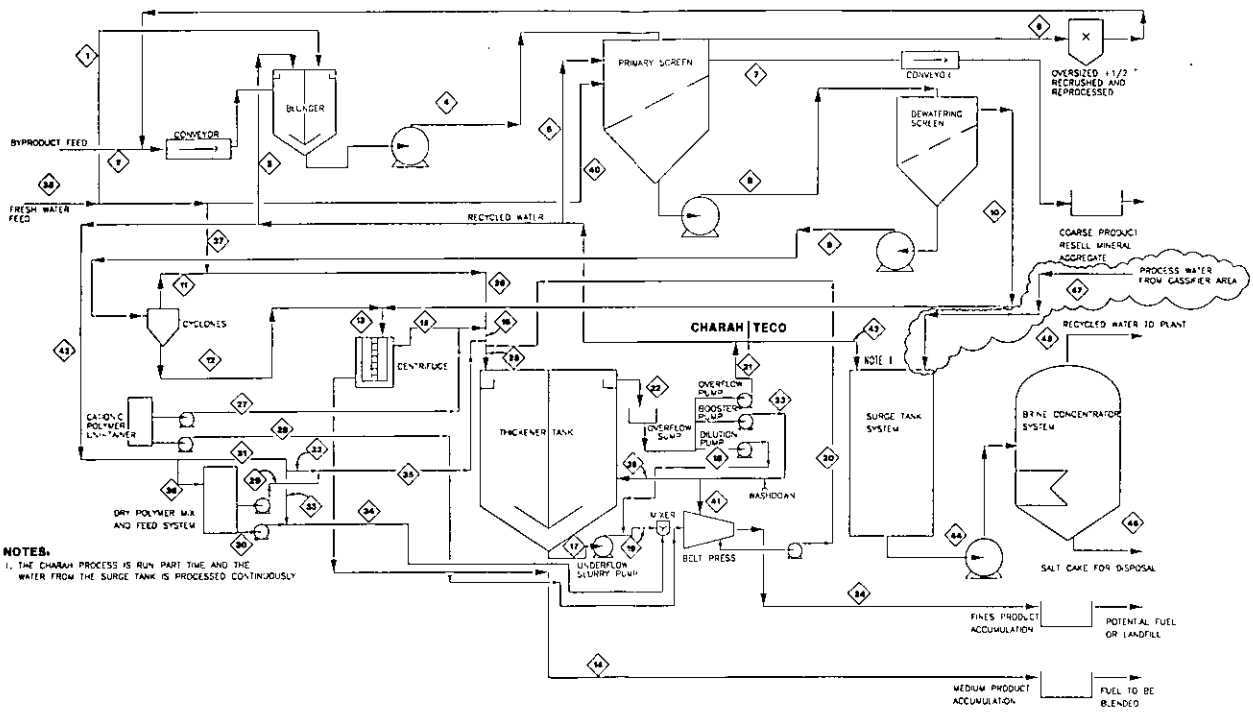
	Generator Output	Mean Turbine	Fuel Oil	Compressor Discharge Temp	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water Fuel	Specific Humidity	Barometric	Air Inlet Duct
	MW	Exhaust Temp °F	Flow Lbs/sec	°F	Temperature °F	Psia	Angle Deg	lbs/sec	Ratio	lbs water/ lbs air	Pressure Hg	Losses H2O
9/13/2000												
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914		2TMDMI915	2TMSPI909	2TMSPDI912
Start Time	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM
End Time	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 18:23:00	159.53125	1132.294556	20.87481499	757.5600586	90.01437378	195.0291138	77.91768646	32.05961609	1.535803604	Tag not found: -5	29.58471107	2.122986317
13-Sep-00 18:24:00	159.6414795	1132.435181	20.80718422	757.375	90.02534485	195.0199432	77.90919495	32.04820633	1.540247157	Tag not found: -5	29.58487511	2.122454643
13-Sep-00 18:25:00	159.9857178	1132.575806	20.73955345	757.2799072	90.03631592	195.010788	77.90070343	32.03679657	1.54471969	Tag not found: -5	29.58504105	2.12192297
13-Sep-00 18:26:00	159.3225403	1132.716431	20.67192268	757.1335449	90.04728699	195.0016174	77.89221191	32.02538681	1.549221488	Tag not found: -5	29.58520508	2.121391058
13-Sep-00 18:27:00	159.7378709	1132.787109	20.60429382	756.9871826	90.05825806	194.9924622	77.88371277	32.01397705	1.553752695	Tag not found: -5	29.58537102	2.120859385
13-Sep-00 18:28:00	159.5740204	1132.707153	20.53666306	756.4020386	90.06922913	194.9832916	77.87522125	32.00256729	1.55831389	Tag not found: -5	29.58553696	2.120327711
13-Sep-00 18:29:00	159.592453	1132.627075	20.57833099	756.8074341	90.0802002	194.9741211	77.86672974	31.99115562	1.554603997	Tag not found: -5	29.58570099	2.119796038
13-Sep-00 18:30:00	160.3574219	1132.547119	20.64186096	756.875	90.09117126	194.9649658	77.85823822	31.97974586	1.549266606	Tag not found: -5	29.58586693	2.119264364
13-Sep-00 18:31:00	159.9862823	1132.467041	20.70539093	756.875	90.10214233	194.9557953	77.84973907	31.96833611	1.543961967	Tag not found: -5	29.58603096	2.118732691
13-Sep-00 18:32:00	159.9828491	1132.386963	20.76891899	756.875	90.1131134	194.94664	77.84124756	31.95692635	1.538689922	Tag not found: -5	29.5861969	2.118201017
13-Sep-00 18:33:00	159.6151733	1132.519897	20.83244896	756.875	90.12408447	194.9374695	77.83275604	31.94551659	1.533449891	Tag not found: -5	29.58636093	2.117669344
13-Sep-00 18:34:00	159.6979218	1132.641479	20.89597893	756.6392822	89.55125427	194.928299	77.82426453	31.93410683	1.528241722	Tag not found: -5	29.58652687	2.117137671
13-Sep-00 18:35:00	159.6854858	1132.68457	20.95950699	756.375	89.51157379	194.9191437	77.81576538	31.92269707	1.523065265	Tag not found: -5	29.5866909	2.116605997
13-Sep-00 18:36:00	160.0316315	1132.794189	21.01234627	756.375	89.47189331	194.9099731	77.80727386	31.91128731	1.518692244	Tag not found: -5	29.58685684	2.116074324
13-Sep-00 18:37:00	159.8267822	1132.908569	20.98424721	756.0540161	89.4322052	194.9008179	77.79878235	31.89987755	1.520182127	Tag not found: -5	29.58702087	2.11554265
13-Sep-00 18:38:00	159.8886414	1133	20.95614815	755.875	89.39252472	194.8916473	77.7902832	31.88846779	1.521676005	Tag not found: -5	29.58718681	2.115010977
13-Sep-00 18:39:00	159.8096008	1133	20.92804909	755.875	89.35284424	194.8824768	77.78179169	31.87705803	1.523173894	Tag not found: -5	29.58735085	2.114479303
13-Sep-00 18:40:00	158.659375	1133	20.89994812	755.7987061	89.31316376	194.8656464	77.77330017	31.86564827	1.524675951	Tag not found: -5	29.58751678	2.11394763
13-Sep-00 18:41:00	159.216217	1133	20.87184906	755.375	89.27347565	194.8146515	77.76480865	31.85423851	1.526181912	Tag not found: -5	29.58768082	2.113415718
13-Sep-00 18:42:00	159.125	1133	20.84375	755.0499878	89.23379517	194.7636566	77.75630951	31.84282875	1.527691934	Tag not found: -5	29.58784676	2.112884045
13-Sep-00 18:43:00	159.4859314	1133	20.79814258	755.2445679	89.19411469	194.712677	77.74781799	31.83141899	1.530840544	Tag not found: -5	29.58801079	2.112352371
13-Sep-00 18:44:00	159.4385681	1132.925659	20.74853516	754.9837036	89.1544342	194.6616821	77.73932648	31.82000923	1.533602685	Tag not found: -5	29.58817673	2.111820698
13-Sep-00 18:45:00	159.9682813	1132.694824	20.70092773	754.875	89.11474609	194.6106873	77.73083496	31.80859947	1.536578451	Tag not found: -5	29.58834076	2.111289024
13-Sep-00 18:46:00	159.5189362	1132.597412	20.65332031	754.875	89.07506561	194.5596824	77.72233582	31.79718971	1.539567935	Tag not found: -5	29.5885067	2.110757351
13-Sep-00 18:47:00	159.2860565	1132.5	20.60571289	755.3392944	89.00196838	194.5086975	77.7138443	31.78577995	1.542571234	Tag not found: -5	29.58867073	2.110225677
13-Sep-00 18:48:00	159.3478563	1132.938721	20.55810547	754.6621704	88.91338348	194.4577026	77.70535278	31.77437019	1.545588442	Tag not found: -5	29.58883667	2.109694004
13-Sep-00 18:49:00	159.7857208	1132.797119	20.57284546	754.3125	88.82480621	194.4067078	77.69686127	31.76295853	1.543926366	Tag not found: -5	29.5890007	2.109162331
13-Sep-00 18:50:00	159.9827728	1132.65564	20.62914848	754.3125	88.73622131	194.3557129	77.68836212	31.75154877	1.539158447	Tag not found: -5	29.58916684	2.108630657
13-Sep-00 18:51:00	159.40625	1132.51416	20.68545341	754.6193237	88.64763641	194.304718	77.67987061	31.74013901	1.534418336	Tag not found: -5	29.58933067	2.108098984
13-Sep-00 18:52:00	159.140625	1132.372681	20.74175644	754.3125	88.55905151	194.2537231	77.67137909	31.72872925	1.529703106	Tag not found: -5	29.58949661	2.10756731
13-Sep-00 18:53:00	159.5153961	1132.231079	20.79805948	754.3125	88.5	194.2027283	77.66288757	31.71731949	1.525013405	Tag not found: -5	29.58966064	2.107035637
13-Sep-00 18:54:00	159.3020782	1132.384277	20.8543644	753.3125	88.5	194.1517334	77.65438843	31.70590973	1.520348689	Tag not found: -5	29.58982658	2.106503963
13-Sep-00 18:55:00	159.4036407	1132.587524	20.91066742	752.9828491	88.48002625	194.1007385	77.64589691	31.69449997	1.51570963	Tag not found: -5	29.58999062	2.10597229
13-Sep-00 18:56:00	159.1953125	1132.824829	20.93374062	752.3234863	88.44007874	194.1658173	77.6374054	31.69630051	1.514125024	Tag not found: -5	29.59015656	2.105440617
13-Sep-00 18:57:00	159.0187531	1132.964722	20.89510155	752.7484131	88.40013123	194.5790863	77.62891388	31.6995697	1.51708139	Tag not found: -5	29.59032059	2.104908705
13-Sep-00 18:58:00	158.875	1132.79541	20.85646057	753.1893311	88.36018372	194.9923401	77.62041473	31.7028389	1.52004885	Tag not found: -5	29.59048653	2.104377031
13-Sep-00 18:59:00	159.2570343	1132.113647	20.8178215	753.6240845	88.32023621	195.4056091	77.61192322	31.70610619	1.523027094	Tag not found: -5	29.59065056	2.103845358
13-Sep-00 19:00:00	160.5838013	1131.556763	20.77918053	754.875	88.28029633	195.7812457	77.63871002	31.70937538	1.526016646	Tag not found: -5	29.5908165	2.103313684
13-Sep-00 19:01:00	159.8125	1131.83252	20.74054146	754.875	88.24034882	195.8287659	77.68061066	31.71264458	1.529017198	Tag not found: -5	29.59098053	2.102782011
13-Sep-00 19:02:00	160.5916595	1131.868896	20.70190048	754.625	88.20040131	195.8962708	77.72251129	31.71591377	1.532029091	Tag not found: -5	29.59114647	2.102250338
13-Sep-00 19:03:00	159.9375	1131.905396	20.66325951	754.854187	88.1604538	195.9637909	77.76441956	31.71918106	1.535052156	Tag not found: -5	29.5913105	2.101718664
13-Sep-00 19:04:00	159.8457031	1131.925293	20.62462044	754.5581055	88.12050629	196.0312958	77.80632019	31.72245026	1.5380865	Tag not found: -5	29.59147644	2.101186991

13-Sep-00 19:05:00	159.9375	1131.821167	20.59213257	754.3125	88.08055878	196.0988159	77.84822083	31.72571945	1.540671873	Tag not found: -5	29.59164047	2.100655317
13-Sep-00 19:06:00	159.9375	1131.717041	20.61501312	755.3218994	88.04061127	196.1663208	77.89012909	31.72898674	1.539120376	Tag not found: -5	29.59180641	2.100123644
13-Sep-00 19:07:00	160.5874939	1131.602417	20.63789368	754.3125	88.00066376	196.2338409	77.93202972	31.73225594	1.537572411	Tag not found: -5	29.59197044	2.09959197
13-Sep-00 19:08:00	159.8856659	1131.408447	20.66077423	754.2125244	88	196.3013458	77.97393799	31.73552513	1.538027875	Tag not found: -5	29.59213638	2.099060297
13-Sep-00 19:09:00	160.4672852	1130.837524	20.68365479	754.6339111	88	196.368866	78.01583862	31.73879242	1.534486663	Tag not found: -5	29.59230042	2.098528624
13-Sep-00 19:10:00	160.907196	1131.15332	20.70653534	755.3533325	88	196.4363708	78.05773926	31.74206161	1.53294895	Tag not found: -5	29.59246635	2.09799695
13-Sep-00 19:11:00	160.8012238	1131.056641	20.72941589	755.375	88	196.4738922	78.09964752	31.74533081	1.531414632	Tag not found: -5	29.59263039	2.097465277
13-Sep-00 19:12:00	160.9095001	1131.17041	20.75229645	755.6566772	88.00840759	196.5108948	78.14154816	31.74860001	1.529883697	Tag not found: -5	29.59279633	2.096933603
13-Sep-00 19:13:00	160.0046844	1131.40271	20.775177	755.710083	88.05428314	196.5478973	78.18344879	31.75186729	1.528356042	Tag not found: -5	29.59296036	2.096401691
13-Sep-00 19:14:00	160.9042969	1130.71582	20.79805756	756.1972046	88.10015106	196.5849152	78.22535706	31.75513649	1.52683184	Tag not found: -5	29.5931263	2.095870018
13-Sep-00 19:15:00	160.890625	1130.078857	20.82093811	756.375	88.14602661	196.6219177	78.26725769	31.75840569	1.525310988	Tag not found: -5	29.59329033	2.095338345
13-Sep-00 19:16:00	161.1287689	1130.702759	20.84381866	756.375	88.19189453	196.5606689	78.30915833	31.76167297	1.523793384	Tag not found: -5	29.59345627	2.094806671
13-Sep-00 19:17:00	161.1784515	1130.836792	20.86669922	756.8379517	88.23777008	196.4904785	78.35106659	31.76494217	1.522279199	Tag not found: -5	29.5936203	2.094274998
13-Sep-00 19:18:00	161.4565277	1130.683716	20.88957977	756.6780396	88.283638	196.4202881	78.39296722	31.76821136	1.520768331	Tag not found: -5	29.59378624	2.093743324
13-Sep-00 19:19:00	161.0906219	1130.53064	20.91246033	756.7064209	88.32951355	196.3500977	78.43487549	31.77147865	1.519260678	Tag not found: -5	29.59395027	2.093211651
13-Sep-00 19:20:00	160.9737854	1129.95459	20.93534088	756.2307739	88.37538147	196.2799072	78.47677612	31.77474785	1.517756411	Tag not found: -5	29.59411621	2.092679977
13-Sep-00 19:21:00	161.15625	1130.004028	20.95822144	756.583313	88.42125702	196.2097321	78.51867676	31.77801704	1.516255429	Tag not found: -5	29.59428024	2.092148304
13-Sep-00 19:22:00	160.4497223	1131.307983	20.78948784	755.375	88.46712494	196.0787272	78.48154449	31.78128624	1.528719057	Tag not found: -5	29.59444618	2.091616631
13-Sep-00 19:23:00	160.2020416	1131.80481	20.61414719	755.6348846	88.53219604	195.9220276	78.41053772	31.78455353	1.541880595	Tag not found: -5	29.59461021	2.091084957
Average	**159.9517349**	**1132.079826**	**20.76987732**	**755.4452615**	**88.84898064**	**195.3321631**	**77.90034697**	**31.81434237**	**1.531807587**	**#DIV/0!**	**29.58966105**	**2.10703557**

	Generator Output	Mean	Turbine	Fuel Oil	Compressor Discharge Temp	Compressor Inlet	Compressor Discharge Press	Inlet Guide Vane	Water Injection Rate	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	°F	Temperature °F	Psia	Angle Deg	lbs/sec		Ratio	lbs water/ lbs air	Pressure	Hg	Losses H2O
9/13/2000															
Tag #	2PWRJI900	2TMETI934		2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI916	2PWRZI904	2TMSFI914			2TMDMI915	2TMSPI909	2TMSPDI912	
Start Time	9/13/00 7:28 PM	9/13/00 7:28 PM		9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM		9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	
End Time	9/13/00 8:28 PM	9/13/00 8:28 PM		9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM		9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	
	1 min	1 min		1 min	1 min	1 min	1 min	1 min	1 min		1 min	1 min	1 min	1 min	
13-Sep-00 19:28:00	160.1875	1132		20.6837616	753.5625	88.52923584	195.1334686	78.05551147	31.8008976		1.537481345	Tag not found: -5	29.5954361	2.088426352	
13-Sep-00 19:29:00	159.6897278	1132.173096		20.70859528	752.8624756	88.45763397	195.0701904	77.9845047	31.80416489		1.535795377	Tag not found: -5	29.59560013	2.087894678	
13-Sep-00 19:30:00	159.2437439	1132.572754		20.73342896	752.5374756	88.38603973	195.0841827	77.91349792	31.80743408		1.53411354	Tag not found: -5	29.59576607	2.087363005	
13-Sep-00 19:31:00	159.2827606	1132.822876		20.75826263	752.6241455	88.31443787	195.098175	77.84249115	31.81070328		1.532435726	Tag not found: -5	29.5959301	2.086831331	
13-Sep-00 19:32:00	159.1553802	1132.848999		20.78309631	752.8624878	88.25	195.1121674	77.77148438	31.81397057		1.530761831	Tag not found: -5	29.59609604	2.086299658	
13-Sep-00 19:33:00	159.5071259	1132.875		20.80792999	752.5625	88.25	195.1261597	77.7004776	31.81723976		1.529092023	Tag not found: -5	29.59626007	2.085767984	
13-Sep-00 19:34:00	159.3444061	1133.053589		20.83276367	753.0516357	88.25	195.140152	77.62947845	31.82050896		1.527426195	Tag not found: -5	29.59642601	2.085236311	
13-Sep-00 19:35:00	159.5695496	1132.940796		20.85759544	753.697937	88.25	195.1541443	77.55847168	31.82377815		1.525764475	Tag not found: -5	29.59659004	2.084704638	
13-Sep-00 19:36:00	159.8085175	1132.5625		20.88242912	754.0625	88.25	195.1681366	77.53559875	31.82704544		1.524106475	Tag not found: -5	29.59675598	2.084172964	
13-Sep-00 19:37:00	159.5732422	1132.310059		20.9072628	755.0341187	88.25	195.1821289	77.54265594	31.83031464		1.522452505	Tag not found: -5	29.59692001	2.083641291	
13-Sep-00 19:38:00	159.265625	1131.928711		20.93209648	755.125	88.25	195.1723785	77.54970551	31.83358383		1.52080246	Tag not found: -5	29.59708595	2.083109617	
13-Sep-00 19:39:00	159.6831818	1131.688354		20.95693016	754.8609619	88.22695923	195.1478729	77.5567627	31.83685112		1.519156235	Tag not found: -5	29.59724998	2.082577944	
13-Sep-00 19:40:00	159.578125	1131.90625		20.98178384	754.930542	88.20136261	195.1233673	77.56381989	31.84012032		1.517513997	Tag not found: -5	29.59741592	2.08204627	
13-Sep-00 19:41:00	160.34375	1132.277344		21.00659752	754.0625	88.17576599	195.0988617	77.57086945	31.84338951		1.515875643	Tag not found: -5	29.59757996	2.081514597	
13-Sep-00 19:42:00	160.8161804	1132.162476		21.0314312	754.8125	88.15016937	195.0743408	77.57792664	31.8466568		1.514241066	Tag not found: -5	29.5977459	2.080982924	
13-Sep-00 19:43:00	159.5612946	1132.3125		20.83265228	754.2788696	88.12457275	195.0498352	77.58498383	31.84992599		1.543666105	Tag not found: -5	29.59790993	2.08045125	
13-Sep-00 19:44:00	160.1586609	1131.591675		20.9923954	754.625	88.09897614	195.0253296	77.59203339	31.85319519		1.517368294	Tag not found: -5	29.59807587	2.079919338	
13-Sep-00 19:45:00	159.8883972	1131.5625		20.92071915	754.4891357	88.07337952	195.000824	77.59909058	31.85646439		1.522723199	Tag not found: -5	29.5982399	2.079387665	
13-Sep-00 19:46:00	159.7937469	1132.170776		20.84904099	753.2261353	88.0477829	194.9763031	77.60614777	31.85973167		1.528114972	Tag not found: -5	29.59840584	2.078855991	
13-Sep-00 19:47:00	160.2421875	1132.375		20.77736282	752.5625	88.02218628	194.9517975	77.61319733	31.86300087		1.533544037	Tag not found: -5	29.59856987	2.078324318	
13-Sep-00 19:48:00	160.3022614	1131.4375		20.70568466	752.340271	87.97406006	194.9272919	77.62025452	31.86388206		1.538895361	Tag not found: -5	29.59873581	2.077792645	
13-Sep-00 19:49:00	159.5426178	1131.544678		20.6340065	751.9091187	87.77947998	194.902771	77.62731171	31.85961151		1.54403419	Tag not found: -5	29.59889984	2.077260971	
13-Sep-00 19:50:00	159.7401733	1131.58667		20.56233025	751.6807861	87.58490753	194.8782654	77.63436127	31.85534096		1.549208702	Tag not found: -5	29.59906578	2.076729298	
13-Sep-00 19:51:00	159.7940369	1131.615845		20.5376873	751.6875	87.39032745	194.8537598	77.64141846	31.8510704		1.550859643	Tag not found: -5	29.59922981	2.076197624	
13-Sep-00 19:52:00	159.265625	1131.644897		20.64239693	751.0904541	87.195755	194.8292542	77.64846802	31.84679985		1.542785945	Tag not found: -5	29.59939575	2.075665951	
13-Sep-00 19:53:00	159.265625	1131.67395		20.74710655	751.25	87.00118256	194.8047333	77.65552521	31.8425293		1.534793742	Tag not found: -5	29.59955978	2.075134277	
13-Sep-00 19:54:00	159.1204529	1131.909668		20.85181618	751.4095459	86.80660248	194.7802277	77.6625824	31.83825874		1.526881806	Tag not found: -5	29.59972572	2.074602604	
13-Sep-00 19:55:00	159.3656311	1132.153564		20.86680031	751.2233887	86.64972687	194.755722	77.66963196	31.83398819		1.525580718	Tag not found: -5	29.59988976	2.07407093	
13-Sep-00 19:56:00	159.279953	1132.212646		20.83691978	751.8693848	87.02060699	194.7312164	77.67668915	31.82971764		1.527563477	Tag not found: -5	29.60005569	2.073539257	
13-Sep-00 19:57:00	159.3136139	1132.25		20.80704117	751.6363525	87.1875	194.7066956	77.68374634	31.82544708		1.529551791	Tag not found: -5	29.60021973	2.073007584	
13-Sep-00 19:58:00	160.0334778	1131.77478		20.77716255	752.0625	87.1875	194.6950684	77.6907959	31.82117653		1.531545823	Tag not found: -5	29.60038567	2.07247591	
13-Sep-00 19:59:00	159.9584045	1132.039795		20.74728394	752.0625	87.1875	194.7300262	77.69785309	31.81690598		1.533545599	Tag not found: -5	29.6005497	2.071944237	
13-Sep-00 20:00:00	159.8125	1132.403564		20.7487556	752.0625	87.1875	194.7649841	77.70491028	31.81263542		1.53337881	Tag not found: -5	29.60071564	2.071412325	
13-Sep-00 20:01:00	160.078125	1132.434814		20.76321983	752.0625	87.1875	194.799942	77.71195984	31.80836487		1.531957236	Tag not found: -5	29.60087967	2.070880651	
13-Sep-00 20:02:00	159.6328125	1132.060059		20.77968407	752.0625	87.24690247	194.8348999	77.71901703	31.80409431		1.530537914	Tag not found: -5	29.60104561	2.070348978	
13-Sep-00 20:03:00	159.9017792	1132.240356		20.7961483	752.5625	87.54393768	194.8698578	77.72607422	31.79982376		1.52912084	Tag not found: -5	29.60120964	2.069817305	
13-Sep-00 20:04:00	159.8125	1132.216553		20.8270092	751.7098999	86.71289063	194.9048157	77.73312378	31.79555321		1.526649981	Tag not found: -5	29.60137558	2.069285631	

13-Sep-00 20:05:00	159.8699951	1132.056763	20.86334038	751.5	87.42500305	194.9397736	77.74018097	31.79128075	1.523786708	Tag not found: -5	29.60153961	2.068753958
13-Sep-00 20:06:00	159.8720245	1131.696973	20.88316536	751.546875	87.1875	194.9747314	77.74723053	31.78701019	1.522135636	Tag not found: -5	29.60170555	2.068222284
13-Sep-00 20:07:00	160.0729218	1131.737061	20.90299225	751.7653198	87.1875	195.0096893	77.75428772	31.78273964	1.520487558	Tag not found: -5	29.60186958	2.067690611
13-Sep-00 20:08:00	159.8403168	1131.577271	20.92281723	751.8707275	87.1875	195.0446472	77.76134491	31.77846909	1.518842742	Tag not found: -5	29.60203552	2.067158937
13-Sep-00 20:09:00	159.629425	1131.569214	20.94264221	752.0625	87.1875	195.0796051	77.76839447	31.77419853	1.517201039	Tag not found: -5	29.60219955	2.066627264
13-Sep-00 20:10:00	159.4232025	1131.903442	20.9624691	752.0625	87.1875	195.114563	77.77545166	31.76992798	1.515562304	Tag not found: -5	29.60236549	2.066095591
13-Sep-00 20:11:00	159.9955292	1132.232422	20.98229408	751.9482422	87.1875	195.1495209	77.78250885	31.76565742	1.513926804	Tag not found: -5	29.60252953	2.065563917
13-Sep-00 20:12:00	159.7011871	1132.487305	21.00211906	751.96875	87.1875	195.1844788	77.78955841	31.76138687	1.512294392	Tag not found: -5	29.60269547	2.065032244
13-Sep-00 20:13:00	159.3083344	1132.380249	21.02194595	752.5625	87.23544312	195.2194366	77.7966156	31.75711632	1.510664921	Tag not found: -5	29.6028614	2.06450057
13-Sep-00 20:14:00	159.8125	1131.984375	21.04177094	752.0625	87.64640045	195.2543945	77.80367279	31.75284576	1.509038658	Tag not found: -5	29.60302544	2.063968897
13-Sep-00 20:15:00	159.5545197	1131.609131	21.01015091	752.3816528	87.1875	195.2893524	77.81072235	31.74857521	1.511106481	Tag not found: -5	29.60319138	2.063436985
13-Sep-00 20:16:00	160.0390625	1131.541382	20.82419586	752.2877197	87.19166565	195.3243103	77.81777954	31.74430466	1.524395221	Tag not found: -5	29.60335541	2.062905312
13-Sep-00 20:17:00	159.5416718	1131.473633	20.63823891	751.9490967	87.2416687	195.3592682	77.82483673	31.7400341	1.537923572	Tag not found: -5	29.60352135	2.062373638
13-Sep-00 20:18:00	159.40625	1131.296753	20.55564117	753.5341797	87.29166412	195.3654022	77.80316925	31.73576355	1.54389558	Tag not found: -5	29.60368538	2.061841965
13-Sep-00 20:19:00	160.4514618	1131.006104	20.59116936	754.0625	87.34166718	195.3479614	77.75837817	31.731493	1.541024332	Tag not found: -5	29.60385132	2.061310291
13-Sep-00 20:20:00	160.6753845	1131.368896	20.62669754	754.0148926	87.39167023	195.3305206	77.7095871	31.72722244	1.538162974	Tag not found: -5	29.60401535	2.060778618
13-Sep-00 20:21:00	160.84758	1131.731812	20.66222382	753.6555176	87.43090057	195.3130798	77.66280365	31.72295189	1.535311599	Tag not found: -5	29.60418129	2.060246944
13-Sep-00 20:22:00	160.696579	1131.682739	20.59833336	752.875	87.35166931	195.295639	77.61601257	31.71868134	1.539866395	Tag not found: -5	29.60434532	2.059715271
13-Sep-00 20:23:00	160.9548187	1131.612061	20.50694466	752.8643188	87.27244568	195.2781982	77.5692215	31.71441078	1.546520523	Tag not found: -5	29.60451126	2.059183598
13-Sep-00 20:24:00	160.546875	1131.452148	20.41555595	751.949707	87.19322205	195.2607574	77.52243042	31.71014023	1.553234225	Tag not found: -5	29.60467529	2.058651924
13-Sep-00 20:25:00	160.3100891	1131.127319	20.32416725	751.5	87.11399841	195.2433167	77.47563934	31.70586967	1.560008304	Tag not found: -5	29.60484123	2.058120251
13-Sep-00 20:26:00	159.90625	1130.854492	20.46582031	751.7327881	87.03477478	195.2258759	77.42884827	31.70159912	1.549002123	Tag not found: -5	29.60500526	2.057588577
13-Sep-00 20:27:00	160.3343048	1130.826294	21.0758934	752.385437	86.95554352	195.2084351	77.38206482	31.6878376	1.503511002	Tag not found: -5	29.6051712	2.057056904
13-Sep-00 20:28:00	160.4080811	1130.949829	21.03125	751.2333984	86.87631989	195.1909943	77.33527374	31.67302132	1.505998042	Tag not found: -5	29.60533524	2.05652523
Average	**159.8346075**	**1131.929381**	**20.79536078**	**752.6571925**	**87.55567932**	**195.0600541**	**77.67682698**	**31.79551991**	**1.529069315**	**#DIV/0!**	**29.60038545**	**2.072475805**

9/15/2000	Generator Output MW	Mean Turbine Exhaust Temp °F	Fuel Oil Flow Lbs/sec	Compressor Discharge Temp °F	Compressor Inlet Temperature °F	Compressor Discharge Press Psig	Inlet Guide Vane Angle Deg	Water Injection Rate lbs/sec	Water Fuel Ratio	Specific Humidity lbs water/ lbs air	Barometric Pressure Hg	Air Inlet Duct Losses H_2O
6:11 to 6:31 AM	80.23	1199.74	13.56	673.21	100.51	126.19	48.73	17.93	1.32	N/A	29.61	1.96
6:36 to 6:56 AM	80.53	1200.1	13.38	673.12	100.39	126.26	48.95	17.93	1.34	N/A	29.61	1.93
7:01 to 7:21 AM	79.71	1200.13	13.53	672.89	100.81	125.78	49.16	17.99	1.33	N/A	29.615	1.899
7:44 to 8:04 AM	112.37	1178.25	16.4	691.6	85.81	150.91	55.88	23.68	1.44	N/A	29.62	1.85
8:09 to 8:29 AM	112.66	1177.59	16.36	691.38	85.44	150.91	56.233	23.64	1.44	N/A	29.62	1.82
8:34 to 8:54 AM	112.63	1179.24	16.21	693.34	86.82	151.29	56.53	23.59	1.46	N/A	29.62	1.79
9:20 TO 9:40 AM	136.35	1155.97	18.49	711.18	82.18	169.98	61.87	27.35	1.48	N/A	29.62	1.73
9:45 TO 10:05 AM	136.63	1155.81	18.58	712.93	83.08	170.4	62.27	27.32	1.47	N/A	29.62	1.73
10:10 TO 10:30 AM	COULD NOT READ FROM PI											



NOTES.

1. THE CHARAH PROCESS IS RUN PART TIME AND THE WATER FROM THE SURGE TANK IS PROCESSED CONTINUOUSLY

CHARAH PROCESS AT POLK P.S.

PROCESS FLOW DIAGRAM
CHARAH FUEL RECOVERY
BENEFICIATION PROCESS
POLK POWER STATION

TECO TAMPA ELECTRIC

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