York Services Corporation

Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

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TECHNICAL REPORT

FOR

STACK EMISSION COMPLIANCE TESTING

ON THREE

HOT MIX ASPHALT PLANTS

OWNED AND OPERATED BY:

WELDON ASPHALT COMPANY
141 CENTRAL AVENUE
WESTFIELD, NEW JERSEY 07090

SUBMITTED TO:

MR. ROBERT WELDON
WELDON ASPHALT COMPANY
141 CENTRAL AVENUE
WESTFIELD, NEW JERSEY 07090

YORK REPORT NO. 4937-01
SEPTEMBER 26, 1991

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1.0 INTRODUCTION

York Services Corporation (York) was retained by Weldon Asphalt Co. to conduct Stack Emissions Compliance Testing on three of their hot mix asphalt concrete plants. Two of the plants (Madsen and Aztec) are located in Watchung, New Jersey and the third plant (Dayton) is located in Dayton, New Jersey. The Madsen and Dayton plants are batch-mix plants, whereas Aztec is a drum-mix plant. These two basic plant designs and the manufacturing process are described below.

The compliance tests were performed by York in accordance with EPA and State of New Jersey approved methods.

2.0 DISCUSSION

During the beginning of the program, the New Jersey Department of Environmental Protection (NJDEP) Air Quality Engineering and Technical Department, informed both Weldon officials and the York Project Manager that the particulate test requirements were waived. The NJDEP felt that since there were no visible emissions, there would be no reason to require particulate sampling. In addition, baghouses are considered best available control technology for controlling asphalt plant emissions.

The NJDEP required a temperature traverse, moisture, total hydrocarbons, carbon monoxide and oxygen emissions as parameters of measurement for the program at the above referenced Weldon asphalt plants. During each test series operational parameters were monitored. The results of parameters tested are summarized in the following tables.

TABLE 1.0

WELDON ASPHALT COMPANY
SUMMARY OF RESULTS

Asphalt Plant	Product	Date of Test	Test No.	Average Stack Temp. °F	Percent Moisture (v/v)	Total Hydrocarbons (ppmv)	Carbon Monoxide (ppmv)	Oxygen (%) (v/v)
				Start/Stop		Uncorrected/Corrected*		
Aztec	RAP	9/10/91	1	206/206	30.57	7.08/8.8	151/182	9.3
Aztec	RAP	9/10/91	2	206/208	29.31	6.1/6.9	155/178	8.7
Aztec	RAP	9/10/91	3	208/209	30.04	6.4/7.1	170/188	8.3
Aztec	Virgin	9/11/91	4	213/215	33.28	6.7/7.4	174/192	8.3
Aztec	Virgin	9/11/91	5	215/196	31.62	8.4/9.3	191/212	8.4
Aztec	Virgin	9/11/91	6	196/205	30.42	7.4/8.4	184/211	8.7
Madsen	Virgin	9/13/91	1	196/185	28.96	3.6/7.5	46.2/99.1	14.6
Madsen	Virgin	9/13/91	2	185/176	28.44	3.8/9.5	29.0/63.6	14.8
Madsen	Virgin	9/13/91	3	176/167	11.81**	4.0/10.7	14.7/35.6	15.2
Dayton	Virgin	9/11/91	1	211/196	17.99	42.1/93.4	252/545	14.5
Dayton	Virgin	9/11/91	2	196/195	20.16	30.5/57.6	296/559	13.5
Dayton	Virgin	9/11/91	3	195/194	15.93	61.6//149.9	266/649	15.2

* Corrected to 7% O_2
** During test no. 3 at the Madsen Plant, the product mix was being loaded and dumped. This may explain the drop in moisture.

TABLE 2.0

PLANT OPERATION DATA

AZTEC

Date	**9/10/91**	**9/10/91**	**9/10/91**
Test No.	1	2	3
RAP/TPH	20	20	20
Screening/TPH	24	24	24
Sand/TPH	17	17	17
Stone/TPH	59	59	59
Aczo/TPH	4	4	4
Fuel Gal/Min	6.3	6.3	6.3
Baghouse, Δp	3.8	4.0	3.5
Tons/Hour[1]	-	-	-

[1] Tons/hour not a requirement until Test No. 4 of Aztec Series

TABLE 2.0 CONTINUED

PLANT OPERATION DATA

AZTEC

Date	9/11/91	9/11/91	9/11/91
Test No.	3	4	5
RAP/TPH	-	-	-
Screening/TPH	33	33	33
Sand/TPH	24	24	24
Stone/TPH	43	43	43
Aczo/TPH	5.8	5.8	5.8
Fuel Gal/Min	6.36	6.17	6.25
Baghouse, Δp	4.0	3.5	4.1
Tons/Hour	-	276	284

TABLE 2.0 CONTINUED

PLANT OPERATION DATA

MADSEN

Date	9/13/91	9/13/91	9/13/91
Test No.	1	2	3
Tons/Hour	187	180	151
Mix Temp. °F	300	300	300
Fuel[1] cu. ft/hr	8000	8000	8000
Burner Setting, %	40	40	40
Baghouse, Δp	4.5	4.5	4.5

[1] Fuel burned over the four (4) hour test series X 1000

TABLE 2.0 CONTINUED

PLANT OPERATION DATA

DAYTON

Date	9/14/91	9/14/91	9/14/91
Test No.	1	2	3
Tons/Hour	181	207	207
Mix Temp. °F	285	285	285
Fuel [1] gal/min	4.0	4.1	4.3
Burner Setting, %	38	38	36
Baghouse, Δp	6.4	3.4	3.4

[1] During Test No. 1 feed line to gage cleared of moisture.

3.0 PURPOSE AND SCOPE

The purpose of the test program on the three asphalt concrete plants was to demonstrate air emissions compliance with NJDEP regulations.

Testing was conducted for temperature, moisture, carbon monoxide, oxygen and total hydrocarbons, as required under the regulations. The Madsen and Dayton plants were tested on virgin raw material asphalt concrete stock only and the Aztec plant was tested on both virgin and reprocessed asphalt pavement (RAP).

In order to satisfy the requirements of the test program, triplicate tests were conducted for all emissions parameters.

The test program was performed at the plants under the supervision of Joseph V. Miceli, Project Manager who has been involved on similar projects. The quality control and quality assurance tasks were overseen by Abraham J. Kurtz who has corporate responsibility for these functions.

4.0 PROCESS DESCRIPTION AND OPERATION

4.1 Asphalt Concrete Manufacturing

Asphalt concrete is a blended mixture of asphaltic cement (AC) and aggregate. Depending on the constitution of the AC and different sizes and combinations of aggregates the variations in the types of asphalt concrete are numerous. The basic manufacturing process is composed of:

- Screening of aggregate
- Heating of the aggregate to drive off moisture and to facilitate mixture with the AC
- Blending of the aggregate with heated AC and mixing until a homogenous product results

Two basic plant designs are found in the production of asphalt concrete:

1. Batch-Mix Plants: These are usually older plants which separate the heating, screening and blending production steps. One batch is mixed at a time and the rotary dryer may be started and stopped many times during the day.

2. Drum-Mix Plants: These are generally newer plants which combine the heating and blending steps. They normally operate continuously and for longer periods than a batch plant.

Further information on the asphalt concrete manufacturing process is included in Appendix A.

4.2 Plant Description and Control Apparatus

- Madsen Plant (Watchung, NJ)

  In operation since 1962, the Madsen batch plant runs at approximately 180 tons per hour (tph). Control apparatus for the plant consists of a knockout box and a 1963 Madsen Flex Kleen baghouse containing 448 filter bags. The plant normally operates on natural gas and can also burn #2 fuel oil.

  A copy of permit certificate No. 0013476 approved under the authority of Chapter 106, P.L. 1967 (NJSA 26:2C-9.2) by the Bureau of New Source Review on 8/21/90 is included in Appendix B.

- Aztec Plant (Watchung, NJ)

  This plant is a drum mix plant with a 1990 McDermott drum, capable of producing 380 tph at full capacity. Control apparatus consists of a 1990 Dustex baghouse (Model 3612-14-60) containing 840 Nomex filter bags. The Aztec runs on #2 fuel oil with an average sulfur content of <0.2%.

  A copy of permit/certificate No. 042141 approved under the authority of Chapter 106, P.L. 1967 (NJSA 26:2C-9.2) by the Bureau of New Source Review on 9/24/90 is included in Appendix B.

- Dayton Plant (Dayton, NJ)

  The facility at Dayton is a 1988 H & B batch plant which runs at 200 tph. The control apparatus is a 1990 Dustex baghouse with 576 filter bags. Included in the control system is a 1988 cyclone which directs 70% of the heavy fine material into the hot elevator before reaching the baghouse. Fuel oil (#2 with <0.2% sulfur) is used to run the plant.

  A copy of permit/certificate No. 042380 approved under the authority of Chapter 106, P.L. 1967 (NJSA 26:2C-9.2) by the Bureau of New Source Review on 8/21/90 is included in Appendix B.

  A summary of the three plants is provided in Table 3.0.

4.3 Process Measurements and Safety Requirements

During the test program, the amount of asphalt concrete produced each hour was be recorded. As measurement of the material is executed through a computer system, a log was established to record prescribed amounts when possible.

When RAP was used at the Aztec plant, the feed rate of RAP into the concrete mix was also recorded.

Fuel usage rate was monitored for the plants throughout the program.

Safety requirements are those normally adhered to for fugitive emissions from the asphalt concrete process and were followed by all members of the test team.

5.0 SAMPLING PROCEDURES

Each asphalt concrete plant was tested for the following parameters, using the relevant compliance methods:

Parameters	Method
Carbon Monoxide (CO)	EPA Method 10
Oxygen (O_2)	EPA Method 3
Total Hydrocarbons (THC)	NJ Air Method 3
Temperature	EPA Method 1

The CO, O_2 and THC emissions measurement were performed by continuous emissions monitors located in York's Mobile Laboratory CEM Van which was located at each plant site.

TABLE 3.0

WELDON ASPHALT CO. - PLANT SUMMARY

Plant Name	Location	Plant Type	Fuel	Process
Madsen	Watchung, NJ	1962, Batch Mix	Nat'l Gas #2 Fuel Oil	180 TPH
Aztec	Watchung, NJ	Drum-mix 1990 McDermott	#2 Fuel Oil (<0.02% S)	380 TPH
Dayton	Dayton, NJ	Batch-mix 1988 H & B	#2 Fuel Oil (<0.2% S)	200 TPH

CONTROL APPARATUS

Madsen - Knockout box and Madsen Flex baghouse (448 bags)
Aztec - Dustex baghouse (840 bags)
Dayton - Cyclone and Dustex baghouse (576 bags)

5.1 Sampling Locations

Emissions samples were collected from the Aztec and Madsen stacks which vent the exhaust gases from the baghouse to the atmosphere. The Dayton plant test location was reading before the exhaust fan.

A summary of the baghouse outlet test locations is included below. Schematics of the locations are provided in Figure 5-1.

Plant	Stack I.D.	No. Ports	No. Traverse Pts/Port
Madsen	44"	2	12
Aztec	60"	2	12
Dayton	44"	2	12

5.2 Moisture, NJ Air Test Method 1

All tests will be conducted in accordance with the following:

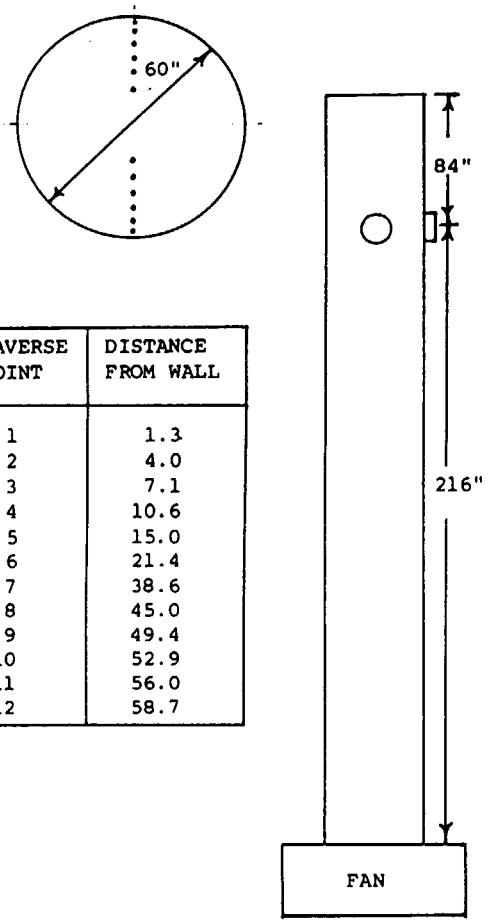
- EPA Method 1 for Determination of the number of traverse points (see above).
- EPA Method 2 for Determination of stack gas temperature.

The gas temperature data was collected before and after each test. A thermocouple was rigidly attached to a sampling probe. The thermocouple was connected to an to a pyrometer (Figure 5-2). The gas temperature was measured on the pyrometer. These readings will be taken and recorded for each traverse point.

- New Jersey Air Test Method 1 for Determination of Moisture from Stationary Sources

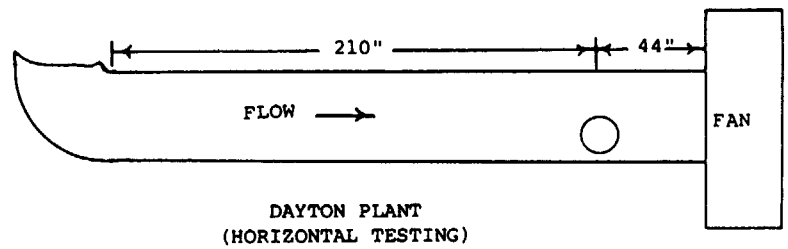
The sampling train was consisted of a glass-lined probe, glass fiber filter, impinger train, vacuum pump, dry gas meter and differential manometers as shown in Figure 5-3.

The probe consisted of a 1/2 inch outside diameter glass tube wound with a heater capable of maintaining a temperature of 248 $\pm$ 25°F. The probe was encased in a stainless steel sheath for protection. A stainless steel button-hook nozzle was attached to the inlet of the probe by means of a stainless steel coupling.

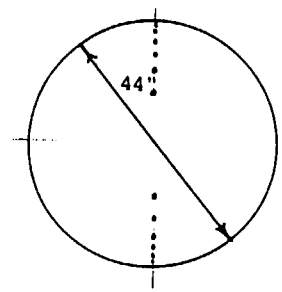


TRAVERSE POINT	DISTANCE FROM WALL
1	1.3
2	4.0
3	7.1
4	10.6
5	15.0
6	21.4
7	38.6
8	45.0
9	49.4
10	52.9
11	56.0
12	58.7

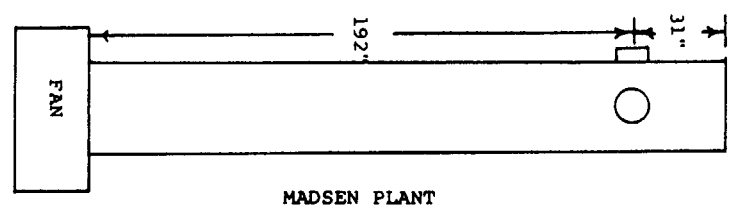
AZTEC PLANT



DAYTON PLANT
(HORIZONTAL TESTING)



TRAVERSE POINT	DISTANCE FROM WALL
1	1.0
2	3.0
3	5.2
4	7.8
5	11.0
6	15.7
7	28.3
8	33.0
9	36.2
10	38.8
11	41.0
12	43.0



MADSEN PLANT

TEST LOCATIONS WITH TRAVERSE POINTS

FIGURE 5-1

TEMPERATURE PROFILE MEASUREMENT TRAIN

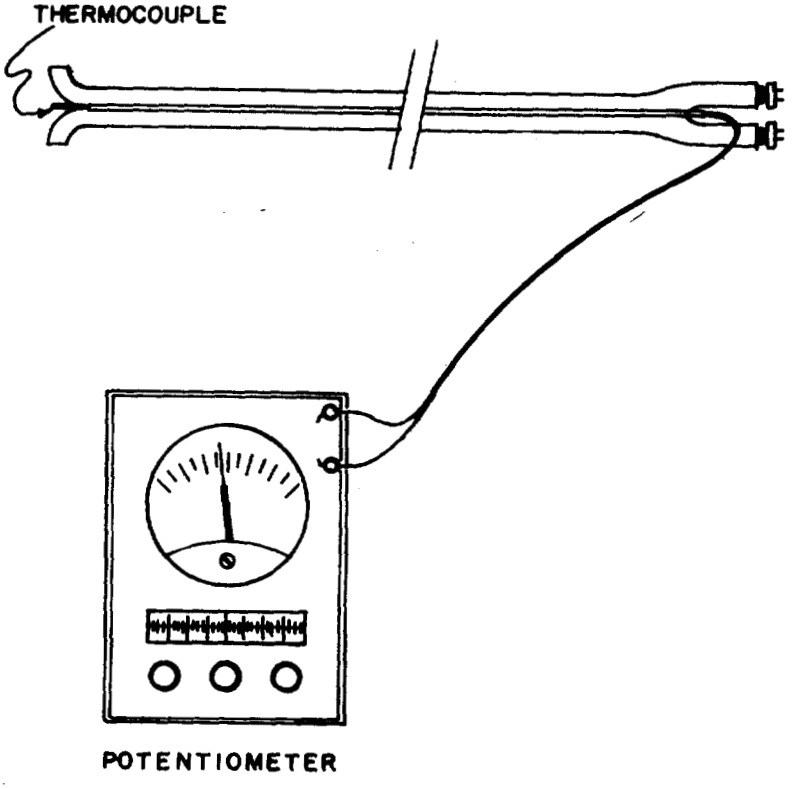


FIGURE 5-2

MOISTURE SAMPLING TRAIN

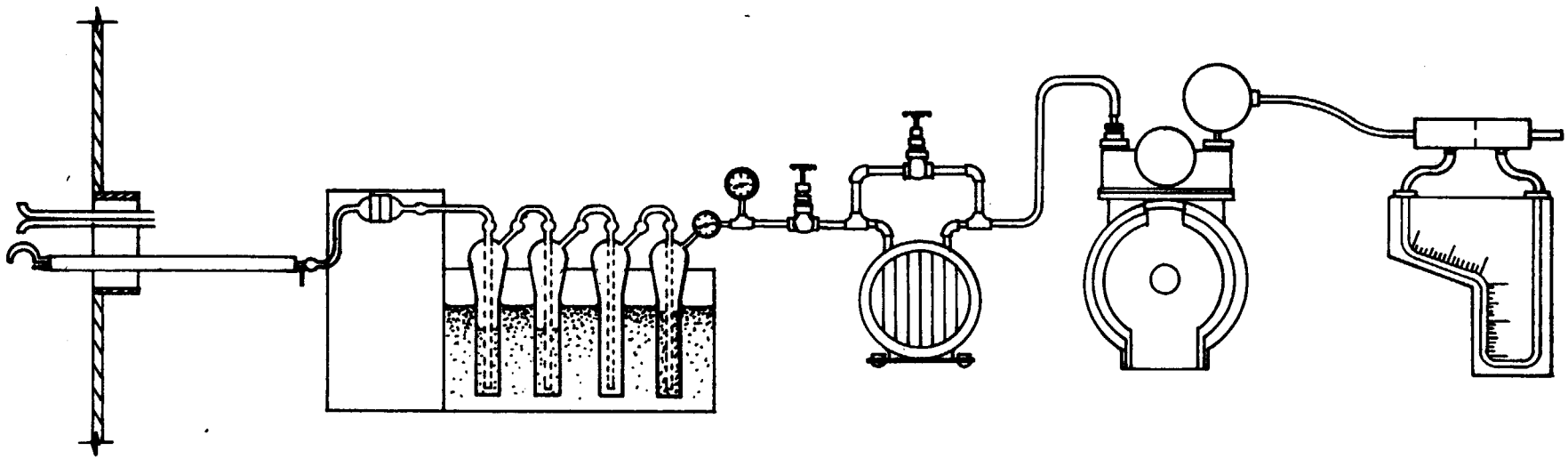


FIGURE 5-3

Attached to the outlet of the probe was a glass fiber filter held in a glass filter holder. The filter assembly was housed in an electrically heated oven capable of maintaining a temperature of 248 ± 25°F. A temperature sensor monitored the oven temperature during each test.

Rigidly attached to the outlet of the filter holder was an impinger train. The impinger train consisted of four glass impingers connected in series. The first, third and fourth impingers were of standard Greenburg-Smith design, modified by replacing the impinger tip with a straight, one-half inch diameter tube extending to within one-half inch of the flask bottom. The second impinger was of standard Greenburg-Smith design with the tip. All connections in the impinger train will be standard 28/15 ball and sockets.

Prior to each test, the first and second impingers were initially filled with 100 ml of distilled water. The third impinger was left dry to act as a carryover trap. The fourth impinger was filled with indicating type silica gel. This impinger was weighed prior to the start of the test and the weight were recorded on the data sheet along with the volume of liquid in the impingers. All impingers were immersed in an ice bath.

From the fourth impinger, the sample gas flows through tubing with a vacuum pump connected in parallel with a bypass valve, a dry gas meter and orifice. A manometer was connected across the orifice to indicate instantaneous flow rates of the sample gas through the sampling train.

After the sampling train has been assembled and prior to the start of sampling, a leak check was conducted. A leak rate no greater than 0.02 cfm at a vacuum of 15 inches of mercury was acceptable. Once an acceptable leak check was obtained, the nozzle was placed at the first traverse point and the run was be started. The nozzle was placed and remained at an average temperature and/or flow traverse point for thirty minutes. The total test time was approximately 30 minutes. At the completion of the test, a leak check was conducted at the highest pump vacuum level recorded during the test. A leak rate no greater than 0.02 cfm was acceptable.

During each test run, the following readings were taken and recorded.

- Point designation
- Sampling time
- Clock time
- Dry gas meter reading (cf)
- Desired pressure drop across orifice (ΔH in inches of H_2O)
- Actual pressure drop across orifice (ΔH in inches of H_2O)
- Stack temperature (°F)
- Dry gas meter inlet temperature (°F)
- Dry gas meter outlet temperature (°F)
- Filter oven temperature (°F)
- Last impinger exit temperature (°F)
- Pump vacuum (inches of mercury)
- Probe temperature (°F)

At the completion of each test run, the impinger solutions were weighed to determine moisture gain. The third impinger was visually checked and weighed for gain.

The silica gel impinger was be re-weighed and the weight was recorded on the data sheet along with the volume of liquid contained in the impingers.

The impinger train was then re-assembled and prepared for the next test run.

5.3 Carbon Monoxide (EPA METHOD 10) - <u>Determination of Carbon Monoxide Emissions from Stationary Sources</u>

Applicable to all CEM systems are the following procedures. Prior to measurement of emissions, each instrument was calibrated directly, and then a system bias check will be performed on the analyzer units by introducing calibration gas directly into the sample probe. Sampling began once the sampling probe is positioned at the first measurement point, at the same rate as used during the system bias check. a constant sampling run (± 10 percent) was maintained during the entire run. For each run, only those measurements obtained after twice the response time of the measurement system elapsed were used to determine the average effluent concentration in percent (%), or ppm_v dry basis.

A Thermo Environmental Instruments Inc. Carbon Monoxide Analyzer (Model 48) was used to measure CO levels at the plants. The continuous sampling train consists of a probe and filter, air-cooled condenser, analyzer unit and recorder. The analyzer read CO concentration in ppm by volume (dry basis).

At least 5 minutes was allowed before taking readings for the system to stabilize after the probe was placed in the stack, purged and began drawing sample into the analyzer.

5.4 Oxygen (EPA METHOD 3A) - Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources

A Teledyne Oxygen Analyzer, (Model 320) was used to continuously measure O_2 levels at the baghouse outlets of the plants. The sampling train consisted of a sample transport line, calibration valve assembly, moisture removal system, particulate filter, sample pump, sample flow rate control, sample gas manifold and data recorder.

5.5 Total Hydrocarbon (NJ Air Test Method # 3)

Total Hydrocarbon (THC) content of the emissions was determined by directing a portion of the sample into a (JUM) Flame Ionization Analyzer (Model VE-7). This analyzer uses a hydrogen flame ionization detector (FID) in a heated oven to prevent loss of high molecular weight hydrocarbons and to provide reliable performance in the analysis of trace levels of contaminants.

The principal of operation was as follows: Burning hydrocarbon-free hydrogen in hydrocarbon-free air produces a negligible number of ions. A hydrocarbon sample introduced into this flame starts a very complex ionization which creates a larger number of ions. A polarizing high voltage was applied between two electrodes around the burner jet and produced an electrostatic field. Positive ions then migrate to the collector electrode and negative ions migrate to the high voltage electrode. The ionization current generated between the two electrodes was directly proportional to the hydrocarbon concentration in the flame and is measured by the electrometer amplifier. The THC reading was in ppmv.

The FID was typically calibrated with standard propane calibration gases and the results are reported as total hydrocarbons or propane. All THC testing procedures were consistent with the New Jersey Air Test Method 3.8.

CERTIFICATION

"I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalities including fines or imprisonment or both, for submitting false, inaccurate or incomplete information."

Joseph V. Miceli
Project Manager, York Services

Anthony J. Buonicore, P.E.

STATE OF CONNECTICUT
ANTHONY J. BUONICORE
10230
REGISTERED
PROFESSIONAL ENGINEER

New Jersey P.E. No. 32837

APPENDIX A

ADDITIONAL PROCESS INFORMATION

The following figure shows the schematic of a typical batch-mix plant. Aggregates are stored in outside piles of graded stone, sand, etc. The aggregates are fed into hoppers and then proportioned based on mix design, loaded onto a conveyor belt and fed into the rotary dryer. The aggregate is heated to about 300-350°F depending on mix requirements and then moved by a hot elevator to the screens for final sizing. The screens discharge into the hot bins, then to the pug mill where the hot aggregate is blended with the hot AC.

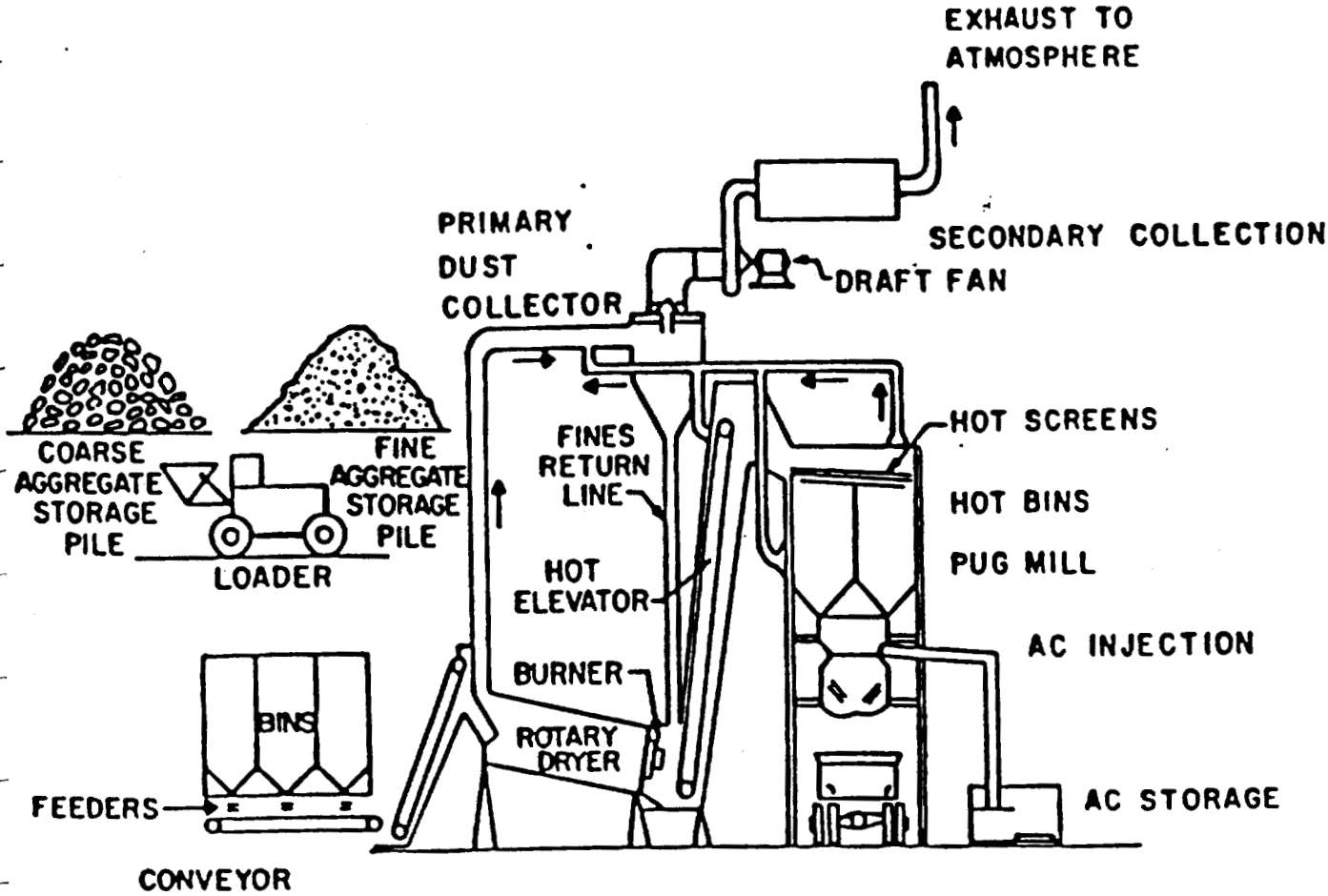
The rotary dryers are designed to quickly heat the rock and drive off most of the surface and pore moisture that would interfere with the proper bonding with the AC. The fuel being combusted (gas,oil or propane) in the burner is converted into heat and exhaust gases. Outside the actual flame, the gases contact the cold stone and quickly drop in temperature to about 350°F or less. The desired flame pattern is short and wide but without impingement on the sides of the dryer.

In a drum-mix plant, the aggregate is taken from the storage piles and is metered to the conveyor system for specific mix requirements. Inside the rotary dryer, the AC is sprayed onto the aggregate just outside of the flame zone (there are several variations to this AC injection method). The moisture is driven off and the AC and aggregate are mixed by the rotating action of the drum dryer. Due to its design of mixing in the dryer, hot screens, hot elevators or pug mills are not needed with the drum-mix plant.

The drying/mixing zone of the drum-mix dryer is similar to the dryer of a batch-mix plant but modified to prevent flame impingement on the AC. The exhaust gas temperatures of a drum-mix plant can be slightly higher than a batch-mix plant as are the temperature of the asphalt concrete, to compensate for additional heat loss in storage.

The combustion zones in the batch-mix and drum-mix dryers are similar. The flame is short and releases sufficient heat to raise the aggregate temperature to approximately 300°F. The burners use sufficient excess air to ensure proper combustion of the fuel and the desired aggregate temperature. Residence time at combustion conditions (>1,500°F) is short since the wet aggregate cools the exhaust gases very quickly. The burners operate efficiently for their normal fuels and have the potential to adequately combust some waste fuels.

TYPICAL BATCH MIX ASPHALT CONCRETE PLANT



APPENDIX B

PERMIT COPIES AND CORRESPONDENCE

MADSEN PLANT
AZTEC PLANT
DAYTON PLANT

MADSEN PLANT

VEM-045
7/88

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PERMIT PROGRAM
BUREAU OF NEW SOURCE REVIEW
CN 027
TRENTON, NEW JERSEY 08625

APC 35602
6

Date: 8/29/90

WELDON ASPHALT CO.
O. PRIMIANO
141 CENTRAL AVENUE
WESTFIELD , NJ, 07090-2189

Plant Location: WESTFIELD
County: UNION
Applicant's Designation of Stack: 001
Application Log #: 01902845
Approval Date: 8/21/90
Permit/Certificate #: 0013476

Clark-Mad. #001
Hot Mix Plant Stack #1
Watchung - Exp. 5/8/94

This letter is to advise you that an alteration to a Permit to Construct, Install, or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment has been approved under the authority of chapter 106, P.L. 1967 (N.J.S.A. 26:2C-9.2) by the Bureau of New Source Review as referenced above.

The correspondence that you sent will be added to the appropriate stack file. The information is incorporated into the application and constitutes an ENFORCEABLE PERMIT CONDITION. Unless revised herein, all previous conditions of approval continue to apply.

If you have any questions regarding this document, please write to the Bureau of New Source Review at the above address. Questions regarding Certificates to Operate should be directed to the Regional Office.

Approved by: _____
Chief

C: File
Regional Office

VEM-045
7/88

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Let's protect our earth

JUN 20 1990

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PERMIT PROGRAM
BUREAU OF NEW SOURCE REVIEW
CN 027
TRENTON, NEW JERSEY 08625

Date: 6/18/90

WELDON ASPHALT CO.
O. PRIMIANO
141 CENTRAL AVENUE
WESTFIELD , NJ, 07090-2189

Plant Location: WESTFIELD
County: UNION
Applicant's Designation of Stack:001
Application Log #: 01902845
Date Received: 6/15/90

This is to acknowledge the receipt of an application for a Permit to Construct, Install, or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment as referenced above.

The application was received and was assigned the Application log number referenced above.

Information regarding the status of the application can be received by calling 609-292-6716 and referring to the Application Log Number.

by: Louis Mikolajczyk
Chief

C: BNSR File
Regional Office

Plant #2 MADSEN

Plant # 2

weldon asphalt co.

Hot Mix Asphalt • Crushed Stone • Ready-Mixed Concrete

May 18, 1990

Mr. Louis Mikolajczyk, Chief
Bureau of New Source Review
N.J. Department of Environmental Protection
Division of Environmental Quality
CN 027
Trenton, N.J. 08625-0027

Dear Mr. Mikolajczyk:

In accordance with a final agreement between N.J.D.E.P. and the New Jersey Asphalt Pavement Association we hereby request an alteration to our Operating Certificate # 013476 indicating allowable emission rates of 250 PPM/THC and 1000 PPM/CO by June 15, 1990; and 250 PPM/THC and 500 PPM/CO by June 15, 1991.

Enclosed with our $250 check is a completed VEM 004 indicating the altered emission levels. You should be advised that we have instituted a program of Best Management Practices (B.M.P.) as outlined by D.E.P. in a presentation to our Association on March 27, 1990.

I trust this information is satisfactory for the processing of our request.

Very truly yours,

O. Primiano
Mgr. Environmental Compliance

OP/do

Copies: Cliff Heath, President NJAPA
Dick Myers, President Weldon Asphalt Co.
Peter Smith, Operations Mgr.

Enclosures

141 CENTRAL AVENUE • WESTFIELD, NEW JERSEY 07090-2189 • 201-233-4444 • FAX: 201-233-4215

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions And Source Data Form

(Complete this form for each source and submit with application Form VEM-003)

SOURCE INFORMATION

1. Source Description: Bituminous Concrete Plant

2. Operating Schedule: 10 Hours/Day; 2000 Hours/Year; 01/01/62 Operation Starting Date

3. % Annual Production Throughput By Quarter: 10 Jan.-Mar.; 30 Apr.-June; 30 July-Sept.; 30 Oct.-Dec.

4. Volume Of Gas Discharged From This Source (ACFM): 50,000 Source Discharge Temperature (°F): 250°

CONTROL APPARATUS ON SOURCE

		Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary	Knock out box	20,000	2,000	One
Secondary	Bag Collector	100,000	10,000	One
Tertiary				

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.)	Emissions with Control (lbs./hr.)	How Determined
Particulates	4000 lbs./hr	8.99 lbs/hr.	NJDEP
Hydrocarbons	250 P.P.M.		NJDEP
Carbon Monoxide	1000 PPM*/500 PPM**		NJDEP
Sulfur Dioxide	24.0		AP42
Nitrogen	13.2		AP42

Based on 600 G.P.H.
Effective * 6/15/90 ** 6/15/91

NSURE PROPER COORDINATION BETWEEN VEM-003 AND VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND NATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Weldon Asphalt - Plant #2

Company Designation of Stack (s): 001

MANUFACTURING AND MATERIALS HANDLING

1. Process Description: Manufacturer Bituminous Concrete

2. Total Amount Materials Processed: ☒ Batch 8000 lb/batch, _____ hr/batch ☐ Continuous _____ lb/hr

3. Raw Materials

Raw Materials	% By Wt.	Raw Materials	% By Wt.
Sand	45%		
Stone	50%		
A.C. 20	5%		

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR) 116
2. Type Heat Exchange ☒ Direct ☐ Indirect ☐ Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:	Natural Gas	#2 Fuel Oil
b. Heating Value (Btu/lb):	23,341	18,000
4. Method of Firing:	Direct	
5. % Sulfur in Fuel (Dry):	Less than .02	
6. % Ash Content of Fuel (Dry):	.01	
7. Amount Burned/Yr.	500,000 Gals/yr.	

Units: Solid Fuel (Tons) Liquid Fuel (10^3 Gal.) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION

1. Type of Unit: N.A.
2. Constituents of Waste (s) _____
3. Waste Code ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6
4. Amount Burned (lbs./hr.) _____ Type of Auxil. Fuel (If Any) _____

D. STORAGE FACILITY

1. Tank Contents _____
2. Type of Tank or Bin _____ Height or Length (Ft.) _____
3. Capacity _____ (10^3 Ft.^{3}) ☐ (10^3 Gal.) ☐ Equivalent or Actual Diameter (Ft.) _____

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) _____ Storage Temp. If Not Ambient (°F) _____
5. Filling Rate (Gal/Min) _____ Annual Throughput (10^3 Gal/Yr) _____
6. Method of Fill ☐ Top ☐ Bottom ☐ Submerged ☐ Other (Explain Below)
7. Color of Tank ☐ White ☐ Other Exposed to Suns Rays ☐ Yes ☐ No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)
   Type _____, Thickness (Inches) _____, Thermal Conductivity (BTU/HR/FT^2/°F) _____

For Department Use Only

☐☐☐☐☐ - ☐☐☐ - ☐☐☐

AZTEC PLANT

VEM-045
7/88

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PERMIT PROGRAM
BUREAU OF NEW SOURCE REVIEW
CN 027
TRENTON, NEW JERSEY 08625

Date: 9/25/90

WELDON ASPHALT CO.
O. PRIMIANO
141 CENTRAL AVE.
WESTFIELD , NJ, 07090-0000

Plant Location: WATCHUNG
County: UNION
Applicant's Designation of Stack: U/AS 1 SAND AND STONE DRYER
Application Log #: 01901624
Approval Date: 9/24/90
Permit/Certificate #: 042141

This letter is to advise you that an alteration to a Permit to Construct, Install, or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment has been approved under the authority of chapter 106, P.L. 1967 (N.J.S.A. 26:2C-9.2) by the Bureau of New Source Review as referenced above.

The correspondence that you sent will be added to the appropriate stack file. The information is incorporated into the application and constitutes an ENFORCEABLE PERMIT CONDITION. Unless revised herein, all previous conditions of approval continue to apply.

If you have any questions regarding this document, please write to the Bureau of New Source Review at the above address. Questions regarding Certificates to Operate should be directed to the Regional Office.

Approved by: [signature]
Chief

[illegible]
Regional Office

weldon asphalt co.

Hot Mix Asphalt • Crushed Stone • Ready-Mixed Concrete

Sept. 19, 1990

Mr. Michael Adhanom
New Jersey Dept. of Environmental Protection
Bureau of New Source Review
CN-027
Trenton, N.J. 08625-027

Re: Permit 042141

Dear Mr. Adhanom,

Please find enclosed our revised VEM-003 Form for existing Permit #042141.

The revised VEM-003 corrects the number of sources venting to the baghouse to one (1). The revised form also indicates that this is a modification to the existing plant and permit; not a new installation or source.

I thank you for your time and help in correcting our Application, and I trust this is the information you need to process its approval.

Sincerely,

Richard N. Myers
President

RNM/do

Enclosure

Copy: O. Primiano

NOTARY PUBLIC

141 CENTRAL AVENUE • WESTFIELD, NEW JERSEY 07090-2189 • 201-233-4444 • FAX: 201-233-4215

PLANT # 3

weldon asphalt co.

Hot Mix Asphalt • Crushed Stone • Ready-Mixed Concrete

May 18, 1990

Mr. Louis Mikolajczyk, Chief
Bureau of New Source Review
N.J. Department of Environmental Protection
Division of Environmental Quality
CN 027
Trenton, N.J. 08625-0027

Dear Mr. Mikolajczyk:

In accordance with a final agreement between N.J.D.E.P. and the New Jersey Asphalt Pavement association we hereby request an alteration to our Operating Certificate # 094103 indicating allowable emission rates of 250 PPM/THC and 1000 PPM/CO by June 15, 1990; and 250 PPM/THC and 500 PPM/CO by June 15, 1991.

Enclosed with our $250 check is a completed VEM 004 indicating the altered emission levels. You should be advised that we have instituted a program of Best Management Practices (B.M.P.) as outlined by D.E.P. in a presentation to our Association on March 27, 1990.

Kindly take note that we have listed Reclaimed Asphalt Pavements (R.A.P.) in Section H (A) under raw materials, in the event that we elect to incorporate R.A.P. in our mix. (Previously submitted per our letter of 2/28/90).

I trust this information is satisfactory for the processing of our request.

Very truly yours,

O. Primiano
Mgr. Environmental Compliance

OP/do

Copies: Cliff Heath, President NJAPA
Dick Myers, President Weldon Asphalt Co.
Peter Smith, Operations Mgr.

Enclosures

-32-

141 CENTRAL AVENUE • WESTFIELD, NEW JERSEY 07090-2189 • 908 201-233-4444 • FAX: 201-233-4215

Side 1

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

TO: New Jersey Department of Environmental Protection
Bureau of Air Pollution Control
CN-027, Trenton, NJ 08625

Read Instructions Before Completing Application

SECTION A

1. Full Business Name: Weldon Asphalt Co.
2. Mailing Address: 141 Central Ave., Westfield N.J. 07090 (No. / Street / City / State / Zip Code)
3. Division and/or Plant Name: Weldon Asphalt Co., Plant #3
4. Plant Location: 1 New Providence Rd., Watchung, N.J. 07060 Union (No. / Street / City / State / Zip Code / County)
5. Location of Equipment on Premises (bldg., dept., area, etc.): Quarry Floor-Plant #3
6. Nature of Business: Manufacturers of Asphalt Road Materials
7. Estimated Starting Date of Construction: December 1, 1989
8. Date Equipment to be put in use: April 15, 1990
9. Plant Contact: O. Primiano Mgr. Environmental Compliance (201)-233-4444 (Name (print or type) / Title / Telephone No.)

SECTION B

REASON FOR APPLICATION *(Check One)*

- [ ] New Equipment without Control Apparatus
- [ ] New Equipment with Control Apparatus
- [ ] New Control Apparatus on Existing Equipment
- [ ] Five Year Renewal of Certificate No. (s)
- [ ] Other *(Explain)*
- [x] Modification to Existing Equipment
- [ ] Modification to Existing Control Apparatus
- [ ] Painting Tank White

SECTION C

STACK INFORMATION (EQUIVALENT STACK INFORMATION)

1. Company Designation of Stack (s): U/AS #1 Sand and Stone Dryer
2. Previous Certificate Numbers (if any): 042141 - Exp. 2-12-91
3. a. Number of Sources Venting to this Stack: One (1) (Complete a separate VEM-004 for each source)
   b. Number of Stacks Venting Source Operation (s): 1
4. Distance to the nearest Property Line (ft.): 1200 Ft.
5. Stack Diameter (inches): 48"
6. Discharge Height Above Ground (ft.): 35 Ft.
7. Exit Temperature of Stack Gases (°F): 220° - 275° F
8. Volume of Gas Discharged at Stack Conditions (A.C.F.M.)
9. Discharge Directions: [ ] Horizontal [x] Up [ ] Down

The information supplied on applications VEM-003 and VEM-004, including the data in supplements, is to the best of my knowledge true and correct.

O. Primiano — Signature

9-19-90 — Date

O. Primiano — Name (print or type)

Mgr. Environmental Complianc — Title

This application will not be processed unless proper fee is submitted. FOR ASSISTANCE CALL (609) 292-6716

DEPARTMENT USE ONLY

N.J.I.D. | STACK | LOG NO. | CT. NO.

0100

01-89-2597

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions And Source Data Form
(Complete this form for each source and submit with application Form VEM-003)

SECTION E

SOURCE INFORMATION

1. Source Description: Drum Mix Dryer/Baghouse

2. Operating Schedule: 10 Hours/Day; 2000 Hours/Year; 7-15-79 Operation Starting Date

3. % Annual Production Throughput By Quarter: 10 Jan.-Mar.; 30 Apr.-June; 30 July-Sept.; 30 Oct.-Dec.

4. Volume Of Gas Discharged From This Source (ACFM): 79,900 Source Discharge Temperature (°F): 250°

SECTION F

CONTROL APPARATUS ON SOURCE

		Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary	Dust Tex Corp Model 3612-14-16	150,000	15,000	2
Secondary				
Tertiary				

SECTION G

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.)	Emissions with Control (lbs./hr.)	How Determined
Fugitive Stone Dust	3000±	8.9 lbs/hr	Manuf.
Hydrocarbons	250 PPM		NJDEP
Carbon Monoxide	1000 PPM*/ 500 PPM**		NJDEP
Sulfur Dioxide	23.34 lbs/hr		AP42
Nitrogen Oxide	14.4 lbs/hr.		AP42
Effective *6/15/90 ** 6/15/91			

INSURE PROPER COORDINATION BETWEEN VEM-003 AND VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND DESIGNATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Weldon Asphalt Co. - Plant #3

Company Designation of Stack (s): Drum Mix Dryer/Bag House Ex. Permit

MANUFACTURING AND MATERIALS HANDLING

1. Process Description: Drum Mix Asphalt Plant

2. Total Amount Materials Processed: ☐ Batch _____ lb/batch, _____ hr/batch ☒ Continuous 800,000 lb/hr

3. Raw Materials

Raw Materials	% By Wt.	Raw Materials	% By Wt.
Sand	20%		
Stone	40%		
RAP	35%		
A.C. 20	5%		

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR): 116
2. Type Heat Exchange: ☒ Direct ☐ Indirect ☐ Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:	#2 Fuel Oil (L.S.)	
b. Heating Value (Btu/lb):	138,000 per gallon	
4. Method of Firing:	Open fired combustion	
5. % Sulfur in Fuel (Dry):	Less than 0.2	
6. % Ash Content of Fuel (Dry):	Less than 0.01	
7. Amount Burned/Yr.	600,000 gals:/yr.	

Units: Solid Fuel (Tons) (Liquid Fuel (10^3 Gal.)) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION

1. Type of Unit: N/A
2. Constituents of Waste (s) _____
3. Waste Code ☐0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6
4. Amount Burned (lbs./hr.) _____ Type of Auxil. Fuel (If Any) _____

D. STORAGE FACILITY

1. Tank Contents: N/A
2. Type of Tank or Bin _____ Height or Length (Ft.) _____
3. Capacity _____ (10^3 Ft.^{3}) ☐ (10^3 Gal.) ☐ Equivalent or Actual Diameter (Ft.) _____

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) _____ Storage Temp. If Not Ambient (°F) _____
5. Filling Rate (Gal/Min) _____ Annual Throughput (10^3 Gal/Yr) _____
6. Method of Fill ☐ Top ☐ Bottom ☐ Submerged ☐ Other (Explain Below)
7. Color of Tank ☐ White ☐ Other Exposed to Suns Rays ☐ Yes ☐ No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)

Type _____, Thickness (Inches) _____, Thermal Conductivity (BTU/HR/FT^2/°F) _____

For Department Use Only

☐☐☐☐☐ - ☐☐☐ - ☐☐☐

DAYTON PLANT

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PERMIT PROGRAM
BUREAU OF NEW SOURCE REVIEW
CN 027
TRENTON, NEW JERSEY 08625

Date: 8/24/90

BRUNSWICK HOT MIX CORP.
O. PRIMIANO
P.O.BOX 2337
WESTFIELD , NJ, 07091-0000

Plant Location: WESTFIELD
County: UNION
Applicant's Designation of Stack:001
Application Log #: 01902848
Approval Date: 8/21/90
Permit/Certificate #: 042380

B.H.M DRYER

This letter is to advise you that an alteration to a Permit to Construct, Install, or Alter Control Apparatus or Equipment and Certificate to Operate Control Apparatus or Equipment has been approved under the authority of chapter 106, P.L. 1967 (N.J.S.A. 26:2C-9.2) by the Bureau of New Source Review as referenced above.

The correspondence that you sent will be added to the appropriate stack file. The information is incorporated into the application and constitutes an ENFORCEABLE PER [illegible] herein, all previous conditions of [illegible]

If you have any questions regardi[illegible] to the Bureau of New Source Review [illegible] regarding Certificates to Operate [illegible] Regional Office.

PERMIT DATED

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF AIR POLLUTION CONTROL

APPLICATION FOR
PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT

Source Emissions And Source Data Form

(Complete this form for each source and submit with application Form VEM-003)

SOURCE INFORMATION

1. Source Description: Bituminous Concrete Plant

2. Operating Schedule: 10 Hours/Day; 2000 Hours/Year; 3/14/79 Operation Starting Date

3. % Annual Production Throughput By Quarter: 10% Jan.-Mar.; 30% Apr.-June; 30% July-Sept.; 30% Oct.-Dec.

4. Volume Of Gas Discharged From This Source (ACFM): 50,000 Source Discharge Temperature (°F): 250°

CONTROL APPARATUS ON SOURCE

		Capital Cost (Dollars)	Annual Operating Cost (Dollars)	No. of Sources Connected
Primary	Knockout Box	20,000	2,000	One
Secondary	Baghouse	100,000	10,000	One
Tertiary				

AIR CONTAMINANTS FROM SOURCE

CONTAMINANT NAME	Emissions w/o Control (lbs./hr.)	Emissions with Control (lbs./hr.)	How Determined
Particulates	4000 lbs/hr	8.99	NJDEP
Hydrocarbons	250 PPM		NJDEP
Carbon Monoxide	1000 PPM*/	500 PPM**	NJDEP
Sulfur Dioxide	24.0		AP42
Nitrogen	13.2		AP42
Based on 600 GPH			
Effective *6/15/90 **6/15/91			

SURE PROPER COORDINATION BETWEEN VEM-003 AND VEM-004 FORMS, INSERT IDENTICAL COMPANY NAME AND GNATION OF STACK FROM VEM-003, SIDE 1.

Full Business Name: Brunswick Hot Mix Corp.

Company Designation of Stack (s): 001

(over)

Side 2

500,000 lbs/HR 6000 lb/HR

A. MANUFACTURING AND MATERIALS HANDLING

1. Process Description: Manufacture of Bituminous Concrete 250 TONS

2. Total Amount Materials Processed: [X] Batch 8000 lb/batch, 60 hr/batch; [ ] Continuous _____ lb/hr

3. Raw Materials

Raw Materials	% By Wt.	Raw Materials	% By Wt.
Sand	45%		
Stone	50%		
A.C. 20	5%		

B. FUEL BURNING EQUIPMENT

1. Gross Heat Input (10^6 BTU/HR): 116
2. Type Heat Exchange: [X] Direct [ ] Indirect [ ] Internal Combustion Engine

	PRIMARY FUEL	SECONDARY FUEL
3. a. Type of Fuel:	#2 Fuel Oil Low Sulfur	
b. Heating Value (Btu/lb):	138,000 BTU/Gallon	
4. Method of Firing:	Open fired combustion	
5. % Sulfur in Fuel (Dry):	Less than 0.2	
6. % Ash Content of Fuel (Dry):	.01	
7. Amount Burned/Yr.	300,000 gallons/yr.	

Units: Solid Fuel (Tons) (Liquid Fuel (10^3 Gal.)) Gaseous Fuel (10^6 Ft.^{3})

C. INCINERATION

1. Type of Unit: N/A
2. Constituents of Waste (s) _____
3. Waste Code [ ]0 [ ]1 [ ]2 [ ]3 [ ]4 [ ]5 [ ]6
4. Amount Burned (lbs./hr.) _____ Type of Auxil. Fuel (If Any) _____

D. STORAGE FACILITY

1. Tank Contents: N/A
2. Type of Tank or Bin _____ Height or Length (Ft.) _____
3. Capacity _____ (10^3 Ft.^{3}) [ ] (10^3 Gal.) [ ] Equivalent or Actual Diameter (Ft.) _____

THE REMAINING QUESTIONS ARE TO BE ANSWERED ONLY FOR LIQUID STORAGE

4. Vapor Pressure at 70°F (PSIA) _____ Storage Temp. If Not Ambient (°F) _____
5. Filling Rate (Gal/Min) _____ Annual Throughput (10^3 Gal/Yr) _____
6. Method of Fill [ ] Top [ ] Bottom [ ] Submerged [ ] Other (Explain Below)
7. Color of Tank [ ] White [ ] Other Exposed to Suns Rays [ ]Yes [ ]No
8. Insulation Data for Insulated Tanks (Volatile Organic Substances)
   Type _____, Thickness (Inches) _____, Thermal Conductivity (BTU/HR/FT^2/°F) _____

Rich Myers
201 233-4449

For Department Use Only
[ ][ ][ ][ ][ ] - [ ][ ][ ] - [ ][ ][ ]

DAYTON

Brunswick Hot Mix Corp.

P.O. Box 2337
Westfield, New Jersey 07091
(201) 233-4444

Fresh Ponds Road
Dayton, New Jersey 08810
(201) 329-2345

May 18, 1990

Mr. Louis Mikolajczyk, Chief
Bureau of New Source Review
N.J. Department of Environmental Protection
Division of Environmental Quality
CN 027
Trenton, N.J. 08625-0027

Dear Mr. Mikolajczyk:

In accordance with a final agreement between N.J.D.E.P. and the New Jersey Asphalt Pavement Association we hereby request an alteration to our Operating Certificate # 042380 indicating allowable emission rates of 250 PPM/THC and 1000 PPM/Co by June 15, 1990; and 250 PPM/THC and 500 PPM/CO by June 15, 1991.

Enclosed with our $250 check is a completed VEM 004 indicating the altered emission levels. You should be advised that we have instituted a program of Best Management Practices (B.M.P.) as outlined by D.E.P. in a presentation to our Association on March 27, 1990.

I trust this information is satisfactory for the processing of our request.

Very truly yours,

O. Primiano
Mgr. Environmental Compliance

OP/do

Copies: Cliff Heath, President NJAPA
Dick Myers, President Weldon Asphalt Co.
Peter Smith, Operations Mgr.

Enclosures

APPENDIX C

FIELD DATA SHEETS

EPA METHOD 5 CALCULATIONS
USING STP AS 68 DEG F AND 29.92 in Hg

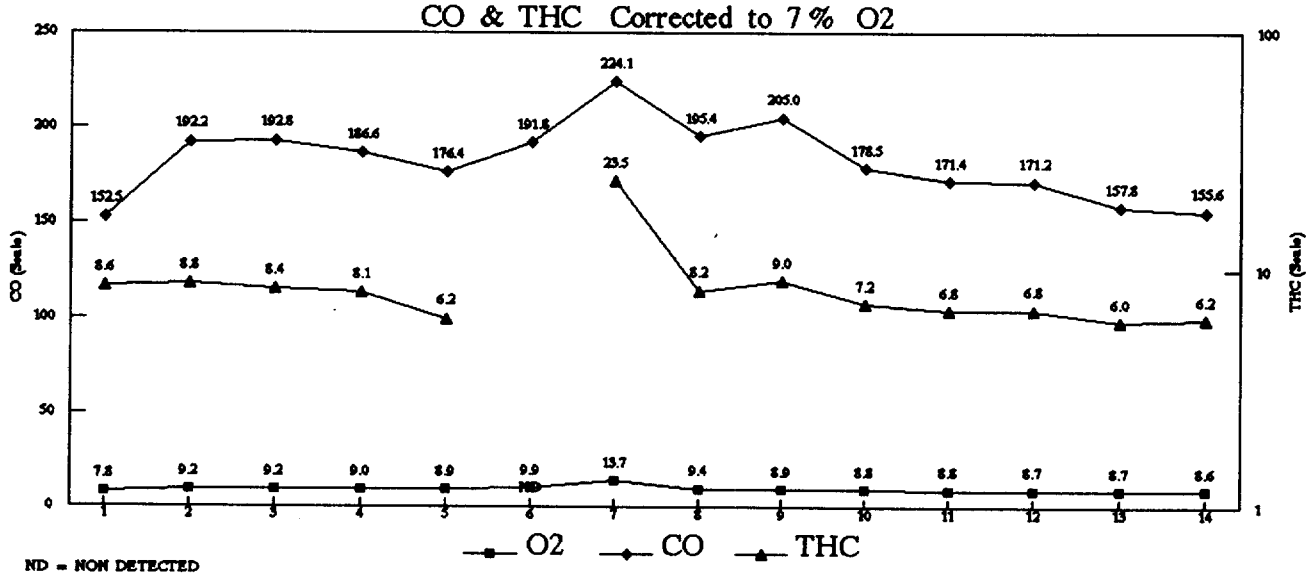
DESCRIPTION OF PARAMETERS	(UNITS)	RUN # 1	RUN # 2	RUN # 3
PROJECT WELDON ASPHALT COMPANY (WAC)		(WAC)	(WAC)	(WAC)
DATE		9/10/91	9/10/91	9/10/91
LOCATION		AZTEC	AZTEC	AZTEC
TIME		0658-0759	0827-0928	1000-1100
LOAD		RAP	RAP	RAP
MATRIX		MOISTURE	MOISTURE	MOISTURE
PITOT TUBE CONSTANT (Cp)				
TOTAL VOLUME H2O COLLECTED (VH2O)	(ml)	275.8	254.7	260.8
AVERAGE GAS METER TEMPERATURE (Tm)	(DEG F)	79.5	90.8	94.1
METER VOLUME SAMPLED (Vm)	(acf)	30.143	30.181	30.029
TOTAL SAMPLING TIME	(min)	61	61	60
BAROMETRIC PRESSURE (Pbar)	(in Hg a)	29.92	29.92	29.92
STACK PRESSURE (Ps)	(in Hg a)			
AVERAGE STACK TEMPERATURE (Ts)	(DEG F)	206	206	209
AVG ORIFICE METER PRESSURE DROP(DHavg)	(in H2O)	0.75	0.75	0.75
SQRT AVG PITOT TUBE PRESSURE DROP	(in H2O^0.5)	0.0000	0.0000	0.0000
AVERAGE PITOT TUBE PRESSURE DROP(DPavg)	(in Hg H2O)			
VOLUME OF H2O AS GAS AT STP (Vwc)	(sfc)	13.02	12.02	12.31
METER VOLUME AT STP (Vmc)	(sfc)	29.56	28.99	28.67
STACK MOISTURE CONTENT (Bws)	(%)	30.57	29.31	30.04
STACK GAS ANALYSIS				
CO2	(%)			
O2	(%)			
CO	(ppm)			
N2	(%)	100	100	100
DRY MOLECULAR WEIGHT (Md)	(g/g mole)	28.00	28.00	28.00
STACK MOLECULAR WEIGHT (Ms)	(g/g mole)	24.94	25.07	25.00
AVERAGE STACK VELOCITY (Vsavg)	(ft/sec)	ERR	ERR	ERR
STACK AREA (A)	(ft2)			
STACK FLOW RATE (QSA)	(afcm)	ERR	ERR	ERR
STACK FLOW RATE (QSW)	(scfm dry)	ERR	ERR	ERR
STACK FLOW RATE (QSD)	(scfm wet)	ERR	ERR	ERR
NOZZLE DIAMETER (Dn)	(in)			
% ISOKINETIC VARIATION (I)	(%)	ERR	ERR	ERR
MASS OF PARTICULATE COLLECTED ON FILTER (Mf)	(g)			
MASS OF PARTICULATE COLLECTED ON PROBE AND CYCLONE	(g)			
TOTAL MASS OF PARTICULATE (Mn)	(g)	0.0000	0.0000	0.0000
PERCENTAGE OF TOTAL PARTICULATE COLLECTED ON FILTER	(%)	ERR	ERR	ERR
STACK PARTICULATE CONCENTRATION (Cs)	(g/scfc)	0.0000	0.000	0.000
PARTICULATE MASS RATE (pmr)	(lb/hr)	ERR	ERR	ERR
PARTICULATE MASS RATE	(Lb/MBTU)	ERR	ERR	ERR

WELDON ASPHALT COMPANY

Run # : One
Period : 6 Minute Average
Number of samples: 14

Date: 09/10/1991
Plant name: Aztec
Unit Tested: Drum Mix
Product Tested: R.A.P.

	Time	Parameters				7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2		CO	THC
	06 : 38	Start sampling					
1	06 : 44	143.7	8.1	7.8		152.5	8.6
2	06 : 50	161.8	7.4	9.2		192.2	8.8
3	06 : 56	161.9	7.1	9.2		192.8	8.4
4	07 : 02	159.9	6.9	9.0		186.6	8.1
5	07 : 08	152.6	5.4	8.9		176.4	6.2
6	07 : 14	152.4	ND	9.9		191.8	ND
7	07 : 20	116.5	12.2	13.7		224.1	23.5
8	07 : 26	161.8	6.8	9.4		195.4	8.2
9	07 : 32	177.0	7.8	8.9		205.0	9.0
10	07 : 38	155.0	6.2	8.8		178.5	7.2
11	07 : 44	149.4	5.9	8.8		171.4	6.8
12	07 : 50	149.8	6.0	8.7		171.2	6.8
13	07 : 56	139.0	5.3	8.7		157.8	6.0
14	08 : 02	137.2	5.4	8.6		155.6	6.2
Average		151.3	7.0	9.3		182.2	8.8



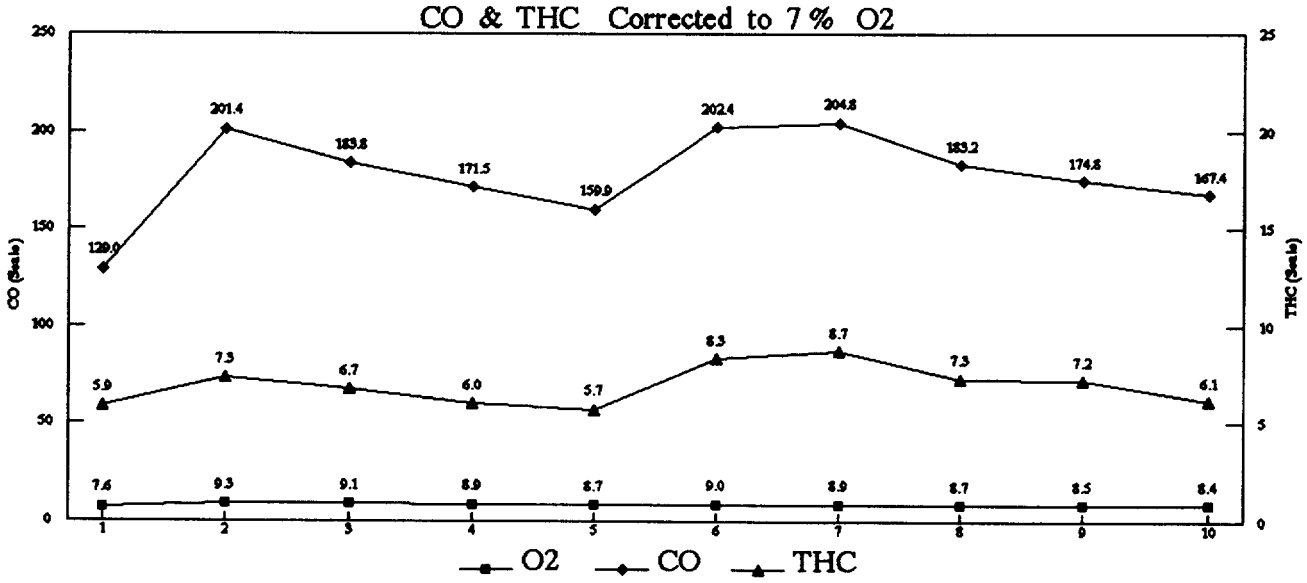
ND = NON DETECTED

WELDON ASPHALT COMPANY

Run # : Two
Period : 6 Minute Average
Number of samples: 10

Date: 09/10/1991
Plant name: Aztec
Unit Tested: Drum Mix
Product Tested: R.A.P.

	Time	Parameters				7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2		CO	THC
	08 : 30	Start sampling					
1	08 : 36	123.4	5.6	7.6		129.0	5.9
2	08 : 42	168.1	6.1	9.3		201.4	7.3
3	08 : 48	156.0	5.7	9.1		183.8	6.7
4	08 : 54	148.1	5.2	8.9		171.5	6.0
5	09 : 00	140.3	5.0	8.7		159.9	5.7
6	09 : 06	173.3	7.1	9.0		202.4	8.3
7	09 : 12	176.8	7.5	8.9		204.8	8.7
8	09 : 18	160.8	6.4	8.7		183.2	7.3
9	09 : 24	155.9	6.4	8.5		174.8	7.2
10	09 : 30	150.5	5.5	8.4		167.4	6.1
Average		155.3	6.1	8.7		177.8	6.9

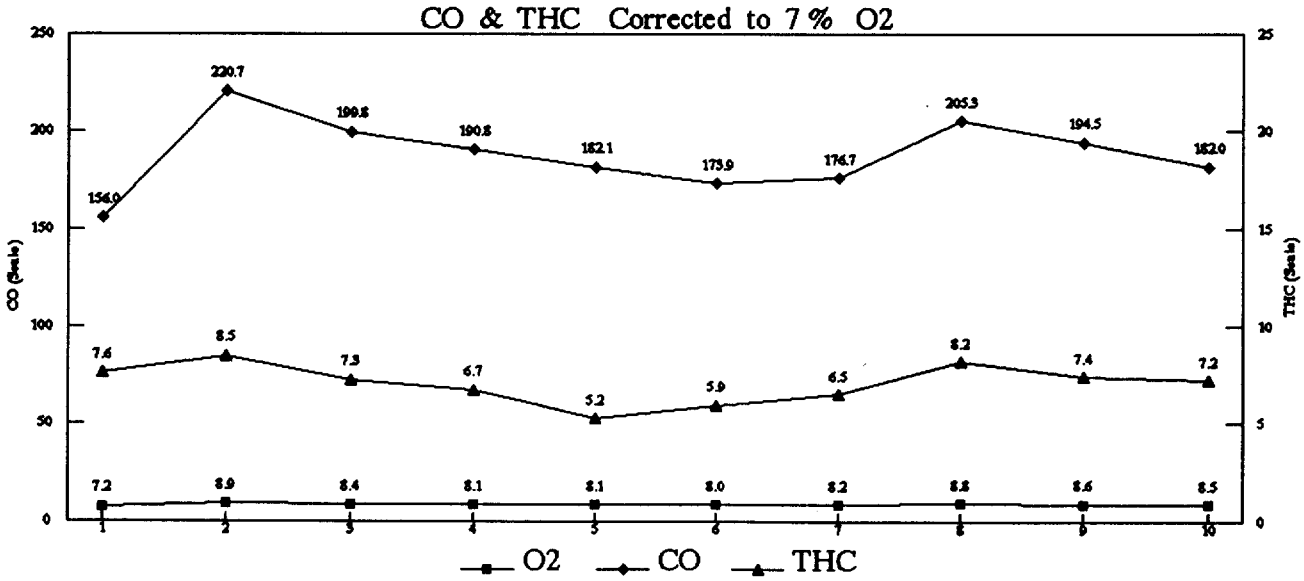


WELDON ASPHALT COMPANY

Run # : Three
Period : 6 Minute Average
Number of samples: 10

Date: 09/10/1991
Plant name: Aztec
Unit Tested: Drum Mix
Product Tested: R.A.P.

					7 % O2 Correction	
	Time	Parameters			Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	10 : 00	Start sampling				
1	10 : 06	154.2	7.5	7.2	156.0	7.6
2	10 : 12	190.3	7.3	8.9	220.7	8.5
3	10 : 18	179.6	6.5	8.4	199.8	7.3
4	10 : 24	175.1	6.2	8.1	190.8	6.7
5	10 : 30	167.5	4.8	8.1	182.1	5.2
6	10 : 36	161.3	5.5	8.0	173.9	5.9
7	10 : 42	161.5	5.9	8.2	176.7	6.5
8	10 : 48	178.5	7.1	8.8	205.3	8.2
9	10 : 54	171.9	6.5	8.6	194.5	7.4
10	11 : 00	163.0	6.4	8.5	182.0	7.2
Average		170.3	6.4	8.3	188.2	7.1



2 = 442.3 PPM CO 5 = N.0 % O2 6 = 1.6 PPM THC

10/SEP/91 5:51:31

START CO CALIBRATION HI 317 PPM LO 141 PPM

2 = 426.3 PPM CO 5 = 0.0 % O2 6 = 0.7 PPM THC

10/SEP/91 5:50:54

10/SEP/91 5:47:33

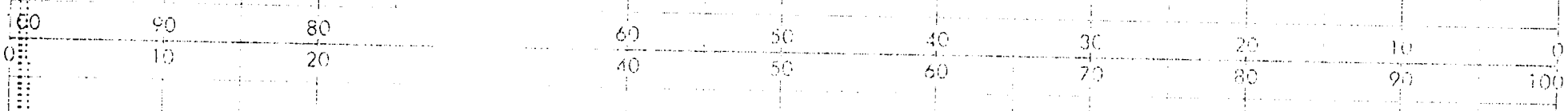
START CO SPAN @ 425 PPM

10/SEP/91 5:47:2

2 = 2.4 PPM CO 5 = 0.0 % O2 6 = 0.5 PPM THC

10/SEP/91 5:46:50

10/SEP/91 5:46:29



10/SEP/91 5:42:58

START ZERO AIR

START ANALYZER CALIBRATION

TESTING AZTEC PLANT FOR THC & CO

W E L D O N

10/SEP/91 5:39:27

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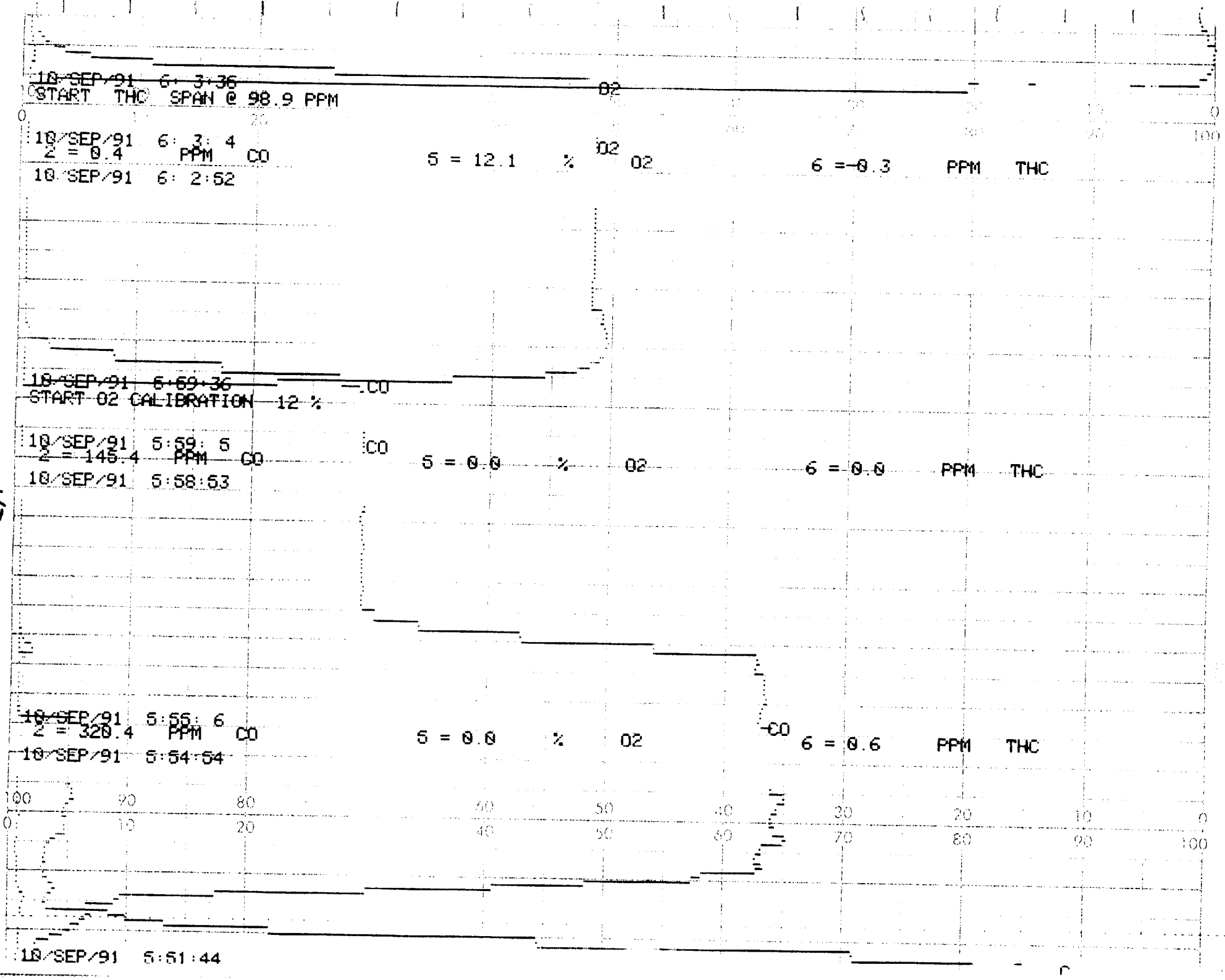
10/SEP/91 6: 3:36
START THC SPAN @ 98.9 PPM
02
10/SEP/91 6: 3: 4
2 = 0.4 PPM CO
5 = 12.1 % 02
6 = 0.3 PPM THC
10/SEP/91 6: 2:52
10/SEP/91 6:59:36
START 02 CALIBRATION 12 %
CO
10/SEP/91 5:59: 5
2 = 145.4 PPM CO
5 = 0.0 % 02
6 = 0.0 PPM THC
10/SEP/91 5:58:53
10/SEP/91 5:55: 6
2 = 320.4 PPM CO
5 = 0.0 % 02
6 = 0.6 PPM THC
10/SEP/91 5:54:54
10/SEP/91 5:51:44

10/SEP/91 6:16:45
ZERO AIR

10/SEP/91 6:16:29
START SYSTEM CALIBRATION DRIFT CHECK

10/SEP/91 6:15:27 THC
END ANALYZERS CALIBRATION

10/SEP/91 6:15: 6 THC
2 = 0.9 PPM CO 5 = 0.0 % O2 6 = 33.8 PPM THC
10/SEP/91 6:14:53

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

10/SEP/91 6:11: 2
2 = -0.1 PPM CO 5 = 0.4 % THC O2 6 = 49.7 PPM THC
10/SEP/91 6:10:50

10/SEP/91 6: 9:23 THC CO
START THC CALIBRATION HI 49.5 LO 35.9 PPM

10/SEP/91 6: 7: 6 THC
2 = 0.4 PPM CO 5 = 0.0 % O2 6 = 98.9 PPM THC
10/SEP/91 6: 6:54

10/SEP/91 6:28:39
2 = 0.9 PPM CO 5 = 12.1 % O2 6 = 45.8 PPM THC
10/SEP/91 6:28:27
START THC CALIBRATION HI 45.9 PPM LO 35.9 PPM
2 = 0.9 PPM CO 5 = 12.1 % O2 6 = 0.1 PPM THC
10/SEP/91 6:27:52

10/SEP/91 6:25:24
START O2 CALIBRATION
10/SEP/91 6:25: 8
2 = 145.4 PPM CO 5 = 0.0 % O2 6 = 0.6 PPM THC
10/SEP/91 6:24:56

10/SEP/91 6:22: 5
2 = 309.8 PPM CO 5 = 0.0 % O2 6 = 0.8 PPM THC
10/SEP/91 6:21:52

10/SEP/91 6:19:40
START CO CALIBRATION HI 317 LO 141 PPM

10/SEP/91 6:19: 4
2 =-0.1 PPM CO 5 = 0.0 % O2 6 =-0.4 PPM THC
10/SEP/91 6:18:52

10/SEP/91 6:18:32

10/SEP/91 6:38:54
02 = 0.1 PPM THC
8 = 0.4 PPM CO 9 =-0.2 % CO2 11 = 0.0 % O2
10/SEP/91 6:38:37

START SAMPLING AZTEC PLANT

Plant #3

10/SEP/91 6:35: 9
ZERO AIR

10/SEP/91 6:34:48
END SYSTEM CALIBRATION

10/SEP/91 6:34:30
2 = 0.9 PPM CO 5 = 0.0 % O2 6 = 2.8 PPM THC
10/SEP/91 6:34:18
10/SEP/91 6:34:13 THC
10/SEP/91 6:34: 7 THC
2 = 0.9 PPM CO 5 = 0.0 % O2 6 = 34.3 PPM THC
10/SEP/91 6:33:54

10/SEP/91 6:31: 6
2 = 0.9 PPM CO 5 = 0.1 % O2 THC 6 = 50.8 PPM THC
10/SEP/91 6:30:53

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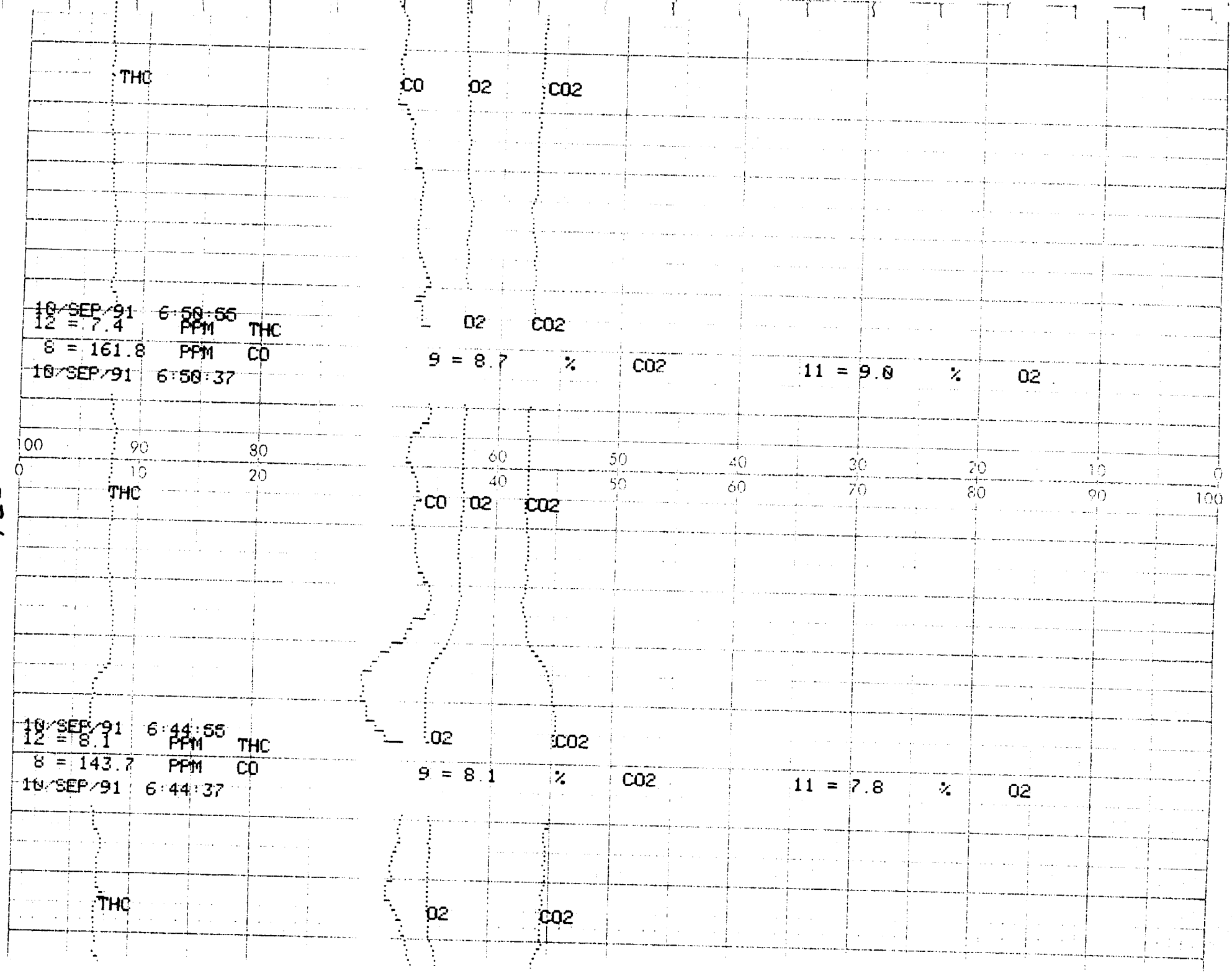
THC
CO
O2
CO2
10/SEP/91 6:50:55
12 = 7.4 PPM THC
8 = 161.8 PPM CO
10/SEP/91 6:50:37
O2
CO2
9 = 8.7 % CO2
11 = 9.0 % O2
100 90 80
0 10 20
60 50 40
40 50 60
30 20 10 0
70 80 90 100
THC
CO
O2
CO2
10/SEP/91 6:44:55
12 = 8.1 PPM THC
8 = 143.7 PPM CO
10/SEP/91 6:44:37
O2
CO2
9 = 8.1 % CO2
11 = 7.8 % O2
THC
O2
CO2

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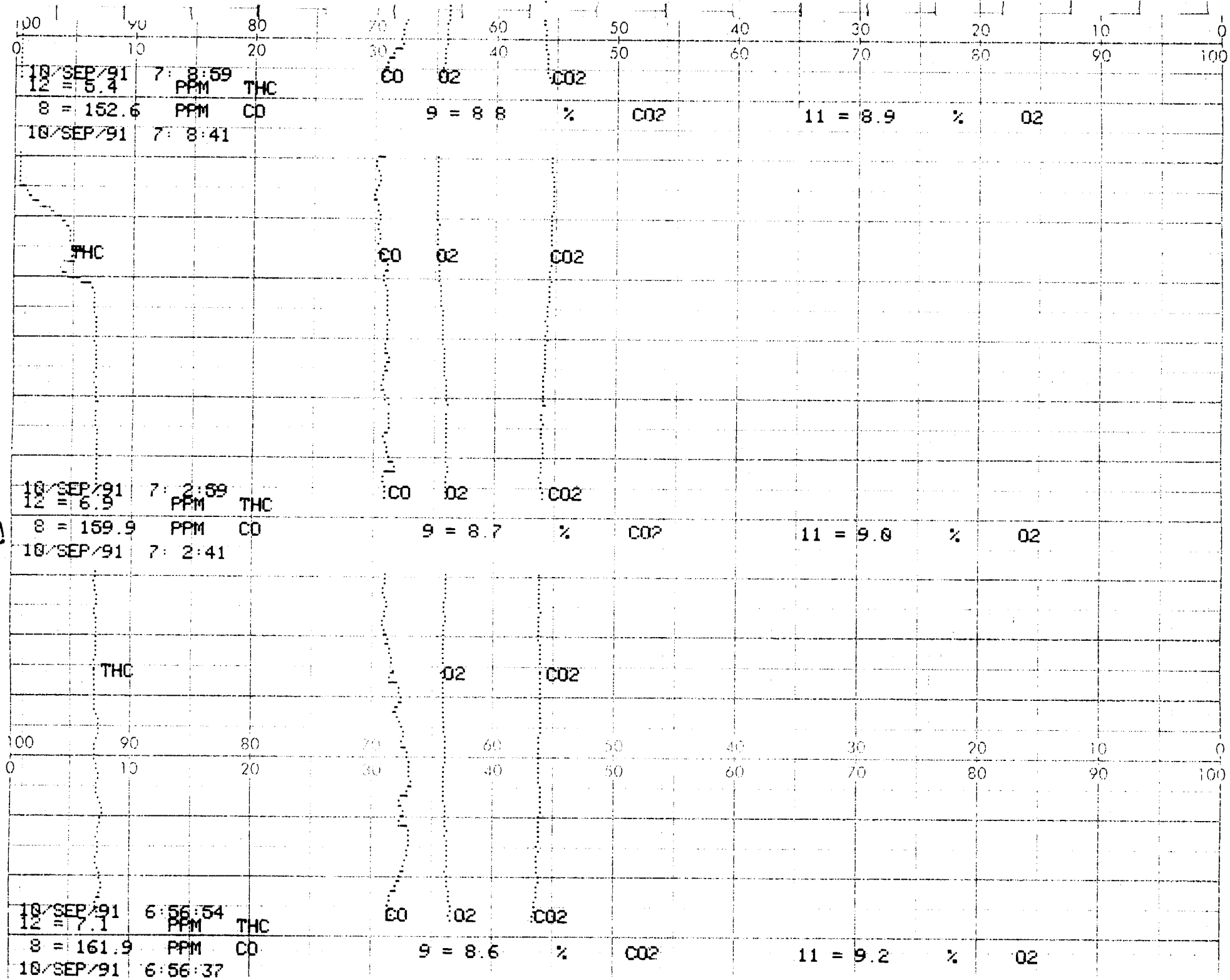
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
10/SEP/91 7: 8:59
12 = 5.4 PPM THC
8 = 152.6 PPM CO
10/SEP/91 7: 8:41
CO O2 CO2
9 = 8.8 % CO2
11 = 8.9 % O2
THC
CO O2 CO2
10/SEP/91 7: 2:59
12 = 6.9 PPM THC
8 = 159.9 PPM CO
10/SEP/91 7: 2:41
CO O2 CO2
9 = 8.7 % CO2
11 = 9.0 % O2
THC
O2 CO2
10/SEP/91 6:56:54
12 = 7.1 PPM THC
8 = 161.9 PPM CO
10/SEP/91 6:56:37
CO O2 CO2
9 = 8.6 % CO2
11 = 9.2 % O2

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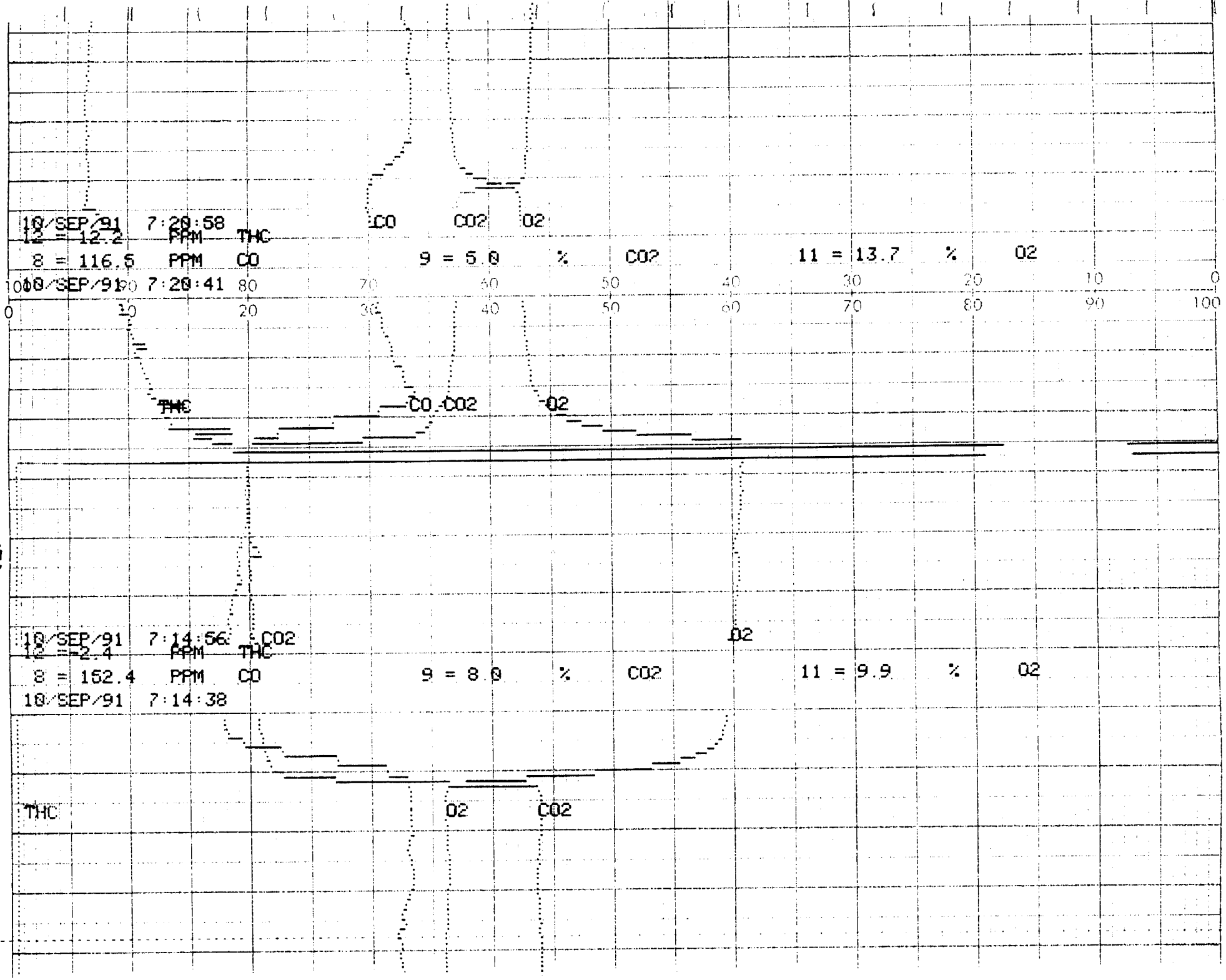
10/SEP/91 7:20:58
12 = 12.2 PPM THC
8 = 116.5 PPM CO
9 = 5.0 % CO2
11 = 13.7 % O2
10/SEP/91 7:20:41
CO
CO2
O2
THC
CO
CO2
O2
10/SEP/91 7:14:56
12 = 2.4 PPM THC
8 = 152.4 PPM CO
9 = 8.0 % CO2
11 = 9.9 % O2
10/SEP/91 7:14:38
CO2
O2
THC
O2
CO2

10/SEP/91 7:38:40

THC CO O2 CO2

10/SEP/91 7:32:58
12 = 7.8 PPM THC
8 = 177.0 PPM CO
9 = 8.8 % CO2
11 = 8.9 % O2
10/SEP/91 7:32:41

O2 CO2

100 THC 80 CO 60 CO2 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

10/SEP/91 7:26:59
12 = 6.8 PPM THC
8 = 161.8 PPM CO
9 = 8.4 % CO2
11 = 9.4 % O2
10/SEP/91 7:26:41

O2 CO2

THC O2 CO2

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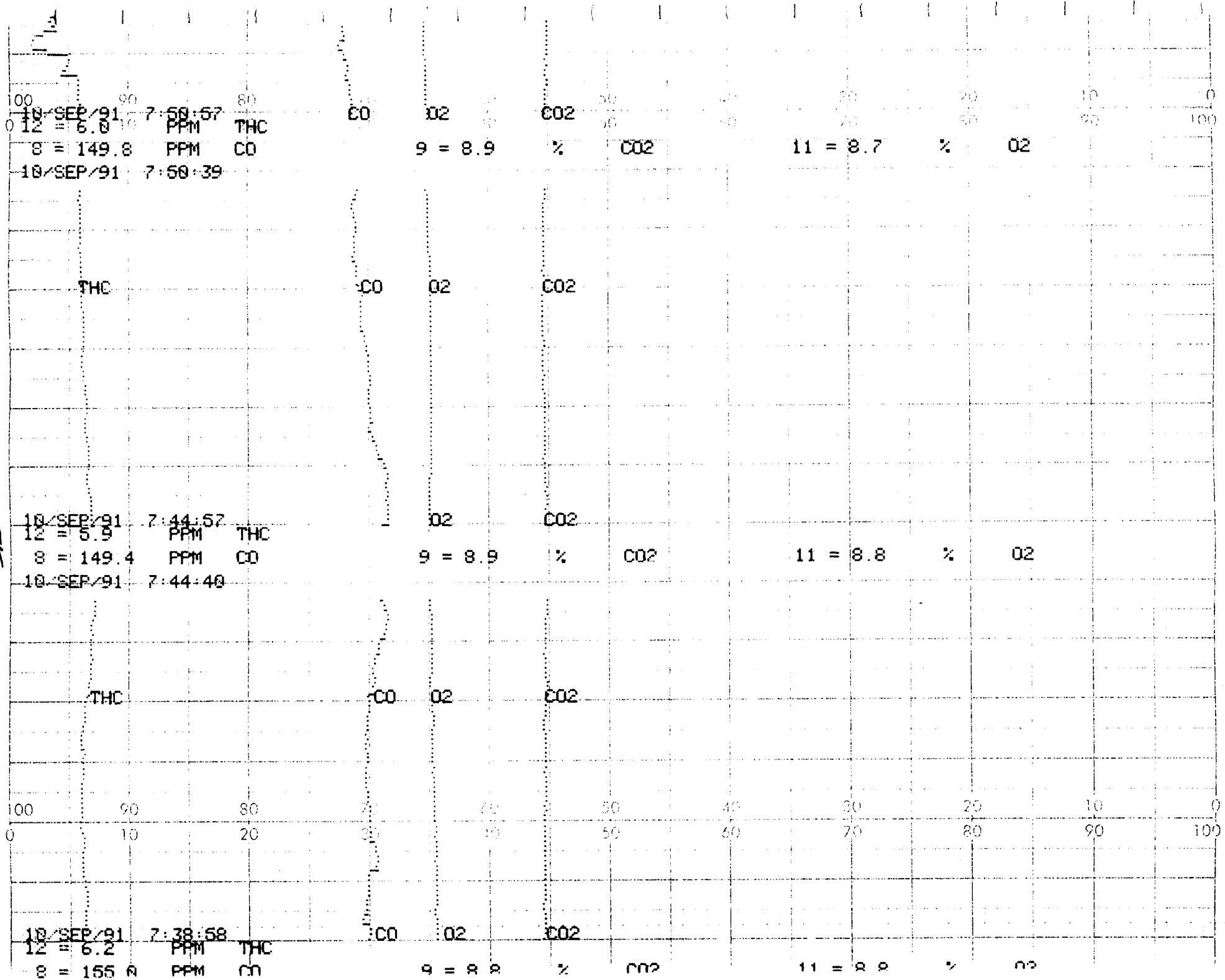
10/SEP/91 7:50:57
12 = 6.0 PPM THC
8 = 149.8 PPM CO
10/SEP/91 7:50:39
CO
O2
CO2
9 = 8.9 % CO2
11 = 8.7 % O2
THC
CO
O2
CO2
10/SEP/91 7:44:57
12 = 5.9 PPM THC
8 = 149.4 PPM CO
10/SEP/91 7:44:40
O2
CO2
9 = 8.9 % CO2
11 = 8.8 % O2
THC
CO
O2
CO2
10/SEP/91 7:38:58
12 = 6.2 PPM THC
8 = 155.0 PPM CO
CO
O2
CO2
9 = 8.8 % CO2
11 = 8.8 % O2

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10/SEP/91 8: 5:12 O2
10/SEP/91 8: 5: 7
ZERO AIR
10/SEP/91 8: 4:54 CO
START CALIBRATION
END TEST # ONE " RAP "

10/SEP/91 8: 2:57 O2 CO2
12 = 5.4 PPM THC
8 = 137.2 PPM CO 9 = 8.9 % CO2 11 = 8.6 % O2
10/SEP/91 8: 2:39

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

THC CO O2 CO2

10/SEP/91 7:56:57 CO O2 CO2
12 = 5.3 PPM THC
8 = 139.0 PPM CO 9 = 9.0 % CO2 11 = 8.7 % O2
10/SEP/91 7:56:39

THC CO O2 CO2

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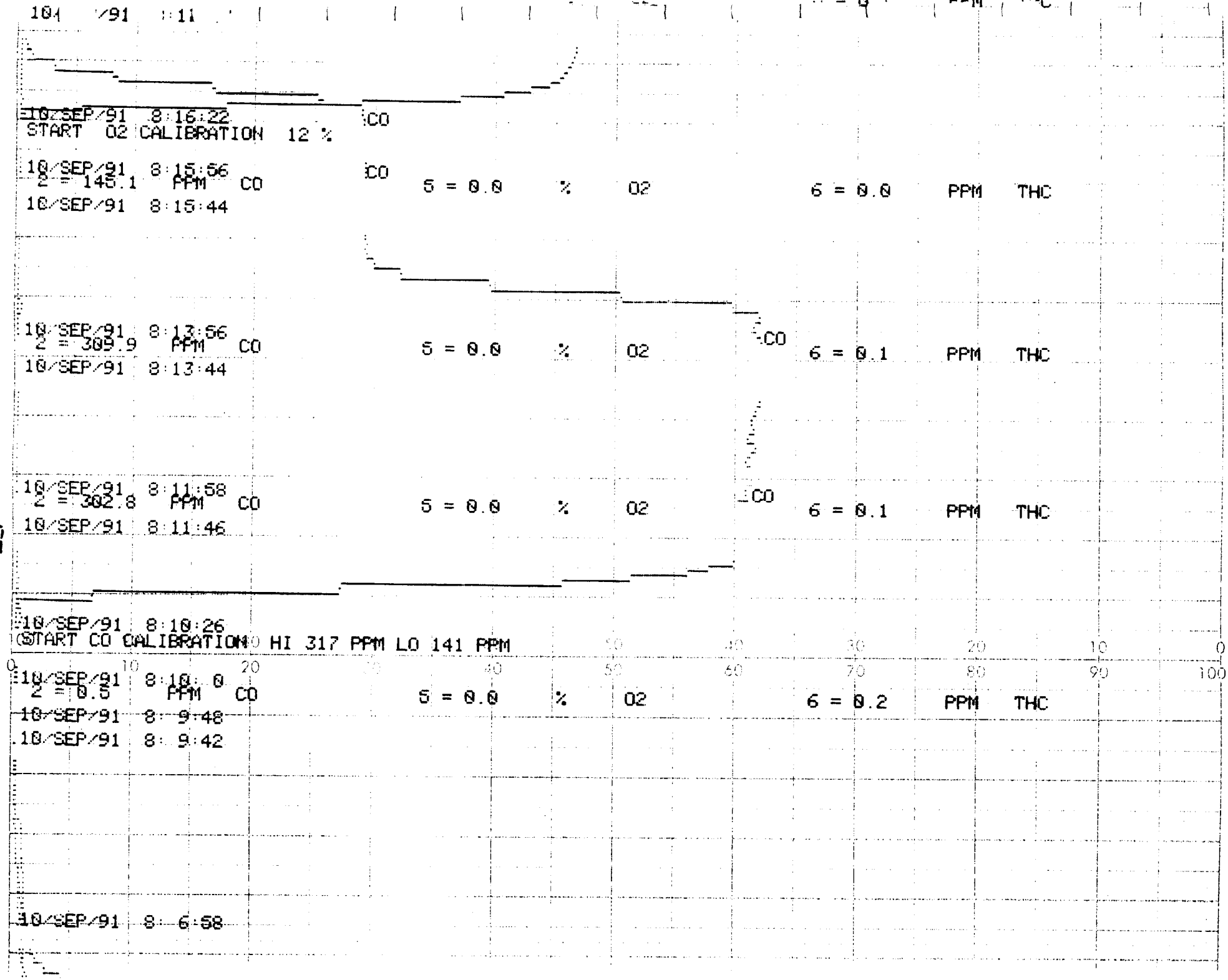
10/SEP/91 8:16:22
START O2 CALIBRATION 12 %
10/SEP/91 8:15:56
2 = 145.1 PPM CO
5 = 0.0 % O2
6 = 0.0 PPM THC
10/SEP/91 8:15:44
10/SEP/91 8:13:56
2 = 309.9 PPM CO
5 = 0.0 % O2
6 = 0.1 PPM THC
10/SEP/91 8:13:44
10/SEP/91 8:11:58
2 = 302.8 PPM CO
5 = 0.0 % O2
6 = 0.1 PPM THC
10/SEP/91 8:11:46
10/SEP/91 8:10:26
START CO CALIBRATION HI 317 PPM LO 141 PPM
10/SEP/91 8:10: 0
2 = 0.5 PPM CO
5 = 0.0 % O2
6 = 0.2 PPM THC
10/SEP/91 8: 9:48
10/SEP/91 8: 9:42
10/SEP/91 8: 6:58

10/SEP/91 8:30:1 CO2
12 = 34.5 PPM THC
8 = 0.9 PPM CO 9 =-0.1 % CO2 11 = 0.0 % O2
10/SEP/91 8:29:44
10/SEP/91 8:29:38
START SAMPLING TEST # TWO RAP
10/SEP/91 8:25:58
2 = 2.5 PPM CO 5 = 0.1 % O2 6 =-0.4 PPM THC
10/SEP/91 8:25:46

10/SEP/91 8:24:59 THC
ZERO AIR
10/SEP/91 8:24:43 THC
END CALIBRATION

10/SEP/91 8:23:58 THC
2 = 1.0 PPM CO 5 = 0.0 % O2 6 = 36.6 PPM THC
10/SEP/91 8:23:45

10/SEP/91 8:21:58 THC
2 = 1.0 PPM CO 5 = 0.1 % O2 6 = 49.7 PPM THC
10/SEP/91 8:21:46

10/SEP/91 8:20:29 O2
START THC CALIBRATION HI 49.5 PPM LO 35.9 PPM

10/SEP/91 8:19:57 O2
2 = 0.5 PPM CO 5 = 11.9 % O2 6 = 0.0 PPM THC
10/SEP/91 8:19:45

10/SEP/91 8:17:59 O2

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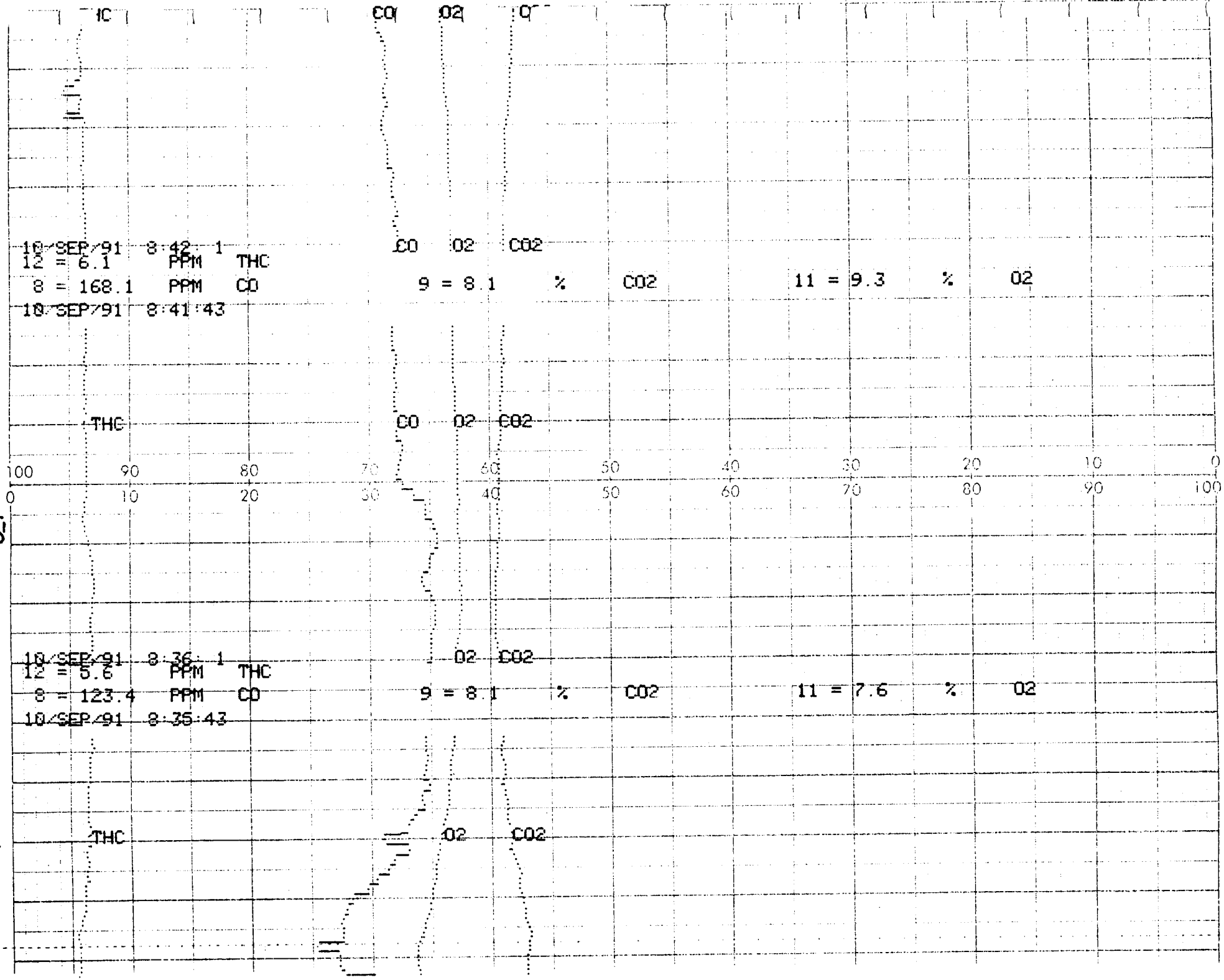
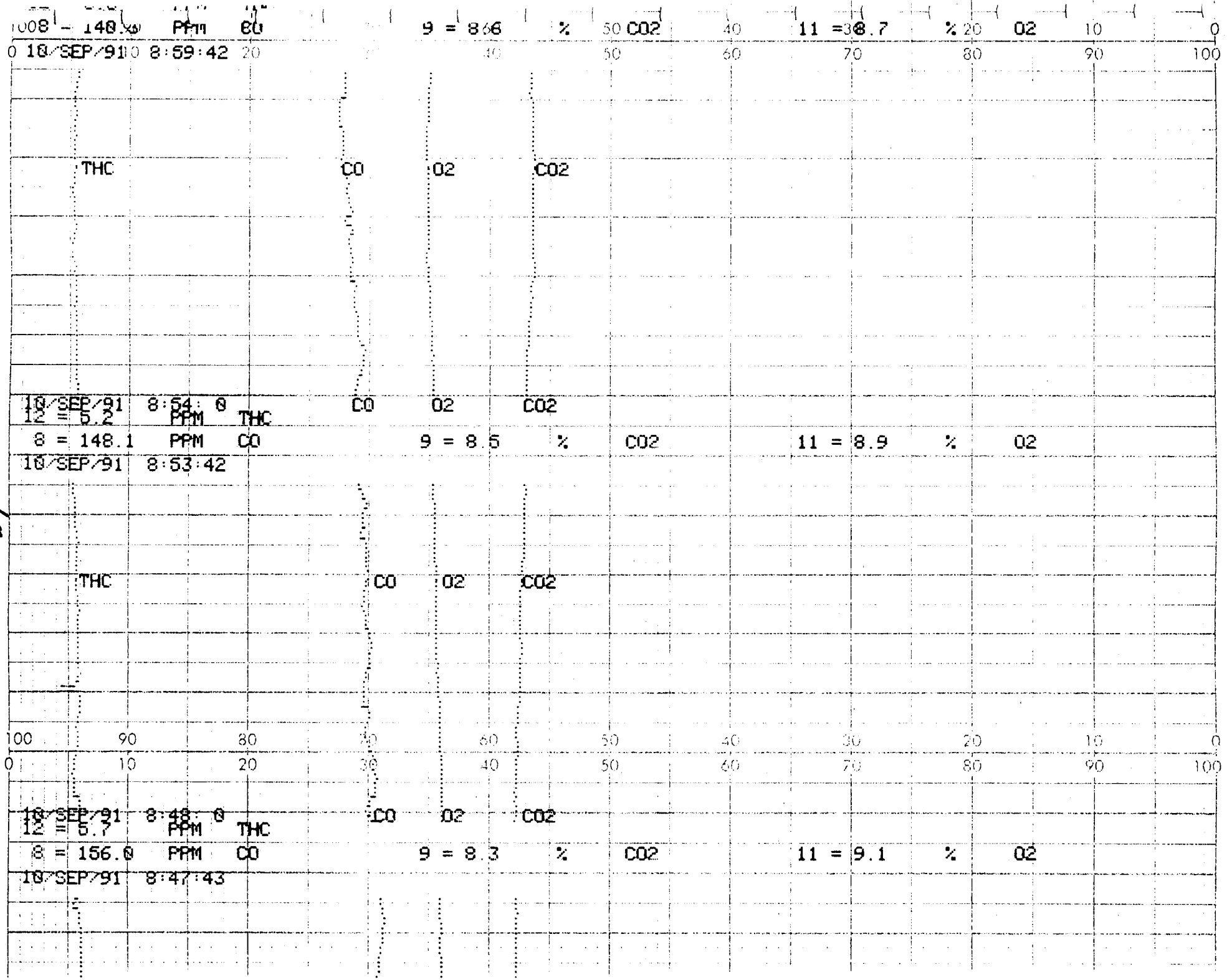
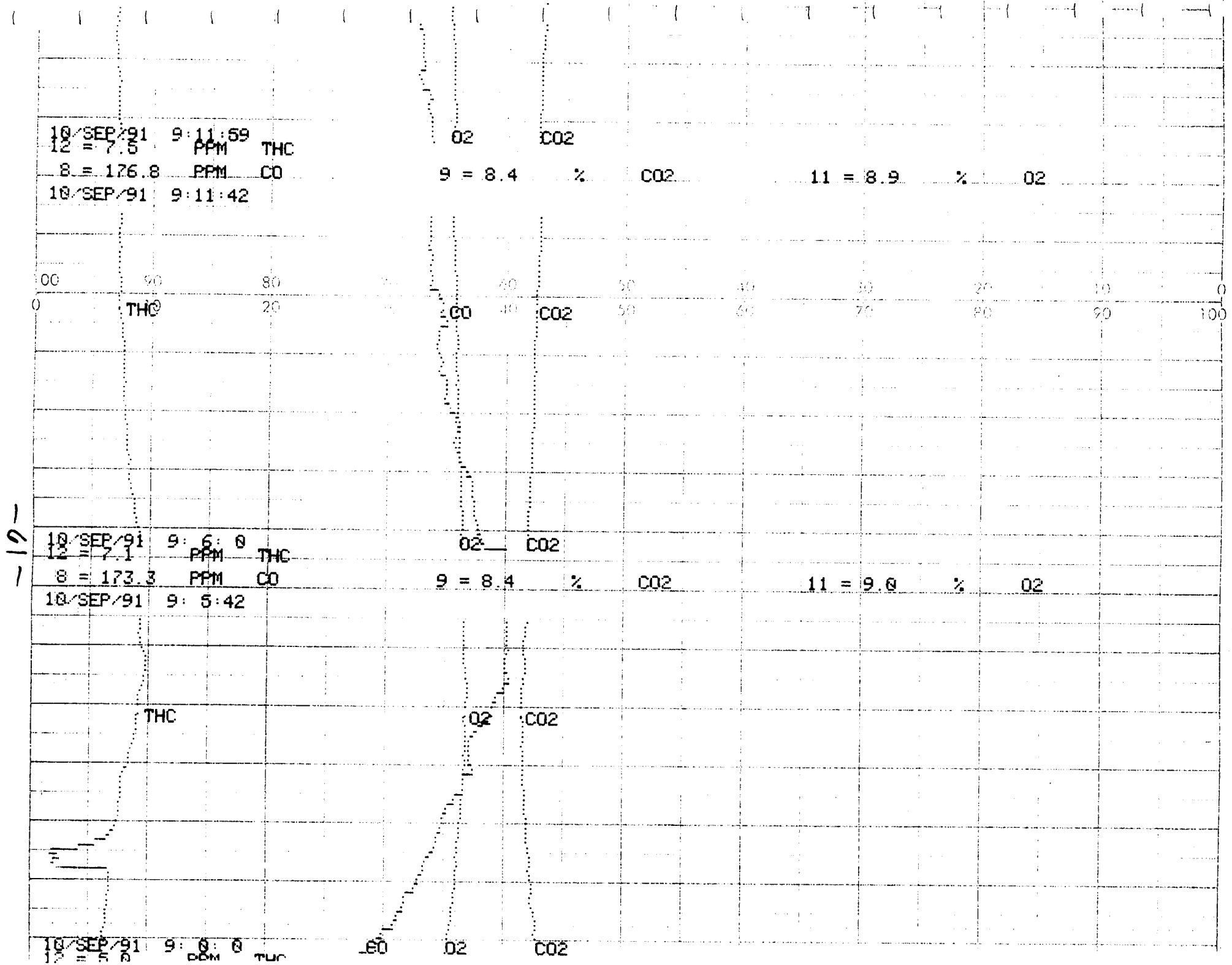

HC
CO
O2
10/SEP/91 8:42: 1
12 = 6.1 PPM THC
8 = 168.1 PPM CO
CO O2 CO2
9 = 8.1 % CO2
11 = 9.3 % O2
10/SEP/91 8:41:43
THC
CO O2 CO2
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
10/SEP/91 8:36: 1
12 = 5.6 PPM THC
8 = 123.4 PPM CO
O2 CO2
9 = 8.1 % CO2
11 = 7.6 % O2
10/SEP/91 8:35:43
THC
O2 CO2


1008 - 140.0 PPM CO
9 = 8.6 % CO2
11 = 8.7 % O2
10/SEP/91 8:59:42
THC
CO
O2
CO2
10/SEP/91 8:54: 0
12 = 5.2 PPM THC
8 = 148.1 PPM CO
9 = 8.5 % CO2
11 = 8.9 % O2
10/SEP/91 8:53:42
THC
CO
O2
CO2
10/SEP/91 8:48: 0
12 = 5.7 PPM THC
8 = 156.0 PPM CO
9 = 8.3 % CO2
11 = 9.1 % O2
10/SEP/91 8:47:43


10/SEP/91 9:11:59
12 = 7.5 PPM THC
8 = 176.8 PPM CO
10/SEP/91 9:11:42
O2
CO2
9 = 8.4 % CO2
11 = 8.9 % O2
THC
CO
CO2
10/SEP/91 9: 6: 0
12 = 7.1 PPM THC
8 = 173.3 PPM CO
10/SEP/91 9: 5:42
O2
CO2
9 = 8.4 % CO2
11 = 9.0 % O2
THC
O2
CO2
10/SEP/91 9: 0: 0
CO
O2
CO2

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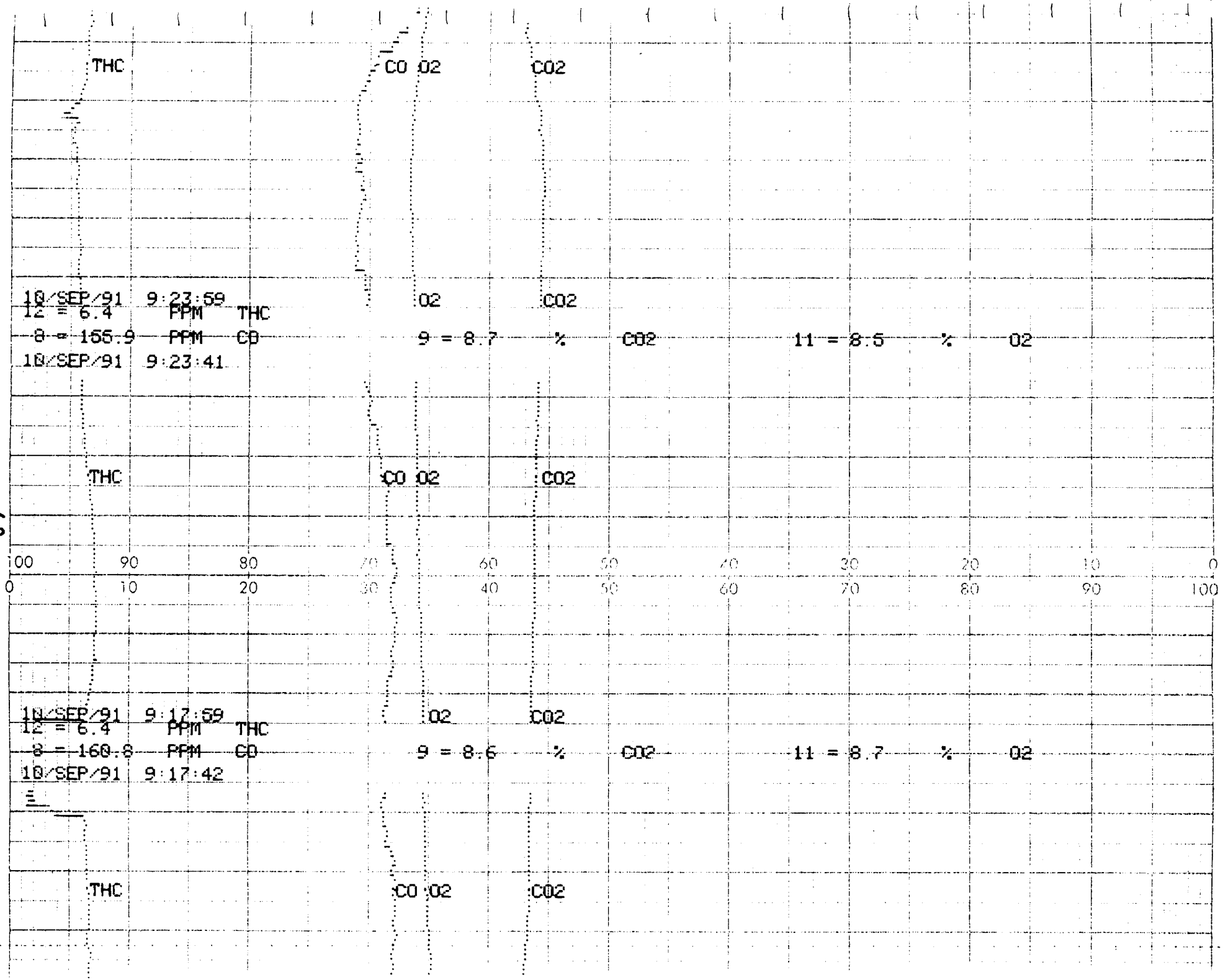
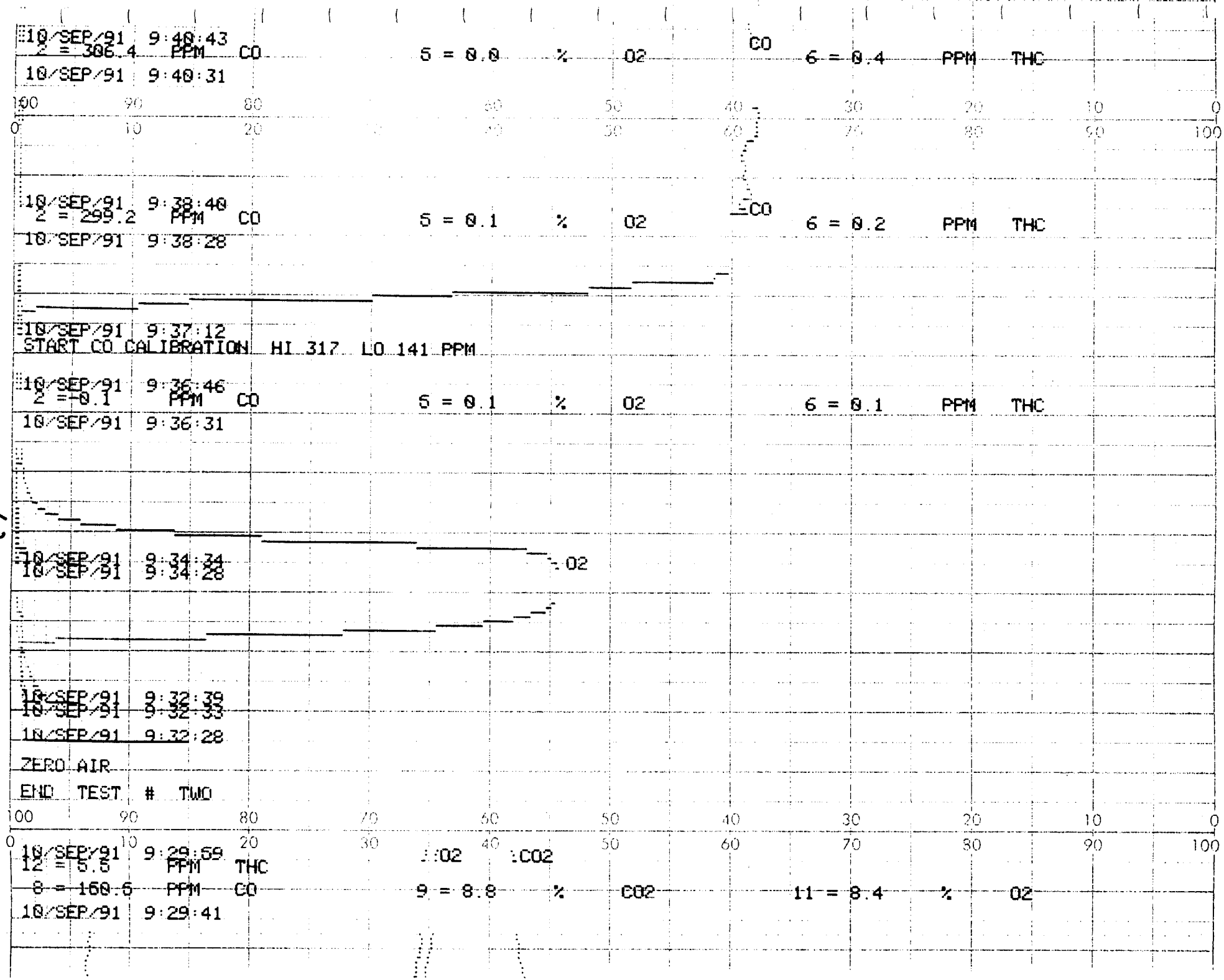
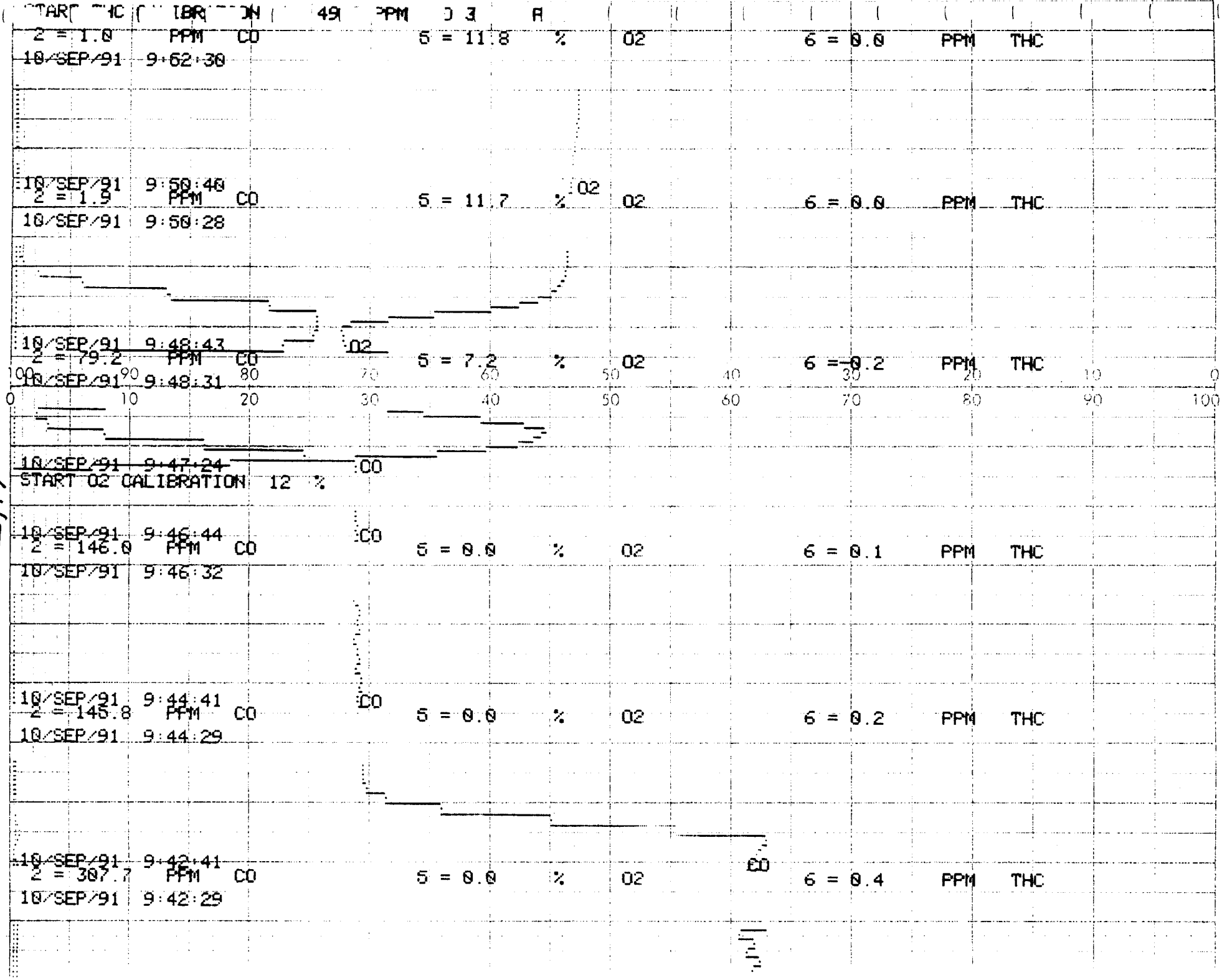


CHART NO. 414446


10/SEP/91 9:40:43
2 = 306.4 PPM CO
5 = 0.0 % O2
CO
6 = 0.4 PPM THC
10/SEP/91 9:40:31
10/SEP/91 9:38:40
2 = 299.2 PPM CO
5 = 0.1 % O2
CO
6 = 0.2 PPM THC
10/SEP/91 9:38:28
10/SEP/91 9:37:12
START CO CALIBRATION HI 317 LO 141 PPM
10/SEP/91 9:36:46
2 = -0.1 PPM CO
5 = 0.1 % O2
6 = 0.1 PPM THC
10/SEP/91 9:36:31
10/SEP/91 9:34:34
10/SEP/91 9:34:28
O2
10/SEP/91 9:32:39
10/SEP/91 9:32:33
10/SEP/91 9:32:28
ZERO AIR
END TEST # TWO
10/SEP/91 9:29:59
12 = 5.5 PPM THC
8 = 160.5 PPM CO
9 = 8.8 % CO2
11 = 8.4 % O2
10/SEP/91 9:29:41



2 = 1.0 PPM CO
5 = 11.8 % O2
6 = 0.0 PPM THC
10/SEP/91 9:52:30
10/SEP/91 9:50:40
2 = 1.9 PPM CO
5 = 11.7 % O2
6 = 0.0 PPM THC
10/SEP/91 9:50:28
10/SEP/91 9:48:43
2 = 79.2 PPM CO
5 = 7.2 % O2
6 = 0.2 PPM THC
10/SEP/91 9:48:31
10/SEP/91 9:47:24
START O2 CALIBRATION 12 %
10/SEP/91 9:46:44
2 = 146.0 PPM CO
5 = 0.0 % O2
6 = 0.1 PPM THC
10/SEP/91 9:46:32
10/SEP/91 9:44:41
2 = 145.8 PPM CO
5 = 0.0 % O2
6 = 0.2 PPM THC
10/SEP/91 9:44:29
10/SEP/91 9:42:41
2 = 307.7 PPM CO
5 = 0.0 % O2
6 = 0.4 PPM THC
10/SEP/91 9:42:29

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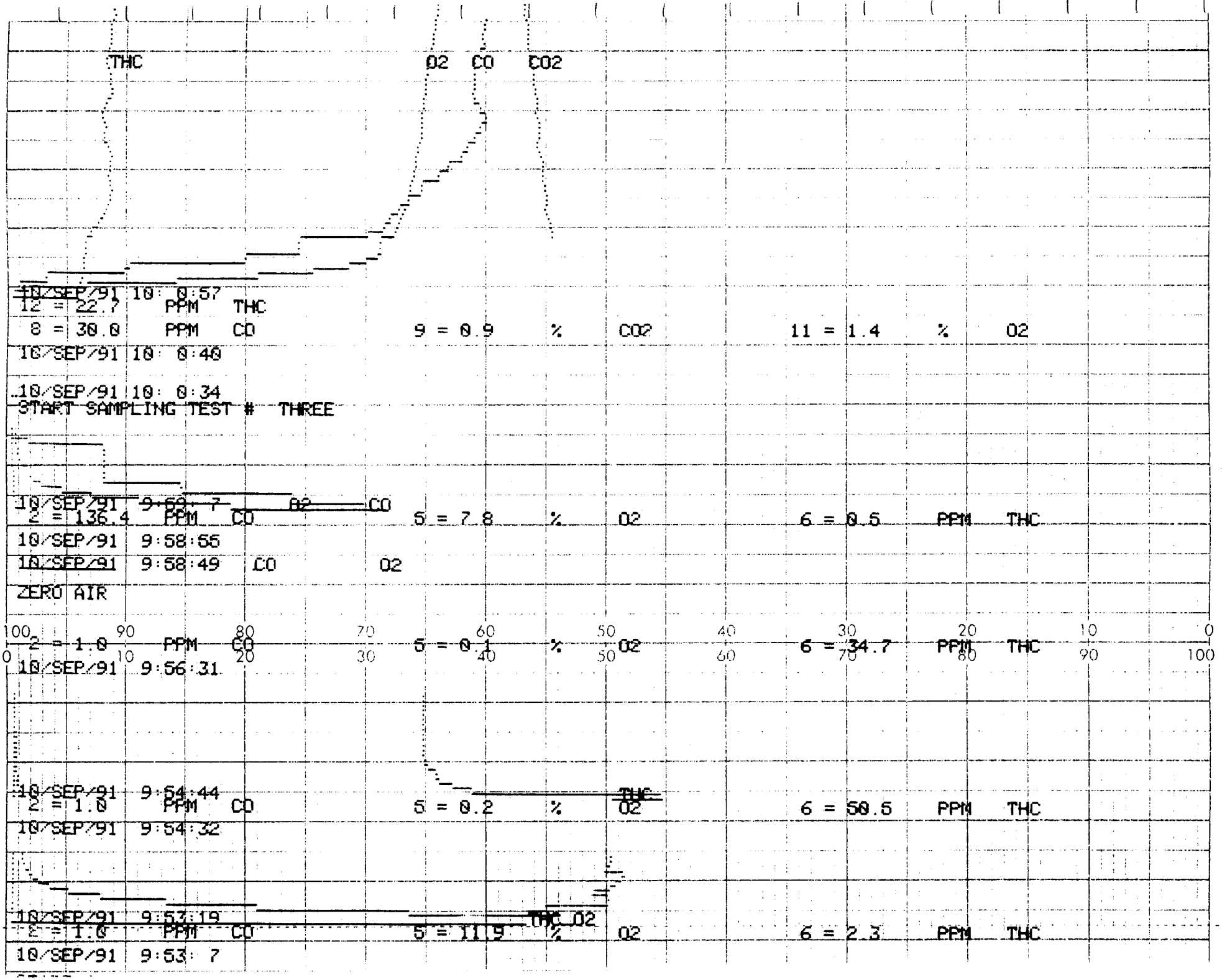
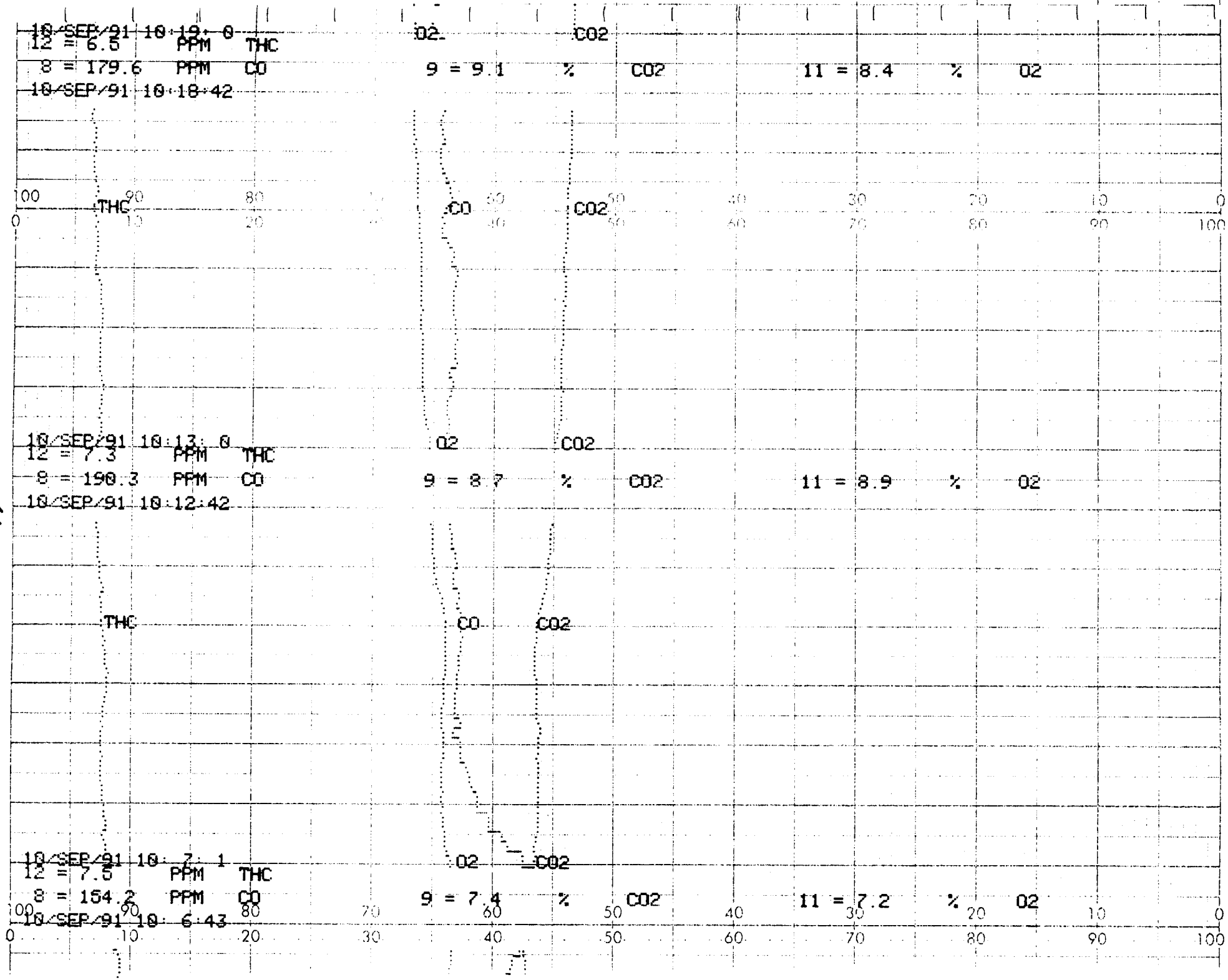
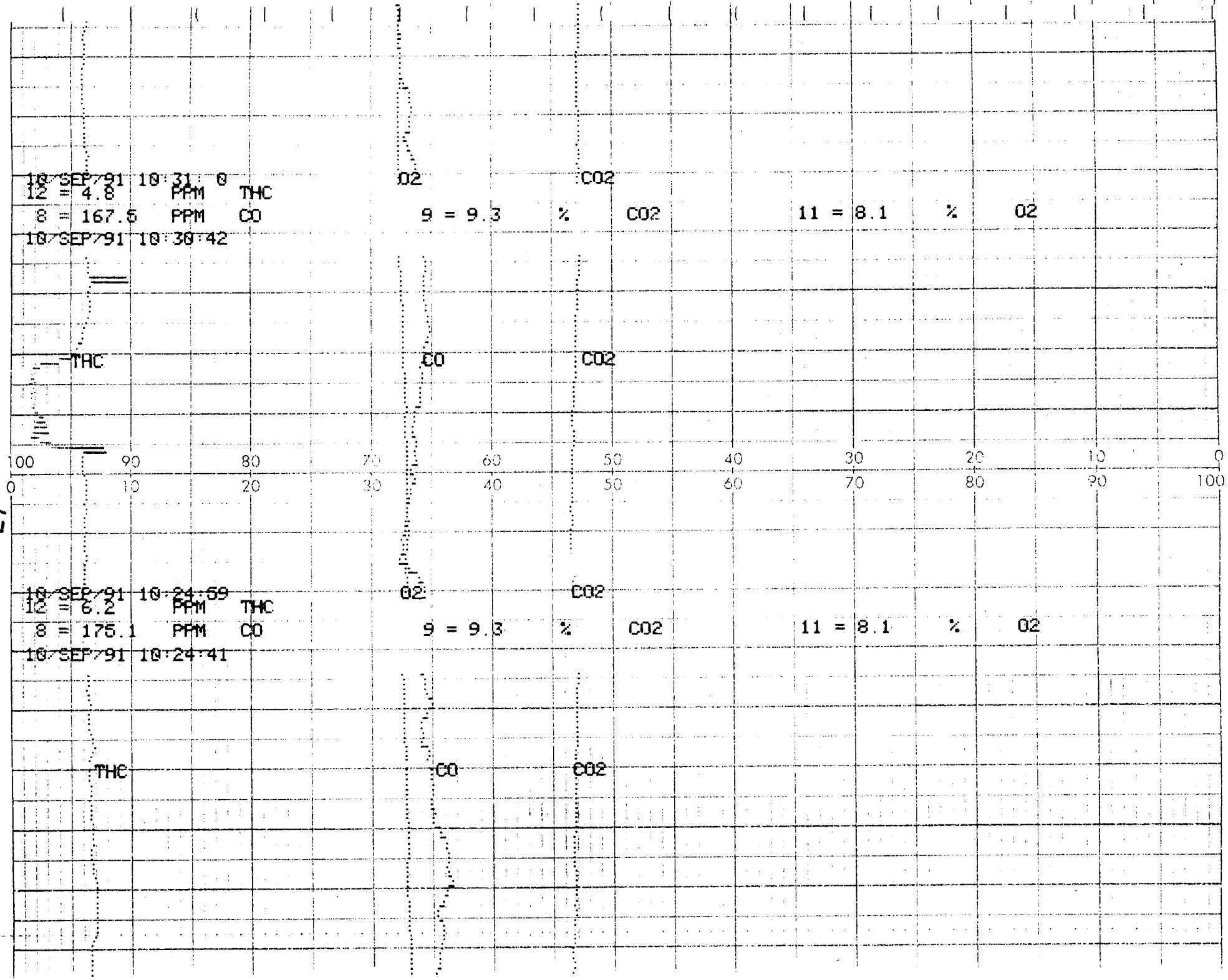
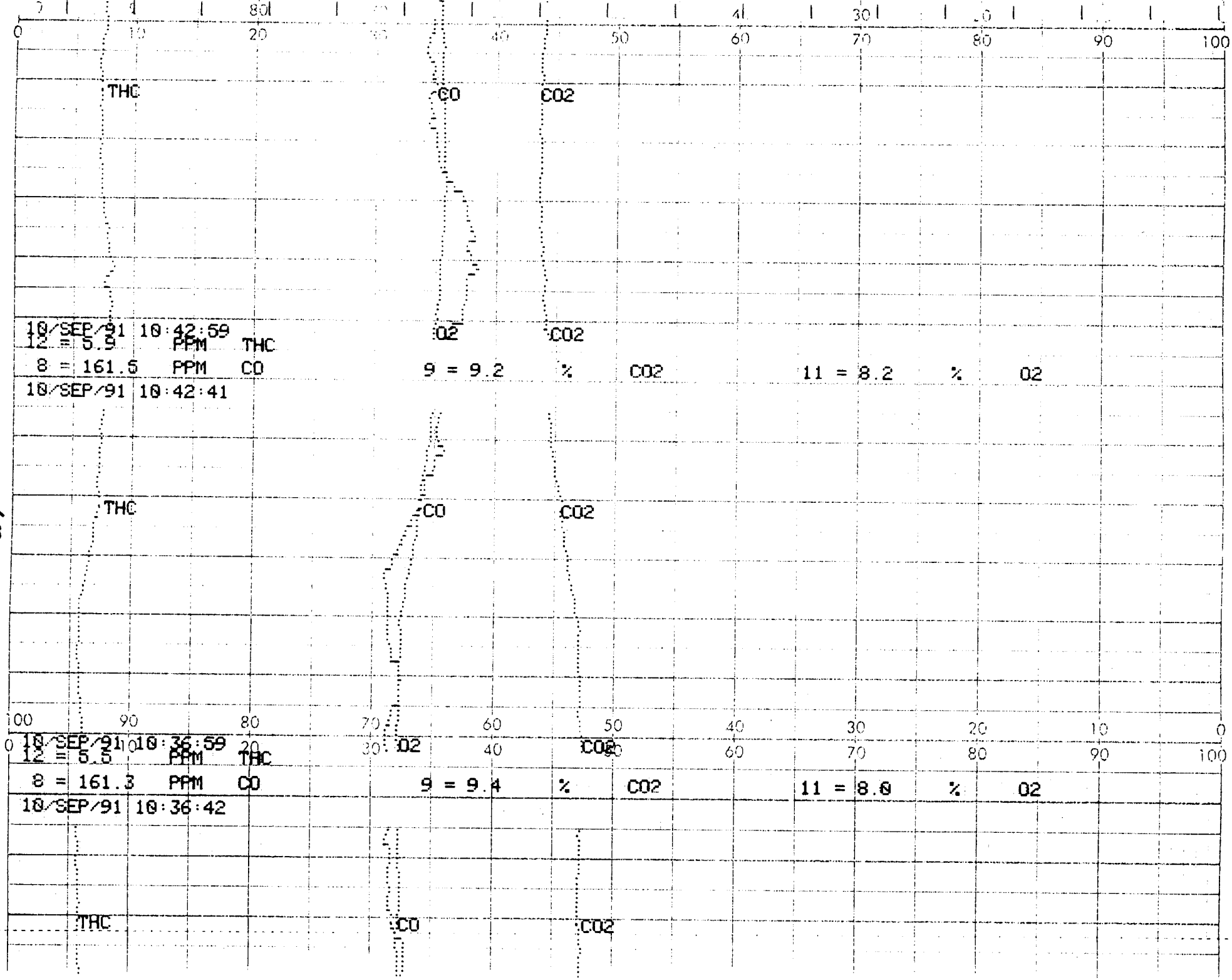

THC
O2 CO CO2
10/SEP/91 10: 0:57
12 = 22.7 PPM THC
8 = 30.0 PPM CO
9 = 0.9 % CO2
11 = 1.4 % O2
10/SEP/91 10: 0:40
10/SEP/91 10: 0:34
START SAMPLING TEST # THREE
10/SEP/91 9:59: 7
O2 CO
2 = 136.4 PPM CO
5 = 7.8 % O2
6 = 0.5 PPM THC
10/SEP/91 9:58:55
10/SEP/91 9:58:49 CO O2
ZERO AIR
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
2 = 1.0 PPM CO
5 = 0.1 % O2
6 = 34.7 PPM THC
10/SEP/91 9:56:31
10/SEP/91 9:54:44
THC
2 = 1.0 PPM CO
5 = 0.2 % O2
6 = 50.5 PPM THC
10/SEP/91 9:54:32
10/SEP/91 9:53:19
THC O2
2 = 1.0 PPM CO
5 = 11.9 % O2
6 = 2.3 PPM THC
10/SEP/91 9:53: 7


10/SEP/91 10:19: 0
12 = 6.5 PPM THC
8 = 179.6 PPM CO
10/SEP/91 10:18:42
O2
CO2
9 = 9.1 % CO2
11 = 8.4 % O2
THC
CO
CO2
10/SEP/91 10:13: 0
12 = 7.3 PPM THC
8 = 190.3 PPM CO
10/SEP/91 10:12:42
O2
CO2
9 = 8.7 % CO2
11 = 8.9 % O2
THC
CO
CO2
10/SEP/91 10: 7: 1
12 = 7.5 PPM THC
8 = 154.2 PPM CO
10/SEP/91 10: 6:43
O2
CO2
9 = 7.4 % CO2
11 = 7.2 % O2
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


10/SEP/91 10:31: 0
12 = 4.8 PPM THC
8 = 167.5 PPM CO
10/SEP/91 10:30:42
O2
CO2
9 = 9.3 % CO2
11 = 8.1 % O2
THC
CO
CO2
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
10/SEP/91 10:24:59
12 = 6.2 PPM THC
8 = 175.1 PPM CO
10/SEP/91 10:24:41
O2
CO2
9 = 9.3 % CO2
11 = 8.1 % O2
THC
CO
CO2


0 10 20 30 40 50 60 70 80 90 100
THC
CO
CO2
10/SEP/91 10:42:59
12 = 5.9 PPM THC
8 = 161.5 PPM CO
O2
CO2
9 = 9.2 % CO2
11 = 8.2 % O2
10/SEP/91 10:42:41
THC
CO
CO2
100 90 80 70 60 50 40 30 20 10 0
10/SEP/91 10:36:59
12 = 5.5 PPM THC
8 = 161.3 PPM CO
O2
CO2
9 = 9.4 % CO2
11 = 8.0 % O2
10/SEP/91 10:36:42
THC
CO
CO2

END TEST # THREE

10/SEP/91 11: 1: 0
12 = 6.4 PPM THC
8 = 163.0 PPM CO
10/SEP/91 11: 0:42

O2 CO2
9 = 9.0 % CO2
11 = 8.5 % O2

THC CO O2 CO2

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

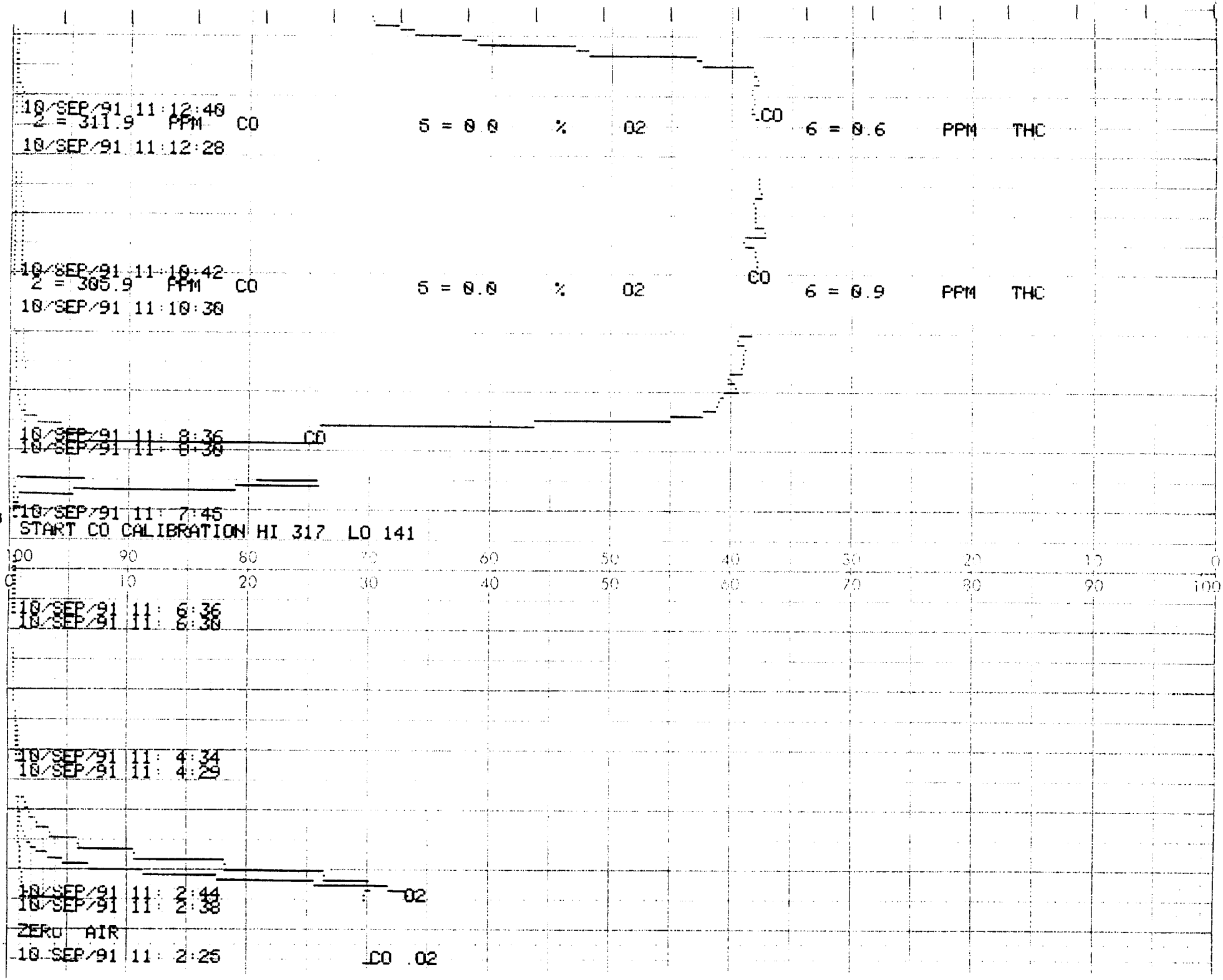
10/SEP/91 10:54:58
12 = 6.5 PPM THC
8 = 171.9 PPM CO
10/SEP/91 10:54:40

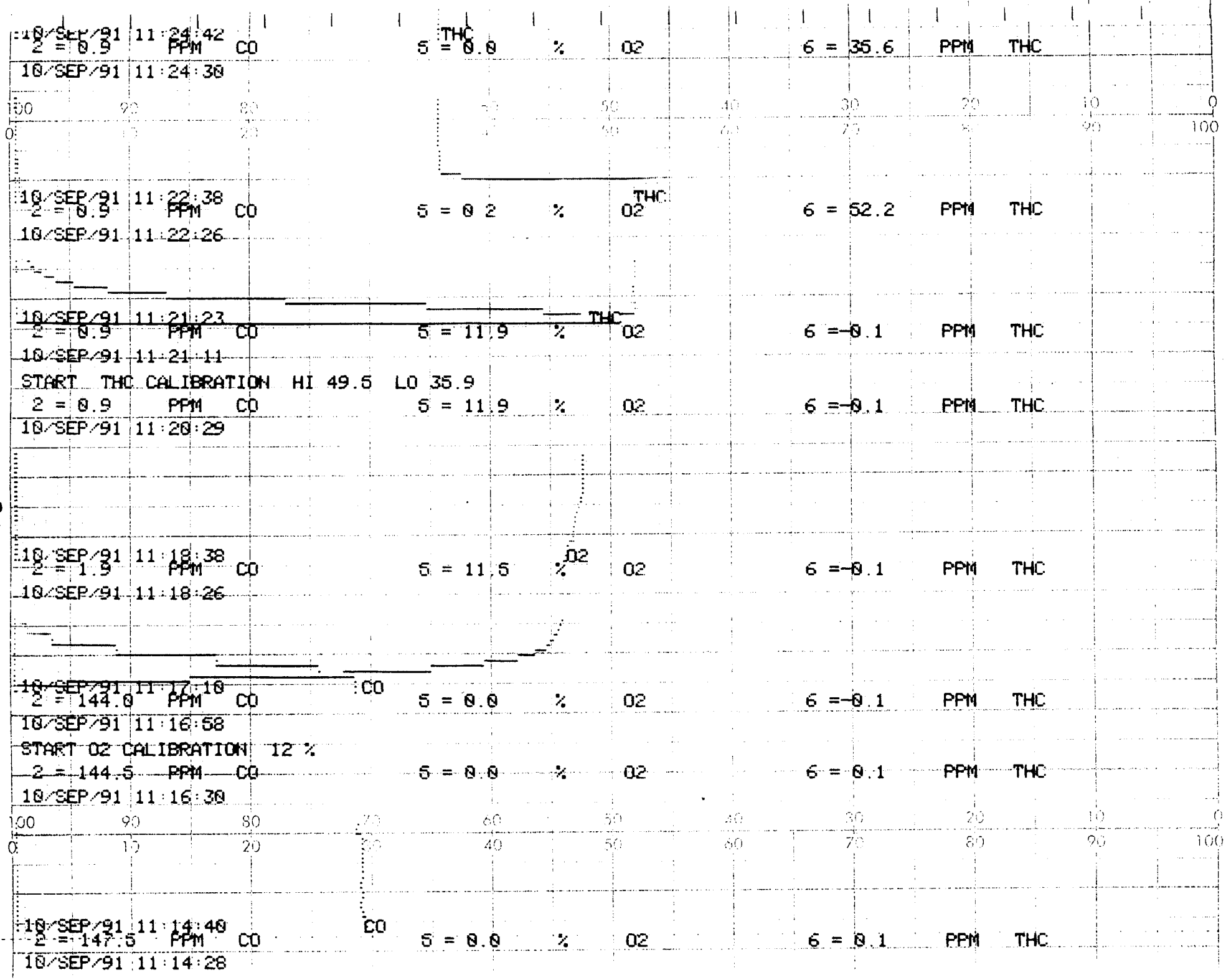
O2 CO2
9 = 8.9 % CO2
11 = 8.6 % O2

THC CO CO2

10/SEP/91 10:48:59
12 = 7.1 PPM THC
8 = 178.5 PPM CO
10/SEP/91 10:48:41

O2 CO2
9 = 8.8 % CO2
11 = 8.8 % O2


10/SEP/91 11:12:40
2 = 311.9 PPM CO
5 = 0.0 % O2
CO
6 = 0.6 PPM THC
10/SEP/91 11:12:28
10/SEP/91 11:10:42
2 = 305.9 PPM CO
5 = 0.0 % O2
CO
6 = 0.9 PPM THC
10/SEP/91 11:10:30
10/SEP/91 11: 8:36
10/SEP/91 11: 8:30
CO
10/SEP/91 11: 7:45
START CO CALIBRATION HI 317 LO 141
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
10/SEP/91 11: 6:36
10/SEP/91 11: 6:30
10/SEP/91 11: 4:34
10/SEP/91 11: 4:29
10/SEP/91 11: 2:44
10/SEP/91 11: 2:38
O2
ZERO AIR
10 SEP/91 11: 2:25
CO .02


10/SEP/91 11:24:42
2 = 0.9 PPM CO
THC
5 = 0.0 % O2
6 = 35.6 PPM THC
10/SEP/91 11:24:30
10/SEP/91 11:22:38
2 = 0.9 PPM CO
THC
5 = 0.2 % O2
6 = 52.2 PPM THC
10/SEP/91 11:22:26
10/SEP/91 11:21:23
THC
2 = 0.9 PPM CO
5 = 11.9 % O2
6 =-0.1 PPM THC
10/SEP/91 11:21:11
START THC CALIBRATION HI 49.5 LO 35.9
2 = 0.9 PPM CO
5 = 11.9 % O2
6 =-0.1 PPM THC
10/SEP/91 11:20:29
10/SEP/91 11:18:38
O2
2 = 1.9 PPM CO
5 = 11.5 % O2
6 =-0.1 PPM THC
10/SEP/91 11:18:26
10/SEP/91 11:17:10
CO
2 = 144.0 PPM CO
5 = 0.0 % O2
6 =-0.1 PPM THC
10/SEP/91 11:16:58
START O2 CALIBRATION 12 %
2 = 144.5 PPM CO
5 = 0.0 % O2
6 = 0.1 PPM THC
10/SEP/91 11:16:30
10/SEP/91 11:14:40
CO
2 = 147.5 PPM CO
5 = 0.0 % O2
6 = 0.1 PPM THC
10/SEP/91 11:14:28

-71-

Aztec CRAP

9-10-91

YSC

CHECK for ~~CYCLONIC FLOW~~ Temp. Traverse

METHOD 1, Section 2.4

Aztec
Test No: 1
@ 0055 HRS

A

TRAVERSE POINT	ANGLE where Δ p=0
1	204
2	205
3	205
4	206
5	206
6	206
7	206
8	206
9	206
10	206
11	206
12	206
AVERAGE	

B

TRAVERSE POINT	ANGLE where Δ p=0
1	205
2	206
3	206
4	206
5	206
6	206
7	206
8	205
9	205
10	205
11	205
12	204
AVERAGE	206

FIELD DATA

YSC

PLANT Weldon
DATE 9-10-91
SAMPLING LOCATION Aztec
SAMPLE TYPE Moisture
RUN NUMBER 1
OPERATOR JVM
AMBIENT TEMPERATURE 70°F
BAROMETRIC PRESSURE 29.92
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15.0 "Hg
Final 0.0 @ 5.0 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 5 ft Glass
NOZZLE I.D. ~~1/2"~~ 3/8" ~~7/16~~
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING
HEATER BOX SETTING
REFERENCE Δp N/A

Silica Gel
Final Weight
Initial Weight
Net Gain

RAB

READ AND RECORD ALL DATA EVERY 1 hr MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	1 hr	443.291										
~~2~~ AL	0658		N/A	N/A	0.75	205	74	76	4.0	189	244	68
	0710	449.100			0.75	205	78	78	4.5	204	245	56
	0724	455.600			0.75	208	80	76	5.0	216	249	67
	0743	465.100			0.75	207	82	83	5.0	222	244	72
	0759	473.434			0.75	207	85	85	5.0	224	247	72
		30.143						(79.5)				

	Start	Stop	Net
1st Imp	560.7	752.8	192.1
2nd Imp	583.0	644.8	61.8
3rd Imp	474.8	487.6	12.8
S.G.	751.6	760.7	9.1
		Total	275.8

Aztec (RAP)

9-10-91

Temp. Traverse

YSC

CHECK for ~~CYCLONIC FLOW~~

Stop Test No. 1
Start Test No. 2

METHOD 1, Section 2.4

A-1

TRAVERSE POINT	ANGLE where Δ p=0
A-1	205
2	205
3	206
4	206
5	206
6	206
7	206
8	206
9	207
10	206
11	205
12	205
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p=0
B-1	204
2	205
3	205
4	206
5	206
6	206
7	206
8	206
9	205
10	205
11	205
12	204
AVERAGE	206

YSC

PLANT Weldon
DATE 9-10-91
SAMPLING LOCATION Aztec
SAMPLE TYPE Moisture
RUN NUMBER 2
OPERATOR SVM
AMBIENT TEMPERATURE 72
BAROMETRIC PRESSURE 29.92
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.15 @ 15 "Hg
Final 0.001 @ 7.5 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 5 ft Glass
NOZZLE I.D. 11/64" 3/8"
ASSUMED MOISTURE, % ____
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR N/A
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp N/A

Silica Gel
Final Weight ____
Initial Weight ____
Net Gain ____

RAP

READ AND RECORD ALL DATA EVERY 1hr MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
		473.613										
A-6	0827		N/A	N/A	0.75	203	87	79	2.0	249	250	75
					0.75	203	92	88	2.5	246	229	65
	0847	483.600			0.75	207	94	89	2.5	250	235	65
	0917	498.200			0.75	209	96	92	2.5	255	235	69
	0928	503.794			0.75	208	97	94	2.5	254	237	69
		30.181						(90.8)				

	Start	Stop	Net
1st Imp	609.3	810.7	201.4
2nd Imp	575.4	615.7	40.3
3rd Imp	477.6	484.3	06.7
S.G.	818.5	824.8	6.3
		Total	254.7

Aztec (RAP)

YSC

9/10/91

Temp. Traverse

CHECK for ~~CYCLONIC FLOW~~

METHOD 1, Section 2.4

Stop Test No. 2
Start Test No. 3

TRAVERSE POINT	ANGLE where Δ p≈0
A-1	207
2	208
3	208
4	208
5	209
6	209
7	209
8	209
9	209
10	208
11	208
12	207
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p≈0
B 1	208
2	208
3	209
4	209
5	209
6	209
7	209
8	209
9	209
10	209
11	209
12	208
AVERAGE	208

YSC

PLANT Windsor
DATE 9-10-91
SAMPLING LOCATION Aztec
SAMPLE TYPE Moisture
RUN NUMBER 3
OPERATOR JVM
AMBIENT TEMPERATURE 75
BAROMETRIC PRESSURE 29.92
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

k d...
Initial 0.01 @ 15 "Hg
Final 0.0 @ 5 "Hg

Impinger Volume
Final ml
Initial ml
Net Gain ml

PROBE LENGTH AND TYPE 5 ft Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

RAP

READ AND RECORD ALL DATA EVERY 1 hr MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	~~1000~~	503.839										
A-L	1000		N/A	N/A	0.75	207	95	88	4.5	270	233	77
	1019	513.300	↓	↓	0.75	210	96	84	5.0	243	256	72
	1037	522.400	↓	↓	0.75	209	99	95	5.0	242	255	73
	1100	533.868	↓	↓	0.75	210	100	96	5.0	243	258	77
		30.029				(209)		(94.1)				
			Start	Stop	Net							
		1st Imp	580.8	826.6	245.8							
		2nd Imp	644.8	672.2	27.4							
		3rd Imp	487.6	489.5	1.9							
		SG	760.7	766.4	5.7							
				Total	260.8							

Aztec (RAP)

YSC

Temp. Traverse

CHECK for ~~CYCLONIC FLOW~~

9/10/91

METHOD 1, Section 2.4

Stop Test No. 3

TRAVERSE POINT	ANGLE where Δ p≈0
A-1	209
2	209
3	209
4	210
5	210
6	210
7	210
8	210
9	209
10	209
11	209
12	208
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p≈0
B-1	207
2	208
3	209
4	209
5	210
6	210
7	210
8	209
9	209
10	209
11	208
12	207
AVERAGE	209

9-10-91 Weldon/ Aztec Plant Test No. 1

Product:

Parameter	Test No #1 Start	Test No #2 Start	Test No #1 Mid	Test No #2 Mid	Test No. #1 End	Test No. #2 End
Screenings	24	24	24	24	24	24
Sand	17	17	[illegible]	17	17	17
Stone	59	59	[illegible]	59	59	59
RAP	20	20	[illegible]	20	20	20
AC-20	4	4	[illegible]	4	4	4
Fuel No.2 ~~Gal/hr~~	377.40	377.4	377.4	377.4	377.4	377.4
(Gal/min) Gal/min	(6.3	(6.30)	[illegible]	[illegible]	(	(6.30)
Baghouse ΔP	[illegible]	4.5	[illegible]	4.0	4.6	3.5

#	Start	Mid	End
Scr	24		
Sand	17		
Stone	59		
RAP	20		
AC 20	4		
Fuel No 2 Gal/hr	377.4		
(Gal/Min)	(6.30)		
Baghouse ΔP	3.5		

EPA METHOD 5 CALCULATIONS
USING STP AS 68 DEG F AND 29.92 in Hg

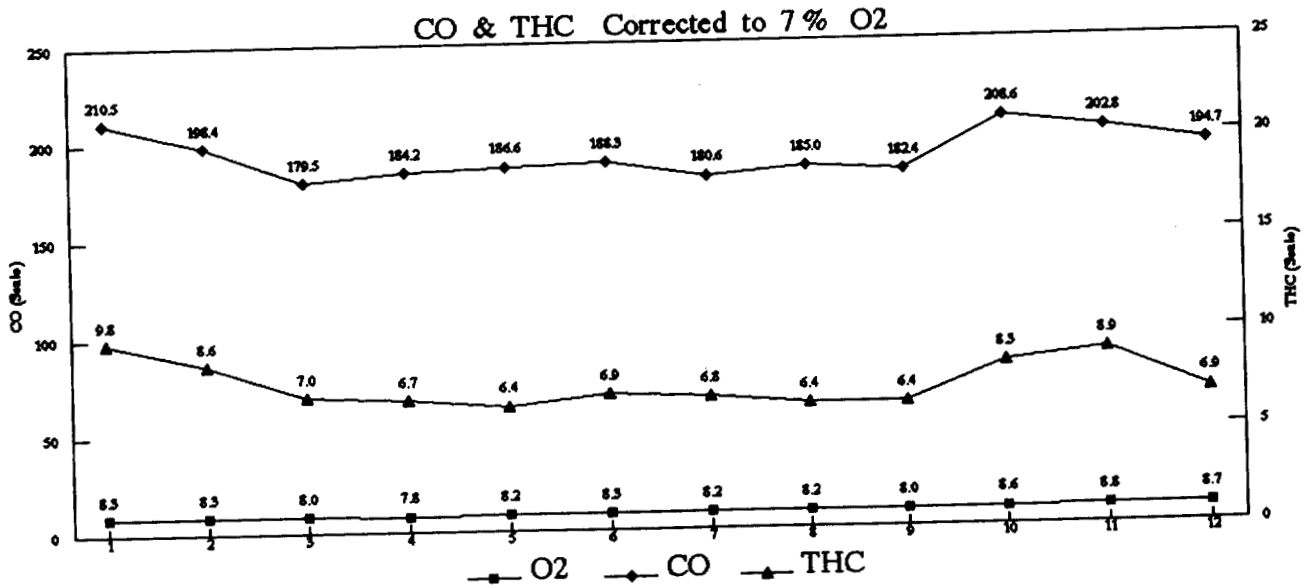
DESCRIPTION OF PARAMETERS	(UNITS)	RUN # 4	RUN # 5	RUN # 6
PROJECT WELDON ASPHALT COMPANY (WAC)		(WAC)	(WAC)	(WAC)
DATE		9/11/91	9/11/91	9/11/91
LOCATION		AZTEC	AZTEC	AZTEC
TIME		0655-0755	0952-1052	1134-1234
LOAD (Mw)		VIRGIN	VIRGIN	VIRGIN
MATRIX		MOISTURE	MOISTURE	MOISTURE
PITOT TUBE CONSTANT (Cp)				
TOTAL VOLUME H2O COLLECTED (VH2O)	(ml)	311.6	285.3	267.4
AVERAGE GAS METER TEMPERATURE (Tm)	(DEG F)	84.3	90.7	87.7
METER VOLUME SAMPLED (Vm)	(acf)	30.607	30.54	30.06
TOTAL SAMPLING TIME	(min)	60	60	60
BAROMETRIC PRESSURE (Pbar)	(in Hg a)	29.65	29.7	29.75
STACK PRESSURE (Ps)	(in Hg a)			
AVERAGE STACK TEMPERATURE (Ts)	(DEG F)	213	198	203
AVG ORIFICE METER PRESSURE DROP(DHavg)	(in H2O)	0.75	0.75	0.75
SQRT AVG PITOT TUBE PRESSURE DROP	(in H2O^0.5)	0.0000	0.0000	0.0000
AVERAGE PITOT TUBE PRESSURE DROP(DPavg)	(in Hg H2O)			
VOLUME OF H2O AS GAS AT STP (Vwc)	(sfc)	14.71	13.47	12.62
METER VOLUME AT STP (Vmc)	(sfc)	29.48	29.12	28.87
STACK MOISTURE CONTENT (Bws)	(%)	33.28	31.62	30.42
STACK GAS ANALYSIS				
CO2	(%)			
O2	(%)			
CO	(ppm)			
N2	(%)	100	100	100
DRY MOLECULAR WEIGHT (Md)	(g/g mole)	28.00	28.00	28.00
STACK MOLECULAR WEIGHT (Ms)	(g/g mole)	24.67	24.84	24.96
AVERAGE STACK VELOCITY (Vsavg)	(ft/sec)	ERR	ERR	ERR
STACK AREA (A)	(ft2)			
STACK FLOW RATE (QSA)	(afcm)	ERR	ERR	ERR
STACK FLOW RATE (QSW)	(scfm dry)	ERR	ERR	ERR
STACK FLOW RATE (QSD)	(scfm wet)	ERR	ERR	ERR
NOZZLE DIAMETER (Dn)	(in)			
% ISOKINETIC VARIATION (I)	(%)	ERR	ERR	ERR
MASS OF PARTICULATE COLLECTED ON FILTER (Mf)	(g)			
MASS OF PARTICULATE COLLECTED ON PROBE AND CYCLONE	(g)			
TOTAL MASS OF PARTICULATE (Mn)	(g)	0.0000	0.0000	0.0000
PERCENTAGE OF TOTAL PARTICULATE COLLECTED ON FILTER	(%)	ERR	ERR	ERR
STACK PARTICULATE CONCENTRATION (Cs)	(g/scfc)	0.0000	0.000	0.000
PARTICULATE MASS RATE (pmr)	(lb/hr)	ERR	ERR	ERR
PARTICULATE MASS RATE	(Lb/MBTU)	ERR	ERR	ERR

WELDON ASPHALT COMPANY

Run # : Four
Period : 6 Minute Average
Number of samples: 12

Date: 09/11/1991
Plant name: Aztec
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	06 : 42	Start sampling				
1	06 : 48	191.5	8.9	8.3	210.5	9.8
2	06 : 54	180.5	7.8	8.3	198.4	8.6
3	06 : 0	166.8	6.5	8.0	179.5	7.0
4	07 : 6	173.4	6.3	7.8	184.2	6.7
5	07 : 12	170.0	5.8	8.2	186.6	6.4
6	07 : 18	171.0	6.3	8.3	188.3	6.9
7	07 : 24	164.5	6.2	8.2	180.6	6.8
8	07 : 30	169.4	5.8	8.2	185.0	6.4
9	07 : 36	169.0	5.9	8.0	182.4	6.4
10	07 : 42	185.1	7.4	8.6	208.6	8.3
11	07 : 48	176.5	7.8	8.8	202.8	8.9
12	07 : 54	170.6	6.0	8.7	194.7	6.9
Average		174.0	6.7	8.3	191.8	7.4

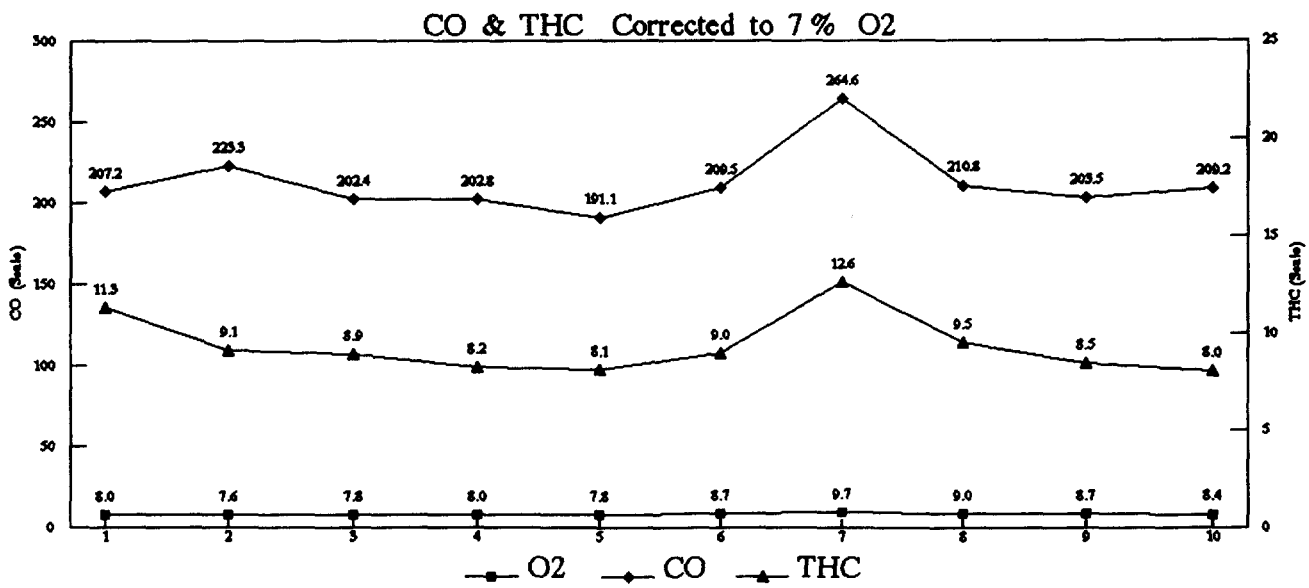


WELDON ASPHALT COMPANY

Run # : Five
Period : 6 Minute Average
Number of samples: 10

Date: 09/11/1991
Plant name: Aztec
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	09 : 50	Start sampling				
1	09 : 56	191.6	10.4	8.0	207.2	11.3
2	10 : 2	214.0	8.7	7.6	223.3	9.1
3	10 : 8	190.1	8.4	7.8	202.4	8.9
4	10 : 14	188.7	7.7	8.0	202.8	8.2
5	10 : 20	179.6	7.6	7.8	191.1	8.1
6	10 : 26	183.1	7.9	8.7	209.5	9.0
7	10 : 32	212.6	10.1	9.7	264.6	12.6
8	10 : 38	180.6	8.1	9.0	210.8	9.5
9	10 : 44	178.5	7.4	8.7	203.5	8.5
10	10 : 50	188.5	7.2	8.4	209.2	8.0
Average		190.7	8.4	8.4	212.4	9.3

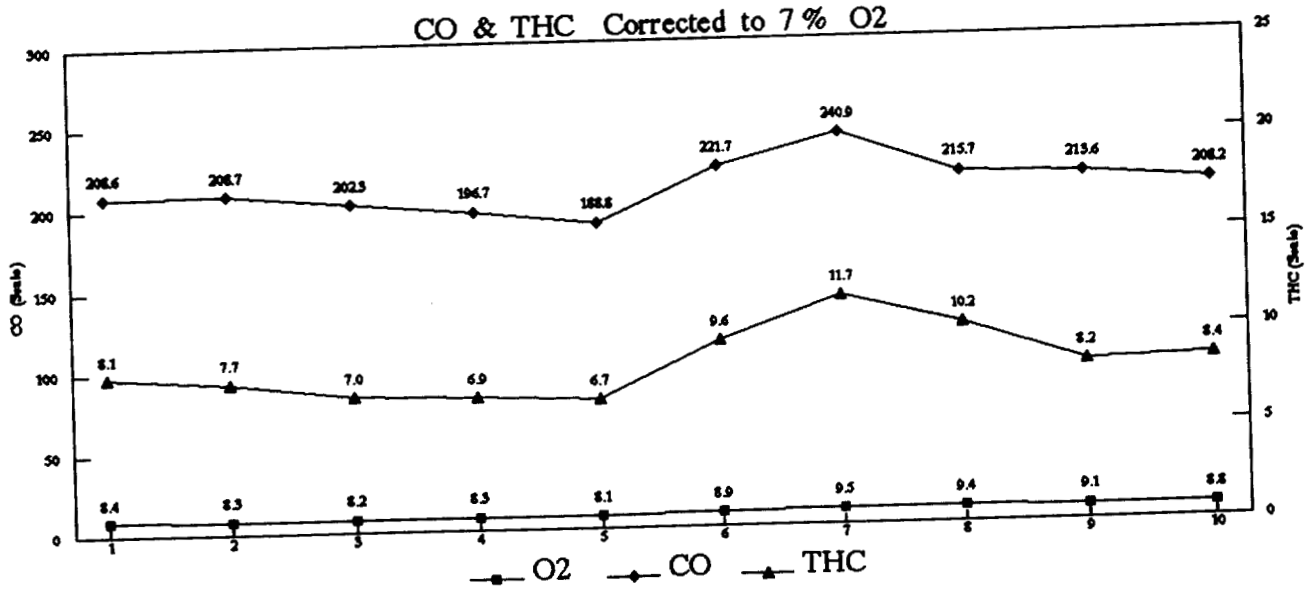


WELDON ASPHALT COMPANY

Run # : Six
Period : 6 Minute Average
Number of samples: 10

Date: 09/11/1991
Plant name: Aztec
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	11 : 31	Start sampling				
1	11 : 37	187.6	7.3	8.4	208.6	8.1
2	11 : 43	189.2	7.0	8.3	208.7	7.7
3	11 : 49	184.8	6.4	8.2	202.3	7.0
4	11 : 55	178.1	6.2	8.3	196.7	6.9
5	12 : 01	174.0	6.1	8.1	188.8	6.7
6	12 : 07	191.1	8.2	8.9	221.7	9.6
7	12 : 13	197.6	9.6	9.5	240.9	11.7
8	12 : 19	178.0	8.4	9.4	215.7	10.2
9	12 : 25	181.2	6.9	9.1	213.6	8.2
10	12 : 31	182.0	7.3	8.8	208.2	8.4
Average		184.3	7.4	8.7	210.5	8.4



141 ...1 CL

11/SEP/91 5:35:14

11/SEP/91 5:32:31
2 = 0.8 PPM CO 5 = 20.5 % O2 6 = 0.0 PPM O2 THC
11/SEP/91 5:32:19
11/SEP/91 5:32:13 O2
----------CO CALIBRATION
START CALIBRATIONS

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

LENGTH LEFT ON PRESENT ROLL IS 36 FEET 6 (INCHES)
10/SEP/91 11:34:20 COLD JUNCTION IS 92.7 F ALARM TYPES LOW/HIGH

12	0.0	100.0	OFF	OFF	ON	0.0	OFF	0.0	OFF	PPM	1TO1
11	0.0	25.0	OFF	OFF	ON	0.0	OFF	0.0	OFF	%	1TO1
10	0.0	300.0	OFF	OFF	OFF	0.0	OFF	0.0	OFF	PPM	1TO1
9	0.0	20.0	OFF	OFF	ON	0.0	OFF	0.0	OFF	%	1TO1
8	0.0	500.0	OFF	OFF	ON	0.0	OFF	0.0	OFF	PPM	1TO1
CHN	LEFT MARGIN	RIGHT MARGIN	DATALOG	TREND	ASCII	LOW	ALARM	STAT	HIGH	ALARM	STAT	UNIT	TYPE

CHART PRINT TREND / LOG OPERATION MODE STANDBY ALARM LOG IS OFF MINIMA/MAXIMA NO

6	0.0	100.0	ON	ON	ON	0.0	OFF	0.0	OFF	PPM	THC
5	0.0	25.0	ON	ON	ON	0.0	OFF	0.0	OFF	%	O2
CHN	LEFT MARGIN	RIGHT MARGIN	DATALOG	TREND	ASCII	LOW	ALARM	STAT	HIGH	ALARM	STAT	UNIT	TYPE

CHART PRINT TREND / LOG OPERATION MODE STANDBY ALARM LOG IS OFF MINIMA/MAXIMA NO

3	0.0	20.0	OFF	OFF	ON	0.0	OFF	0.0	OFF	%	CO2
2	0.0	500.0	ON	ON	ON	0.0	OFF	0.0	OFF	PPM	CO
CHN	LEFT MARGIN	RIGHT MARGIN	DATALOG	TREND	ASCII	LOW	ALARM	STAT	HIGH	ALARM	STAT	UNIT	TYPE

CHART PRINT TREND / LOG OPERATION MODE STANDBY ALARM LOG IS OFF MINIMA/MAXIMA NO

END TESTING

10/SEP/91 11:25:22 THC
END SYSTEM CALIBRATION

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THC LIB ION

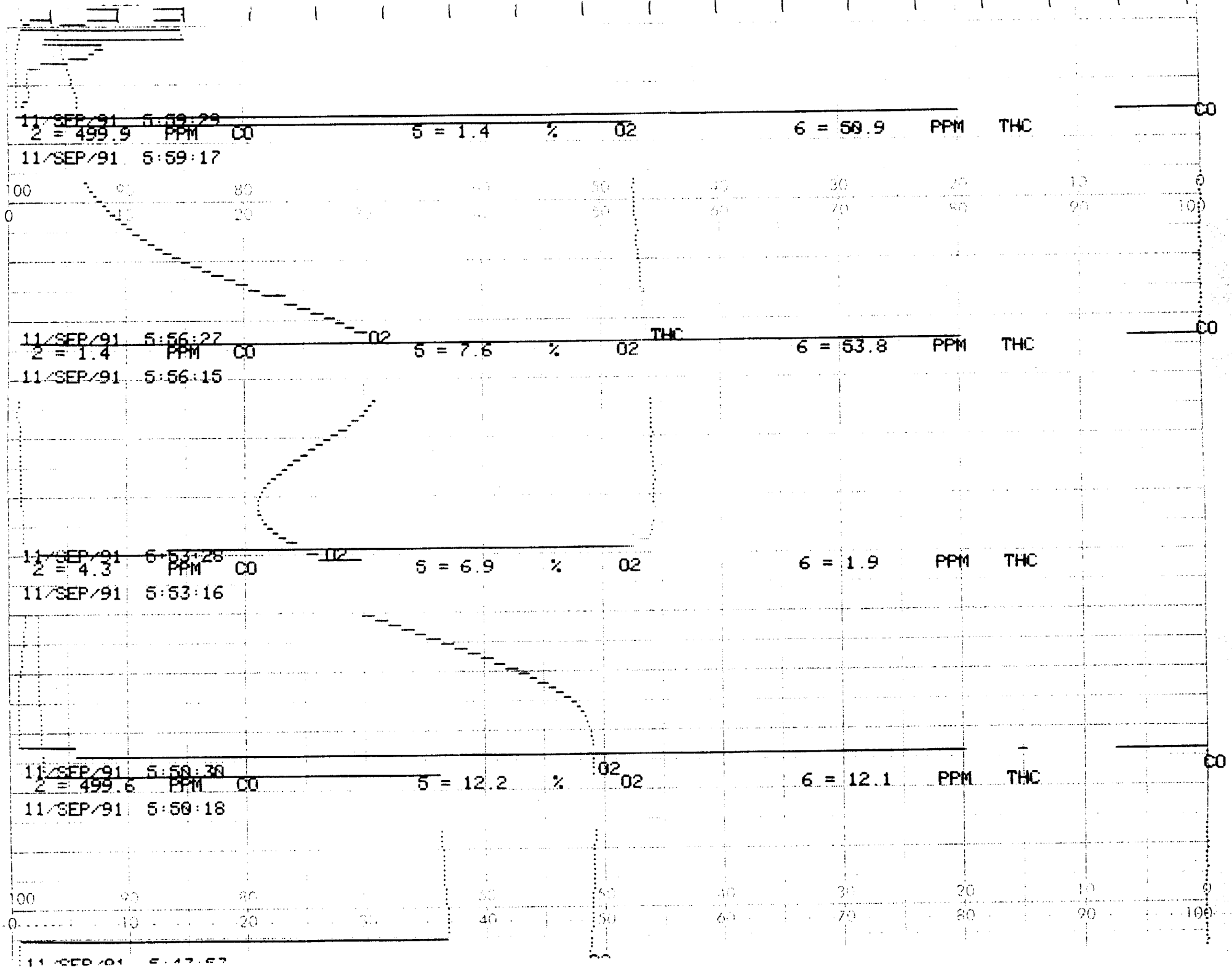
11/SEP/91 5:47:26
2 = 499.9 PPM CO 5 = 12.0 % O2 6 = 0.0 PPM THC
11/SEP/91 5:47:14

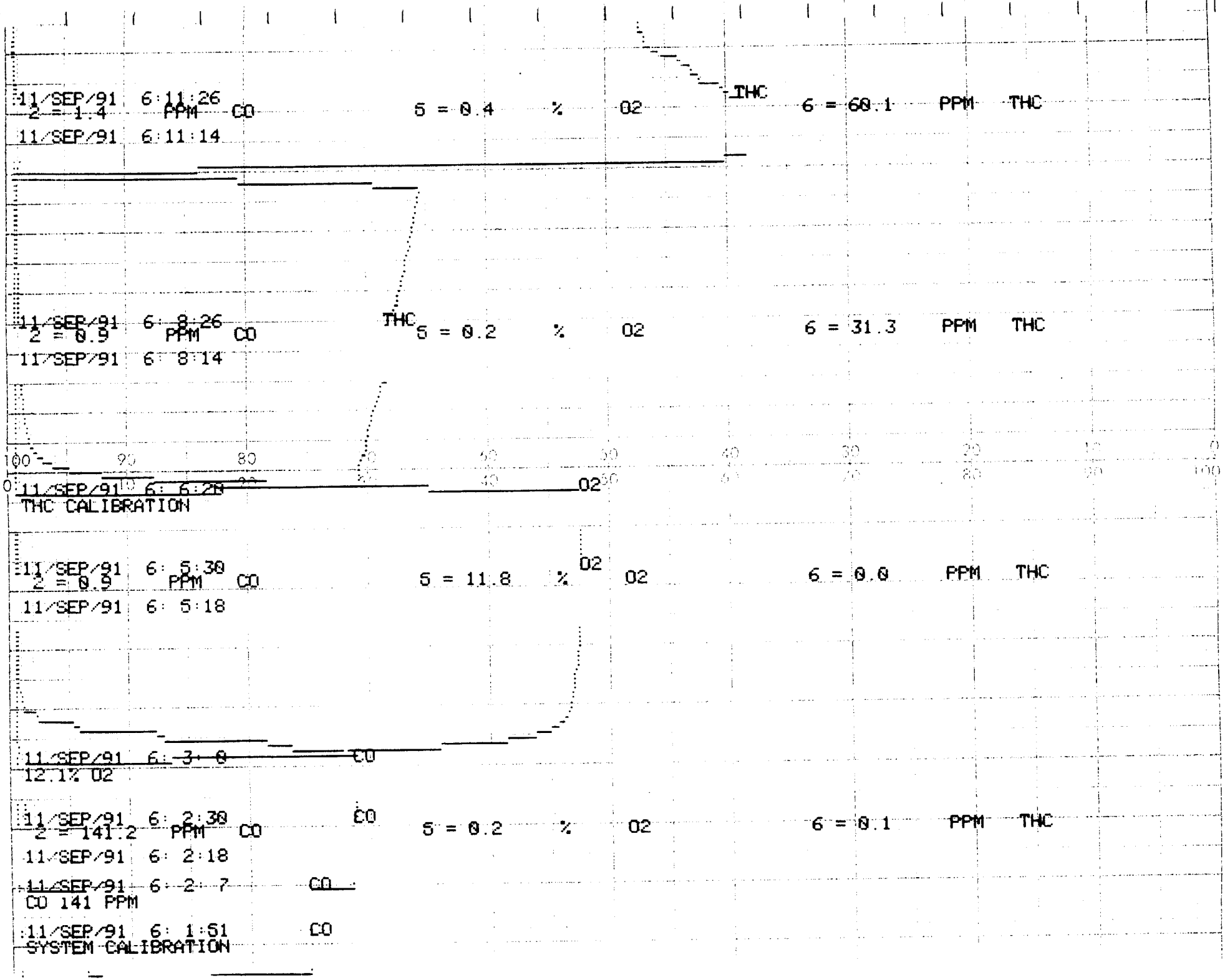
11/SEP/91 5:44:31
2 = 500.0 PPM CO 5 = 11.7 % O2 6 = 0.0 PPM THC
11/SEP/91 5:44:18

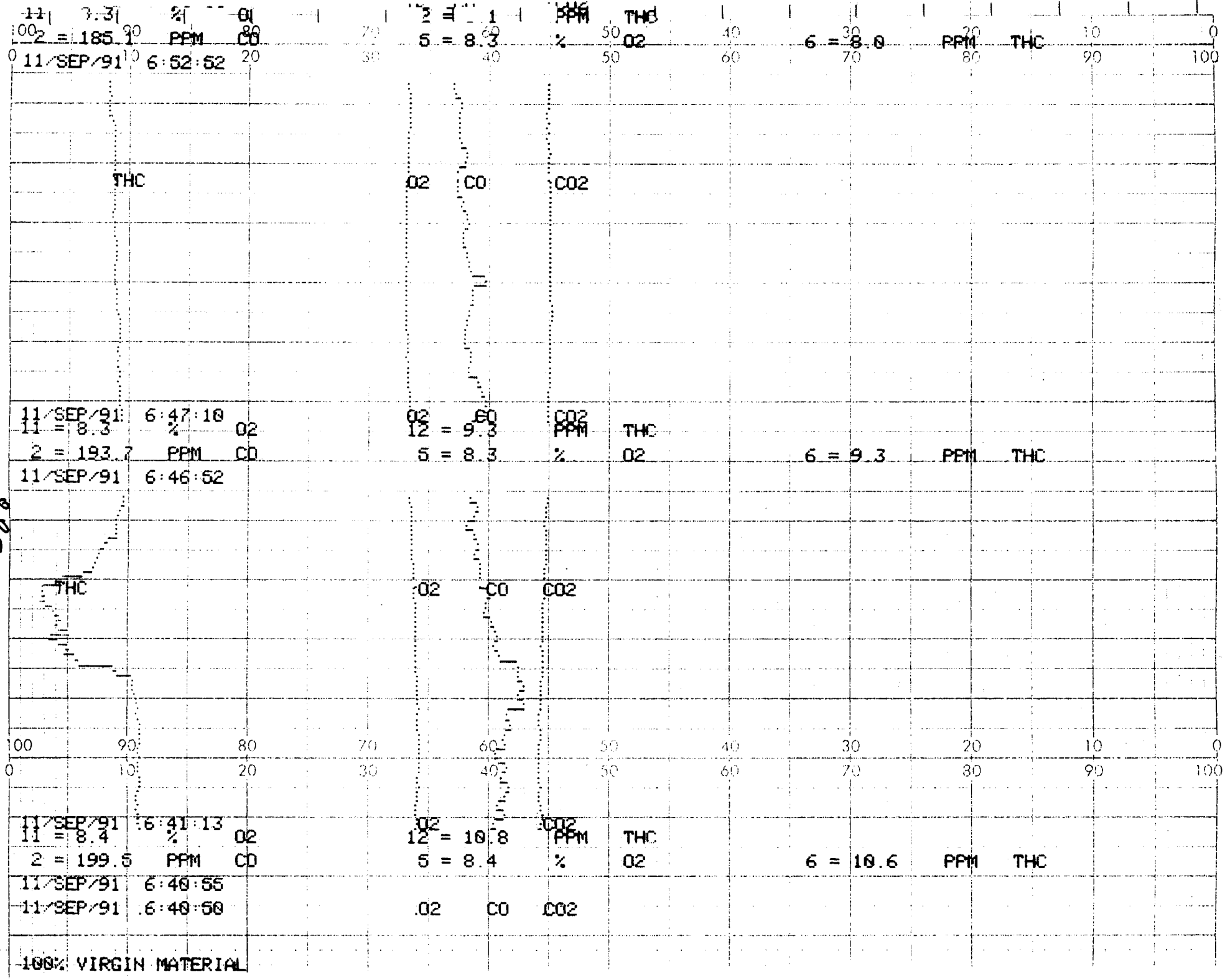
11/SEP/91 5:41:30
2 = 499.8 PPM CO 5 = 13.0 % O2 6 = 0.0 PPM THC
11/SEP/91 5:41:17
11/SEP/91 5:41: 9
O2 12.1%

11/SEP/91 5:38:28
2 = 145.0 PPM CO 5 = 20.5 % O2 6 = 0.0 PPM THC
11/SEP/91 5:38:16

11/SEP/91 5:35:49
2 = 236.4 PPM CO 5 = 20.6 % O2 6 = 0.0 PPM THC
11/SEP/91 5:35:36


11/SEP/91 5:59:29
2 = 499.9 PPM CO
5 = 1.4 % O2
6 = 59.9 PPM THC
CO
11/SEP/91 5:59:17
100 90 80 50 40 30 20 10 0
0 10 20 50 60 70 80 90 100
11/SEP/91 5:56:27
O2
THC
2 = 1.4 PPM CO
5 = 7.6 % O2
6 = 53.8 PPM THC
CO
11/SEP/91 5:56:15
11/SEP/91 5:53:28
O2
2 = 4.3 PPM CO
5 = 6.9 % O2
6 = 1.9 PPM THC
11/SEP/91 5:53:16
11/SEP/91 5:50:30
O2
2 = 499.6 PPM CO
5 = 12.2 % O2
6 = 12.1 PPM THC
CO
11/SEP/91 5:50:18
100 90 80 50 40 30 20 10 0
0 10 20 40 60 70 80 90 100


11/SEP/91 6:11:26
2 = 1.4 PPM CO
5 = 0.4 % O2
THC
6 = 60.1 PPM THC
11/SEP/91 6:11:14
11/SEP/91 6: 8:26
2 = 0.9 PPM CO
THC
5 = 0.2 % O2
6 = 31.3 PPM THC
11/SEP/91 6: 8:14
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
11/SEP/91 6: 6:28
O2
THC CALIBRATION
11/SEP/91 6: 5:30
2 = 0.9 PPM CO
5 = 11.8 % O2
O2
6 = 0.0 PPM THC
11/SEP/91 6: 5:18
11/SEP/91 6: 3: 0
CO
12.1% O2
11/SEP/91 6: 2:30
2 = 141.2 PPM CO
CO
5 = 0.2 % O2
6 = 0.1 PPM THC
11/SEP/91 6: 2:18
11/SEP/91 6: 2: 7
CO
CO 141 PPM
11/SEP/91 6: 1:51
CO
SYSTEM CALIBRATION


2 = 185.1 PPM CO
5 = 8.3 % O2
6 = 8.0 PPM THC
11/SEP/91 6:52:52
THC
O2 CO CO2
11/SEP/91 6:47:10
11 = 8.3 % O2
12 = 9.3 PPM THC
2 = 193.7 PPM CO
5 = 8.3 % O2
6 = 9.3 PPM THC
11/SEP/91 6:46:52
THC
O2 CO CO2
11/SEP/91 6:41:13
11 = 8.4 % O2
12 = 10.8 PPM THC
2 = 199.5 PPM CO
5 = 8.4 % O2
6 = 10.6 PPM THC
11/SEP/91 6:40:55
11/SEP/91 6:40:50
O2 CO CO2
100% VIRGIN MATERIAL

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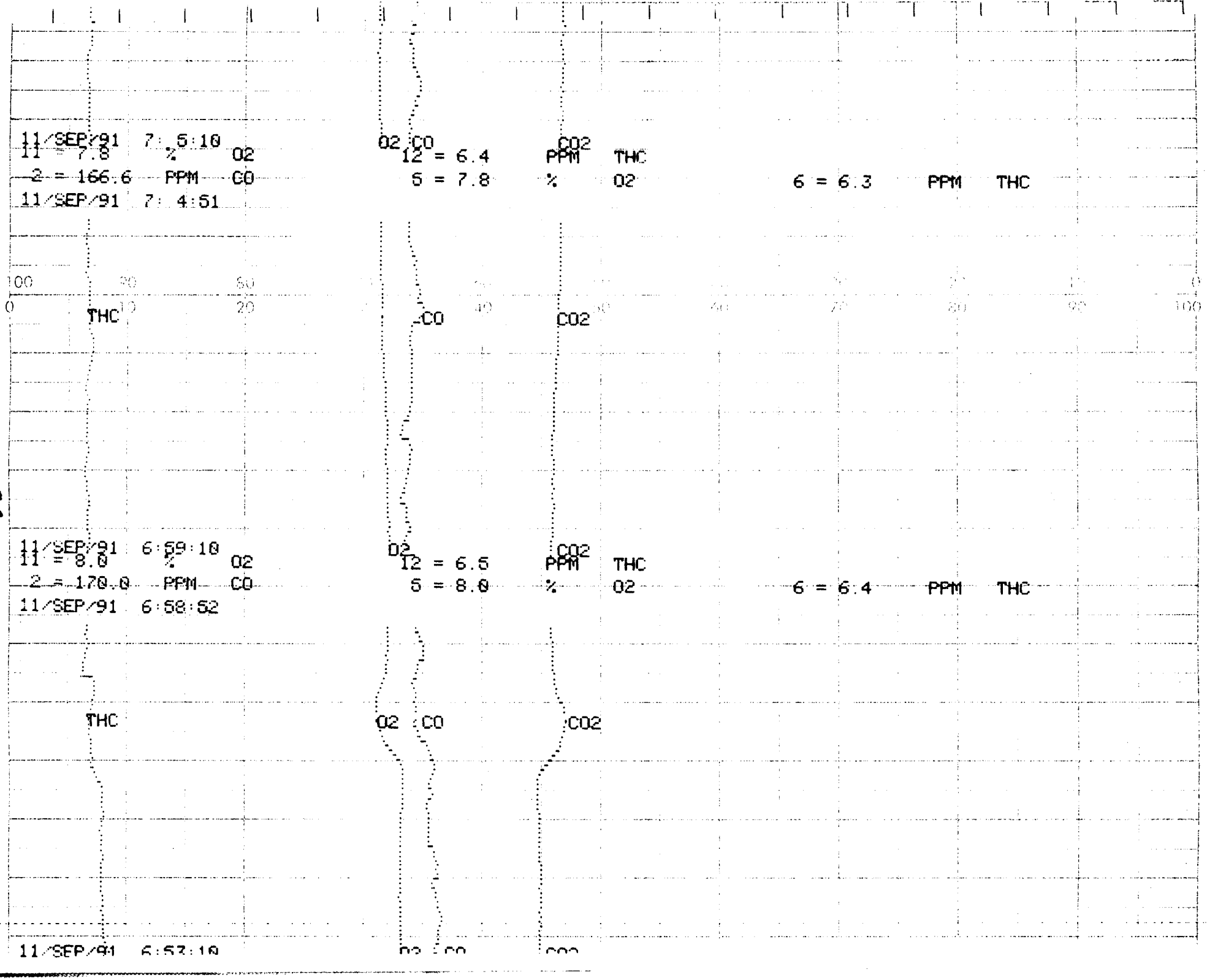
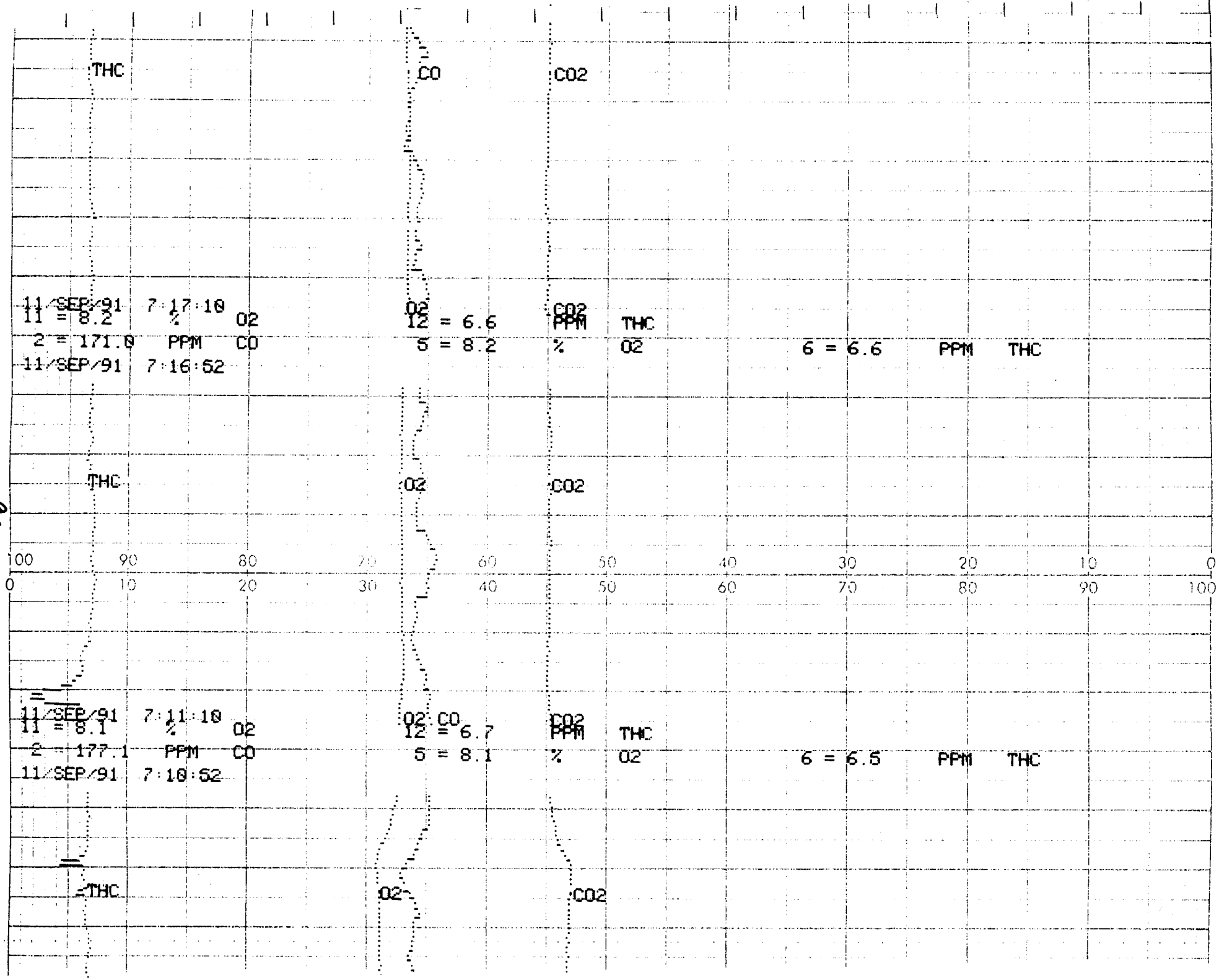
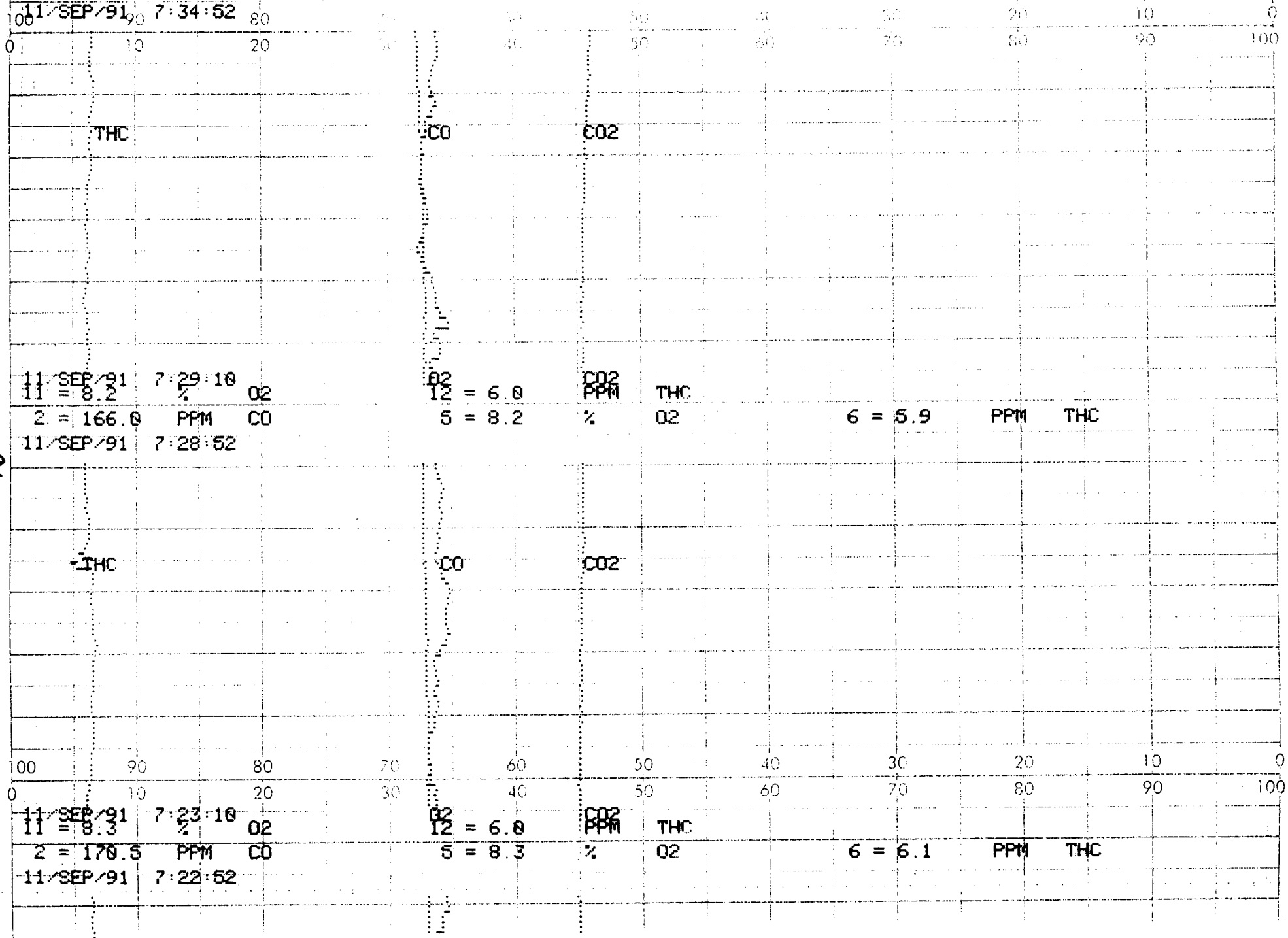

11/SEP/91 7: 5:10
11 = 7.8 % O2
2 = 166.6 PPM CO
11/SEP/91 7: 4:51
O2 CO
12 = 6.4 PPM THC
5 = 7.8 % O2
CO2
6 = 6.3 PPM THC
100 90 80
0 10 20
THC
CO
CO2
11/SEP/91 6:59:10
11 = 8.0 % O2
2 = 170.0 PPM CO
11/SEP/91 6:58:52
O2
12 = 6.5 PPM THC
5 = 8.0 % O2
CO2
6 = 6.4 PPM THC
THC
O2 CO
CO2
11/SEP/91 6:57:10

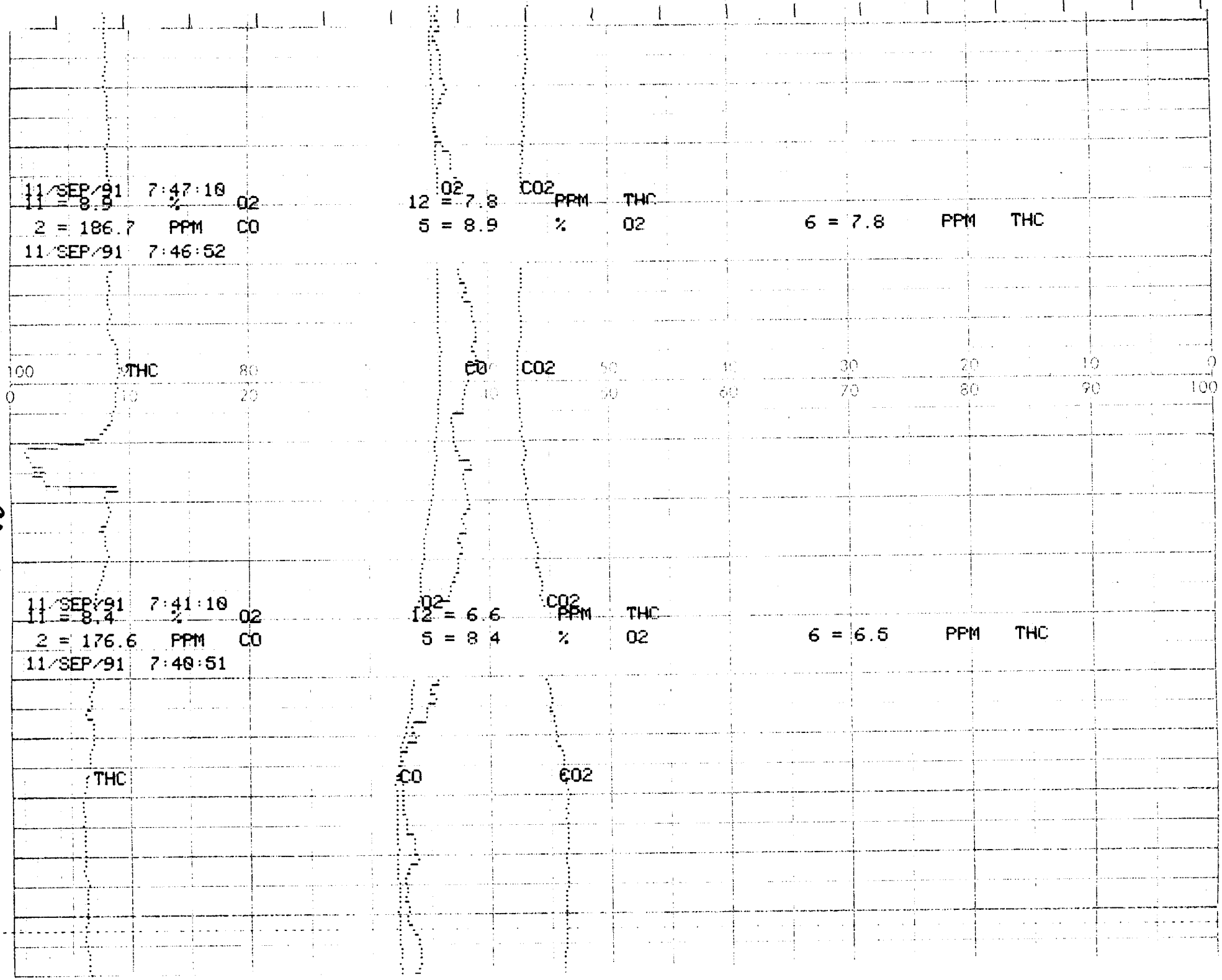

THC
CO
CO2
11/SEP/91 7:17:10
11 = 8.2 % O2
2 = 171.0 PPM CO
11/SEP/91 7:16:52
O2
12 = 6.6 PPM THC
5 = 8.2 % O2
6 = 6.6 PPM THC
THC
O2
CO2
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
11/SEP/91 7:11:10
11 = 8.1 % O2
2 = 177.1 PPM CO
11/SEP/91 7:10:52
O2 CO
12 = 6.7 PPM THC
5 = 8.1 % O2
6 = 6.5 PPM THC
THC
O2
CO2

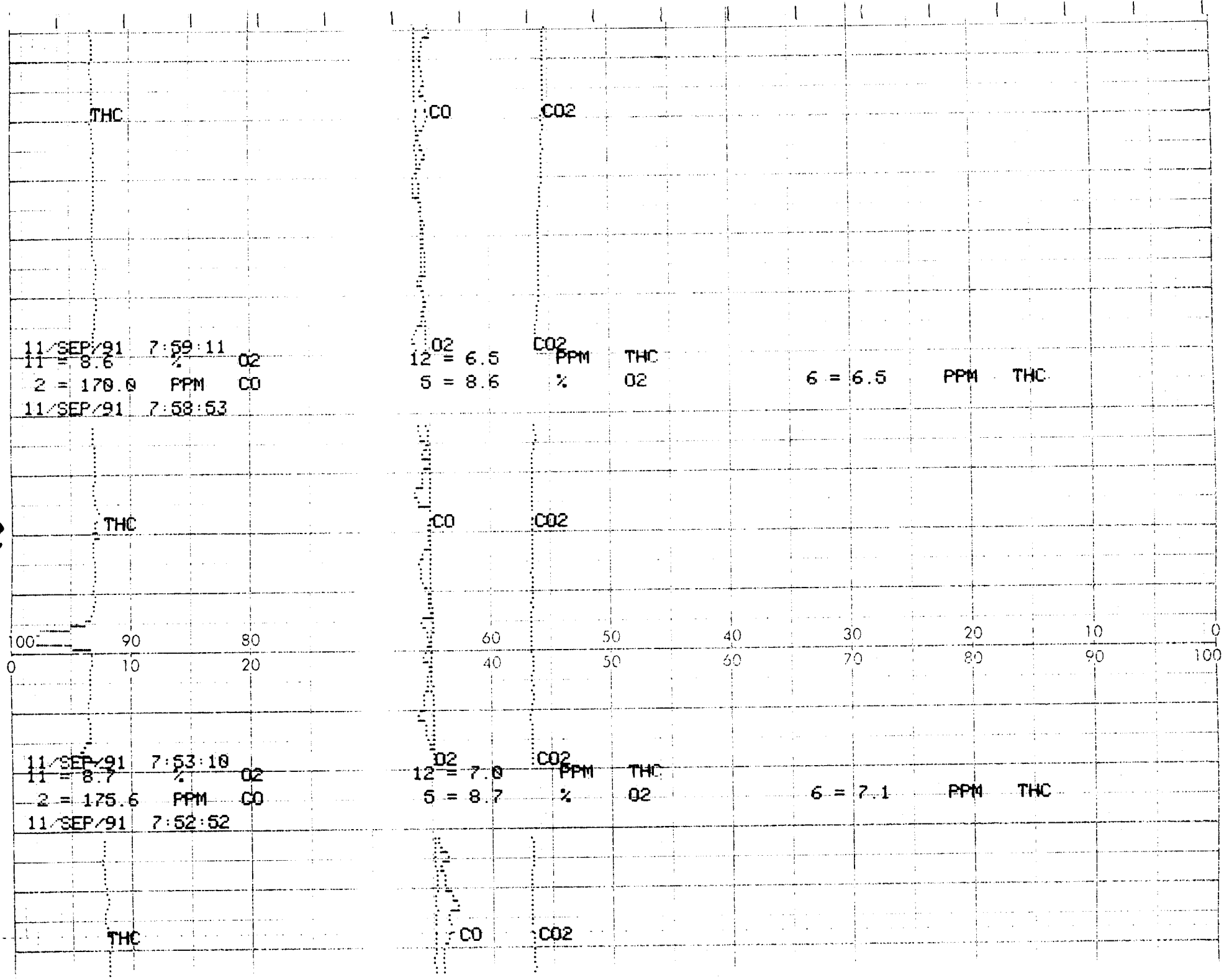
11/SEP/91 7:35:10
11 = 8.0 % O2 O2 12 = 6.1 PPM CO2 THC
2 = 168.8 PPM CO 5 = 8.0 % O2 6 = 6.0 PPM THC
11/SEP/91 7:34:52

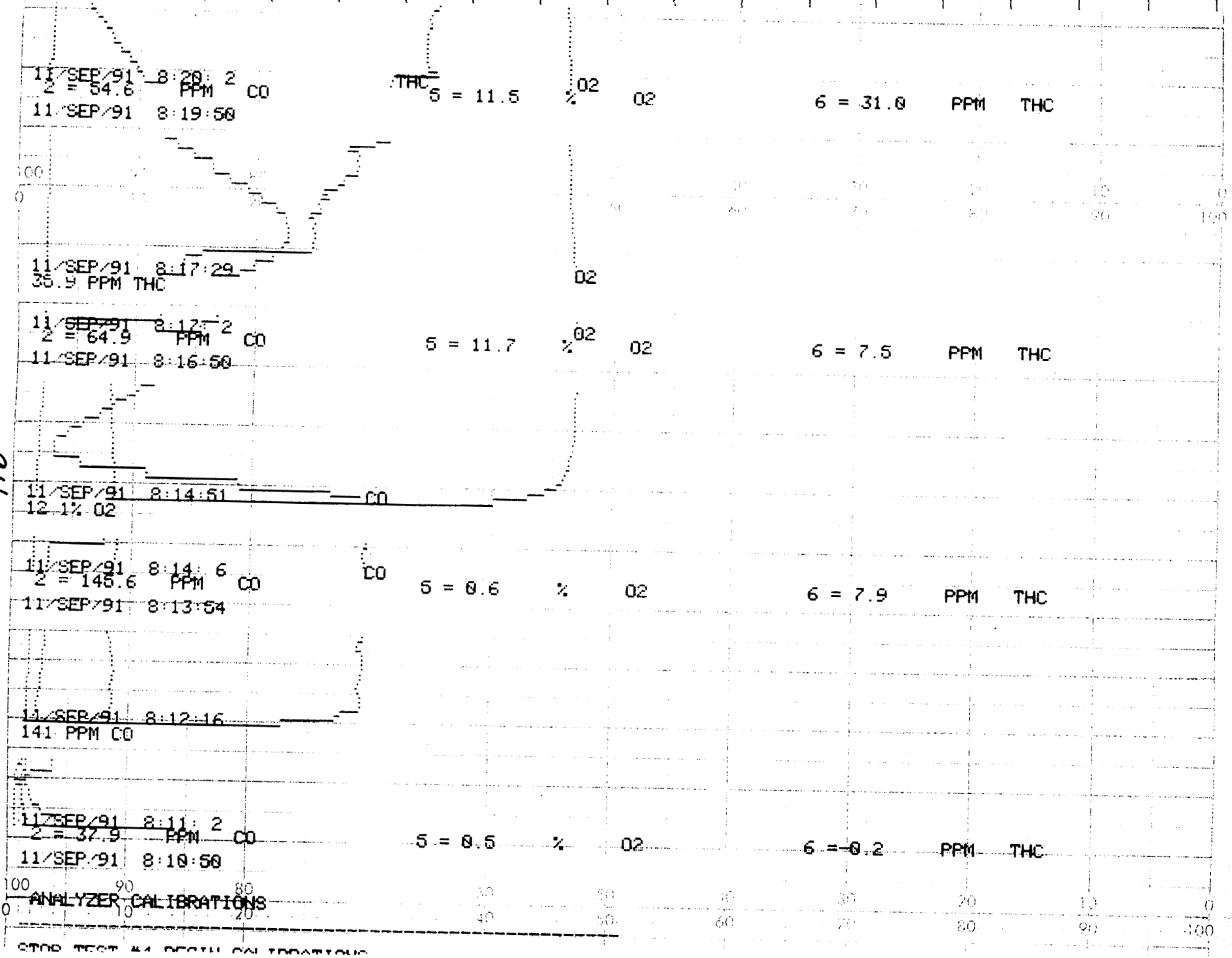


11/SEP/91 7:29:10
11 = 8.2 % O2 O2 12 = 6.0 PPM CO2 THC
2 = 166.0 PPM CO 5 = 8.2 % O2 6 = 5.9 PPM THC
11/SEP/91 7:28:52

11/SEP/91 7:23:10
11 = 8.3 % O2 O2 12 = 6.0 PPM CO2 THC
2 = 170.5 PPM CO 5 = 8.3 % O2 6 = 6.1 PPM THC
11/SEP/91 7:22:52


11/SEP/91 7:47:10
11 = 8.9 % O2
2 = 186.7 PPM CO
11/SEP/91 7:46:52
O2
12 = 7.8 PPM THC
5 = 8.9 % O2
CO2
6 = 7.8 PPM THC
THC
CO
CO2
11/SEP/91 7:41:10
11 = 8.4 % O2
2 = 176.6 PPM CO
11/SEP/91 7:40:51
O2
12 = 6.6 PPM THC
5 = 8.4 % O2
CO2
6 = 6.5 PPM THC
THC
CO
CO2


THC
CO
CO2
11/SEP/91 7:59:11
11 = 8.6 % O2
2 = 170.0 PPM CO
11/SEP/91 7:58:53
O2
12 = 6.5 PPM THC
5 = 8.6 % O2
CO2
6 = 6.5 PPM THC
THC
CO
CO2
100 90 80 60 50 40 30 20 10 0
0 10 20 40 50 60 70 80 90 100
11/SEP/91 7:53:10
11 = 8.7 % O2
2 = 175.6 PPM CO
11/SEP/91 7:52:52
O2
12 = 7.0 PPM THC
5 = 8.7 % O2
CO2
6 = 7.1 PPM THC
THC
CO
CO2



STOP TEST #1 PRETH CALIBRATIONS

11/SEP/91 8:35: 5 O2
THC CALIBRATIONS

11/SEP/91 8:34:34 O2
2 = 1.0 PPM CO 5 = 11.5 % O2 6 = 1.2 PPM THC
11/SEP/91 8:34:22

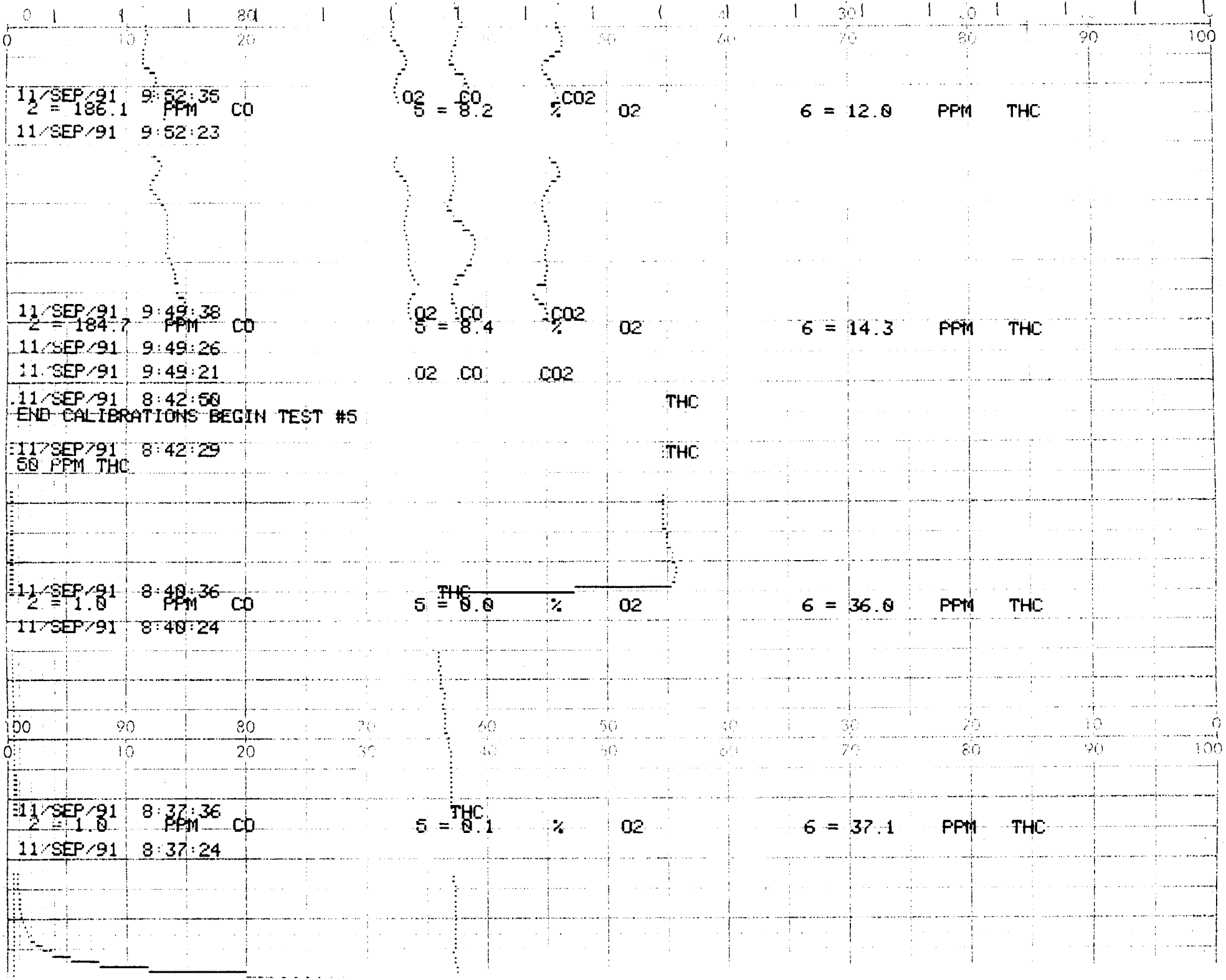
11/SEP/91 8:32: 4 CO
12.1% O2

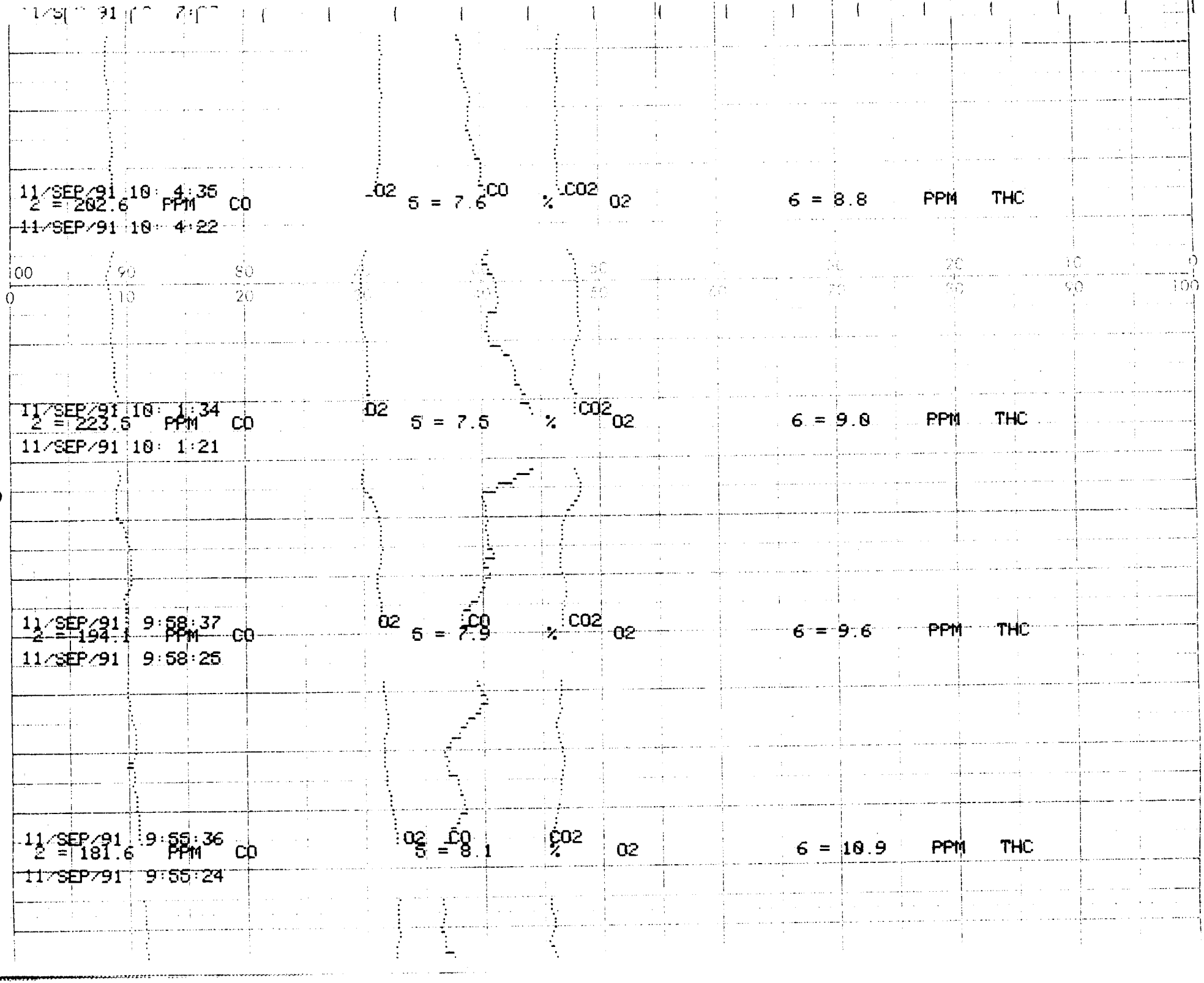
11/SEP/91 8:31:34 CO
2 = 145.4 PPM CO 5 = 0.1 % O2 6 = 1.7 PPM THC
11/SEP/91 8:31:21

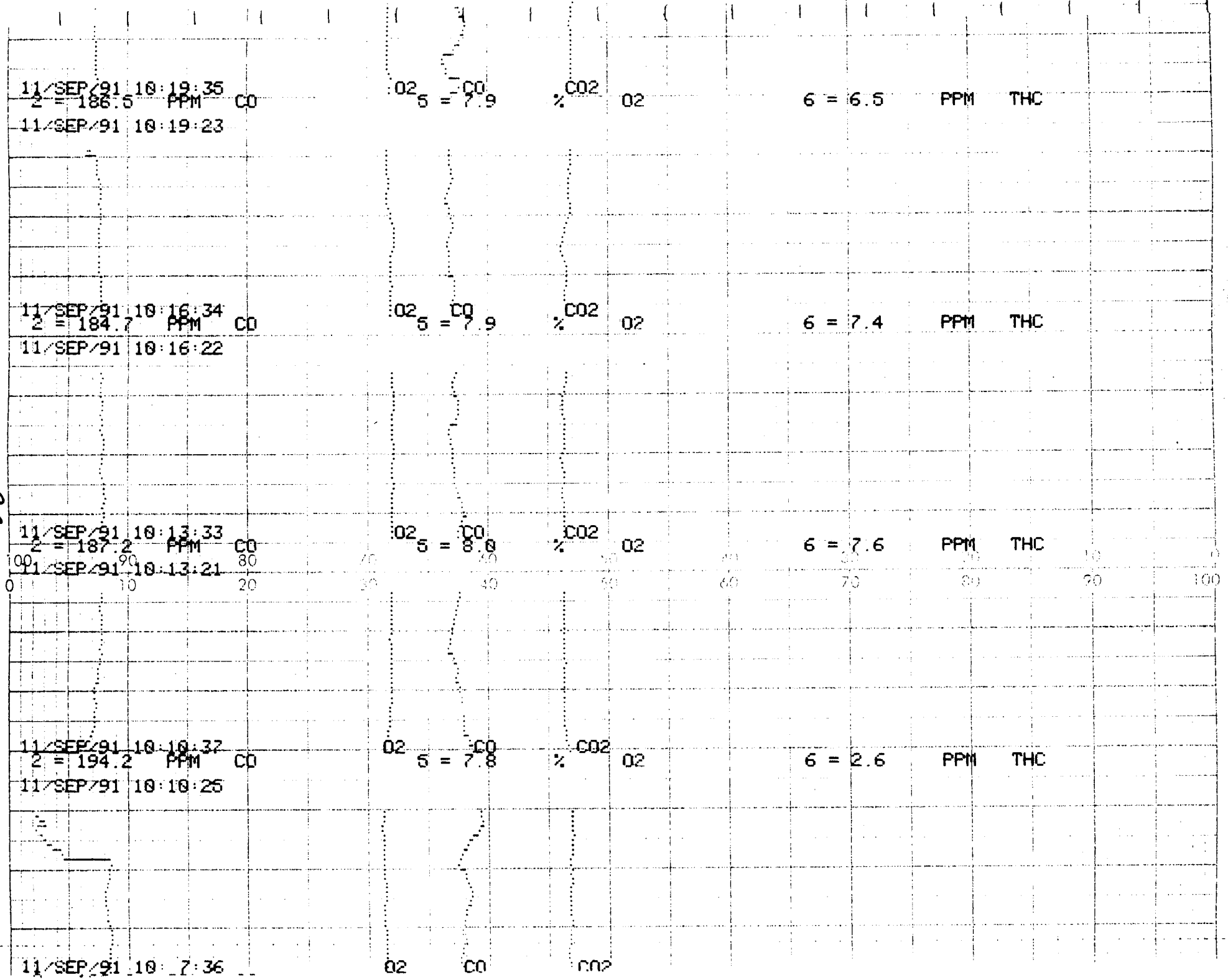
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

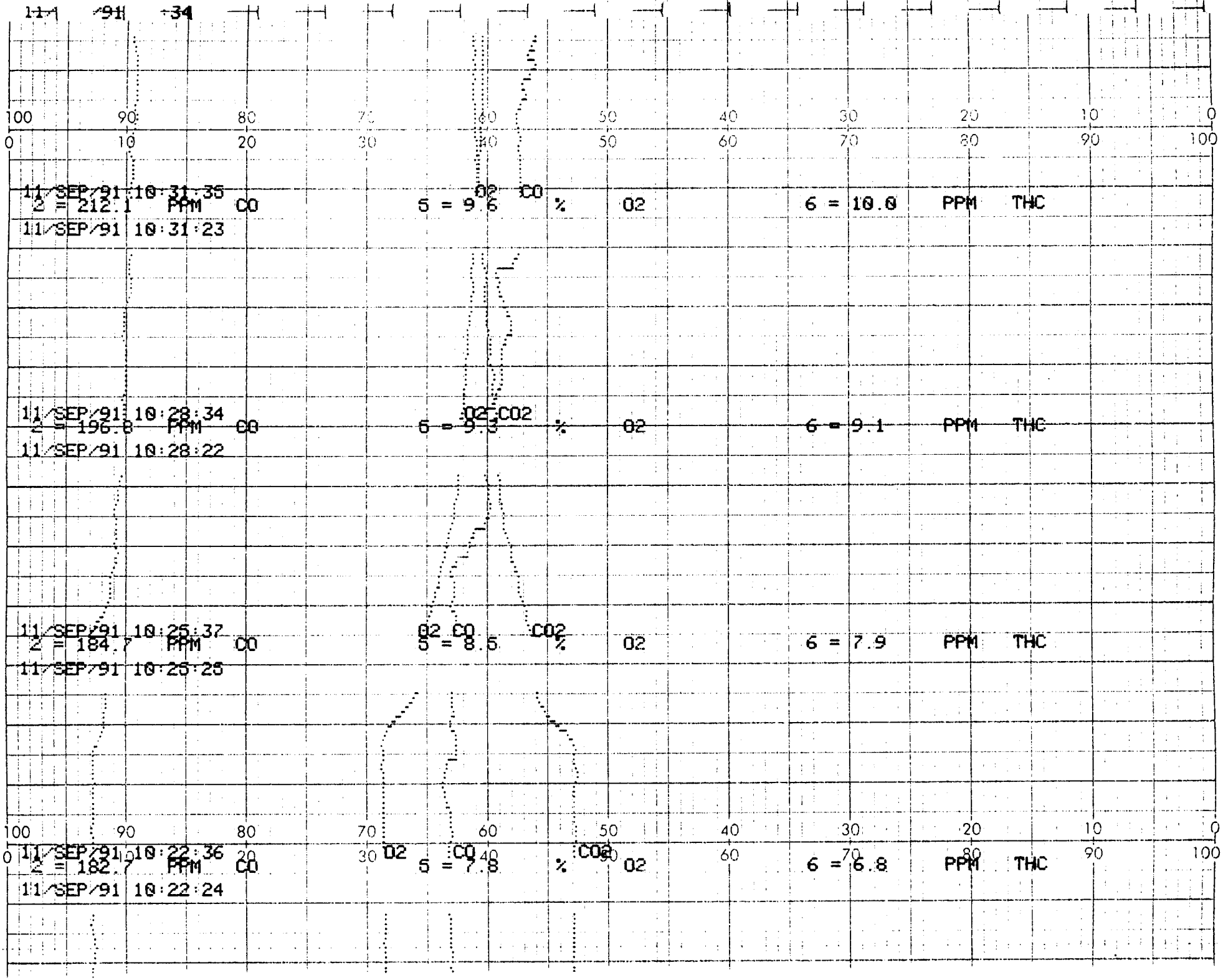
11/SEP/91 8:28:38 CO
2 = 130.1 PPM CO 5 = 0.1 % O2 6 = 1.9 PPM THC
11/SEP/91 8:28:26
11/SEP/91 8:28:20 CO
141 PPM
SYSTEM CALIBRATIONS

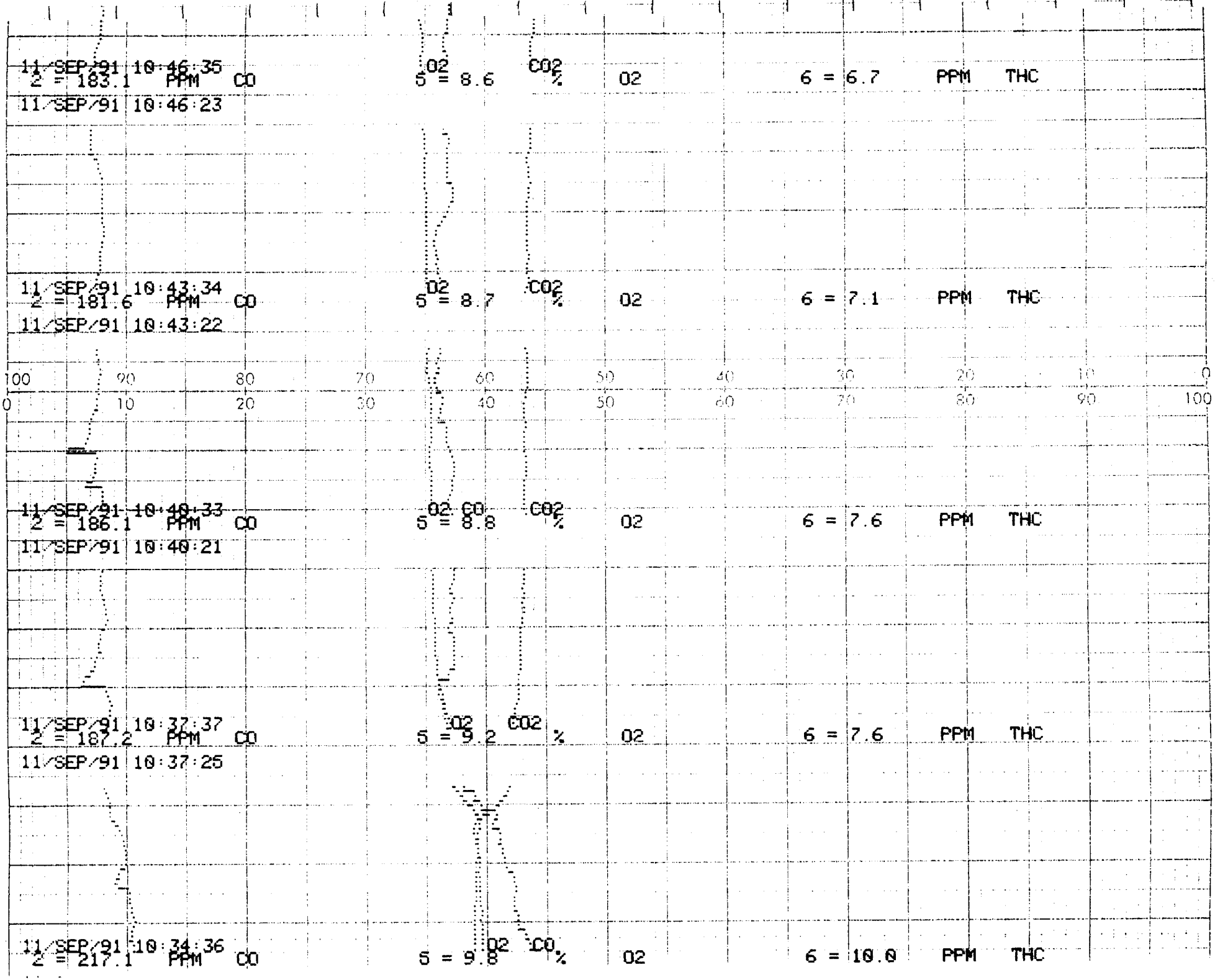
11/SEP/91 8:23: 2 O2 THC
2 = 9.4 PPM CO 5 = 10.9 % O2 6 = 61.9 PPM THC
11/SEP/91 8:22:50


11/SEP/91 9:52:35
2 = 186.1 PPM CO
11/SEP/91 9:52:23
O2 CO CO2
5 = 8.2 % O2
6 = 12.0 PPM THC
11/SEP/91 9:49:38
2 = 184.7 PPM CO
11/SEP/91 9:49:26
11/SEP/91 9:49:21
O2 CO CO2
5 = 8.4 % O2
6 = 14.3 PPM THC
11/SEP/91 8:42:50
THC
END CALIBRATIONS BEGIN TEST #5
11/SEP/91 8:42:29
50 PPM THC
THC
11/SEP/91 8:40:36
2 = 1.0 PPM CO
11/SEP/91 8:40:24
5 = 0.0 % O2
6 = 36.0 PPM THC
11/SEP/91 8:37:36
2 = 1.0 PPM CO
11/SEP/91 8:37:24
THC
5 = 0.1 % O2
6 = 37.1 PPM THC


11/SEP/91 10: 4:35
2 = 202.6 PPM CO
11/SEP/91 10: 4:22
O2 5 = 7.6 CO % CO2 O2
6 = 8.8 PPM THC
11/SEP/91 10: 1:34
2 = 223.5 PPM CO
11/SEP/91 10: 1:21
O2 5 = 7.5 % CO2 O2
6 = 9.0 PPM THC
11/SEP/91 9:58:37
2 = 194.1 PPM CO
11/SEP/91 9:58:25
O2 5 = 7.9 CO % CO2 O2
6 = 9.6 PPM THC
11/SEP/91 9:55:36
2 = 181.6 PPM CO
11/SEP/91 9:55:24
O2 5 = 8.1 CO % CO2 O2
6 = 10.9 PPM THC


11/SEP/91 10:19:35
2 = 186.5 PPM CO
O2 CO CO2
5 = 7.9 % O2
6 = 6.5 PPM THC
11/SEP/91 10:19:23
11/SEP/91 10:16:34
2 = 184.7 PPM CO
O2 CO CO2
5 = 7.9 % O2
6 = 7.4 PPM THC
11/SEP/91 10:16:22
11/SEP/91 10:13:33
2 = 187.2 PPM CO
O2 CO CO2
5 = 8.0 % O2
6 = 7.6 PPM THC
11/SEP/91 10:13:21
11/SEP/91 10:10:37
2 = 194.2 PPM CO
O2 CO CO2
5 = 7.8 % O2
6 = 2.6 PPM THC
11/SEP/91 10:10:25
11/SEP/91 10: 7:36
O2 CO CO2


11/91 34
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
11/SEP/91 10:31:35
2 = 212.1 PPM CO
O2 CO
5 = 9.6 % O2
6 = 10.0 PPM THC
11/SEP/91 10:31:23
11/SEP/91 10:28:34
2 = 196.8 PPM CO
O2 CO2
5 = 9.3 % O2
6 = 9.1 PPM THC
11/SEP/91 10:28:22
11/SEP/91 10:25:37
2 = 184.7 PPM CO
O2 CO CO2
5 = 8.5 % O2
6 = 7.9 PPM THC
11/SEP/91 10:25:25
11/SEP/91 10:22:36
2 = 182.7 PPM CO
O2 CO CO2
5 = 7.8 % O2
6 = 6.8 PPM THC
11/SEP/91 10:22:24


11/SEP/91 10:46:35
2 = 183.1 PPM CO
5 = 8.6 % O2 CO2 O2
6 = 6.7 PPM THC
11/SEP/91 10:46:23
11/SEP/91 10:43:34
2 = 181.6 PPM CO
5 = 8.7 % O2 CO2 O2
6 = 7.1 PPM THC
11/SEP/91 10:43:22
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
11/SEP/91 10:40:33
2 = 186.1 PPM CO
5 = 8.8 % O2 CO2 CO
6 = 7.6 PPM THC
11/SEP/91 10:40:21
11/SEP/91 10:37:37
2 = 187.2 PPM CO
5 = 9.2 % O2 CO2
6 = 7.6 PPM THC
11/SEP/91 10:37:25
11/SEP/91 10:34:36
2 = 217.1 PPM CO
5 = 9.8 % O2 CO O2
6 = 10.0 PPM THC

11/SEP/91 10:57:30
141 PPM CO

11/SEP/91 10:55:56
ZERO ZIR

11/SEP/91 10:55:35
141 PPM CO

11/SEP/91 10:55:13 CO
ZERO AIR

11/SEP/91 10:54:50 O2 CO

11/SEP/91 10:54:27 O2 CO CO2
2 = 180.1 PPM CO 5 = 8.4 % O2 6 = 6.3 PPM THC

11/SEP/91 10:54:16
START CALIBRATIONS
2 = 180.1 PPM CO 5 = 8.4 % O2 6 = 6.8 PPM THC

11/SEP/91 10:53:56

11/SEP/91 10:52:38 O2 CO CO2
2 = 189.2 PPM CO 5 = 8.3 % O2 6 = 6.4 PPM THC

11/SEP/91 10:52:25

11/SEP/91 10:49:36 O2 CO CO2
2 = 186.1 PPM CO 5 = 8.4 % O2 6 = 7.4 PPM THC

11/SEP/91 10:49:24

11/SEP/91 THC
141 PPM CO

11/SEP/91 11: 8:38 THC
2 = 1.0 PPM CO 5 = 0.0 % O2 6 = 48.1 PPM THC
11/SEP/91 11: 8:25
START INSTRUMENT CALIBRATIONS

11/SEP/91 11: 7:13 THC
50 PPM THC

11/SEP/91 11: 5:24 THC
2 = 1.5 PPM CO 5 = 0.1 % O2 6 = 44.8 PPM THC
11/SEP/91 11: 5:12

11/SEP/91 11: 5: 1 THC
LENGTH LEFT ON PRESENT ROLL IS 24 FEET 2 INCH(ES)
11/SEP/91 11: 4:47 COLD JUNCTION IS 89.6 F ALARM TYPES LOW/HIGH

11/SEP/91 11: 2:14 O2

11/SEP/91 11: 2: 1 O2
2 = 1.5 PPM CO 5 = 11.5 % O2 6 = 2.0 PPM THC
11/SEP/91 11: 1:49

11/SEP/91 11: 0:19 CO
12.1% O2

11/SEP/91 10:59: 0 CO
2 = 143.4 PPM CO 5 = 0.1 % O2 6 = 1.5 PPM THC
11/SEP/91 10:58:48

11/SEP/91 11:31:28
2 = 167.6 PPM CO 5 = 8.8 % O2 6 = 7.4 PPM THC
11/SEP/91 11:31:16

TEST #6 VIRGIN MATERIAL
END CALIBRATIONS BEGIN TEST
11/SEP/91 11:19: 5

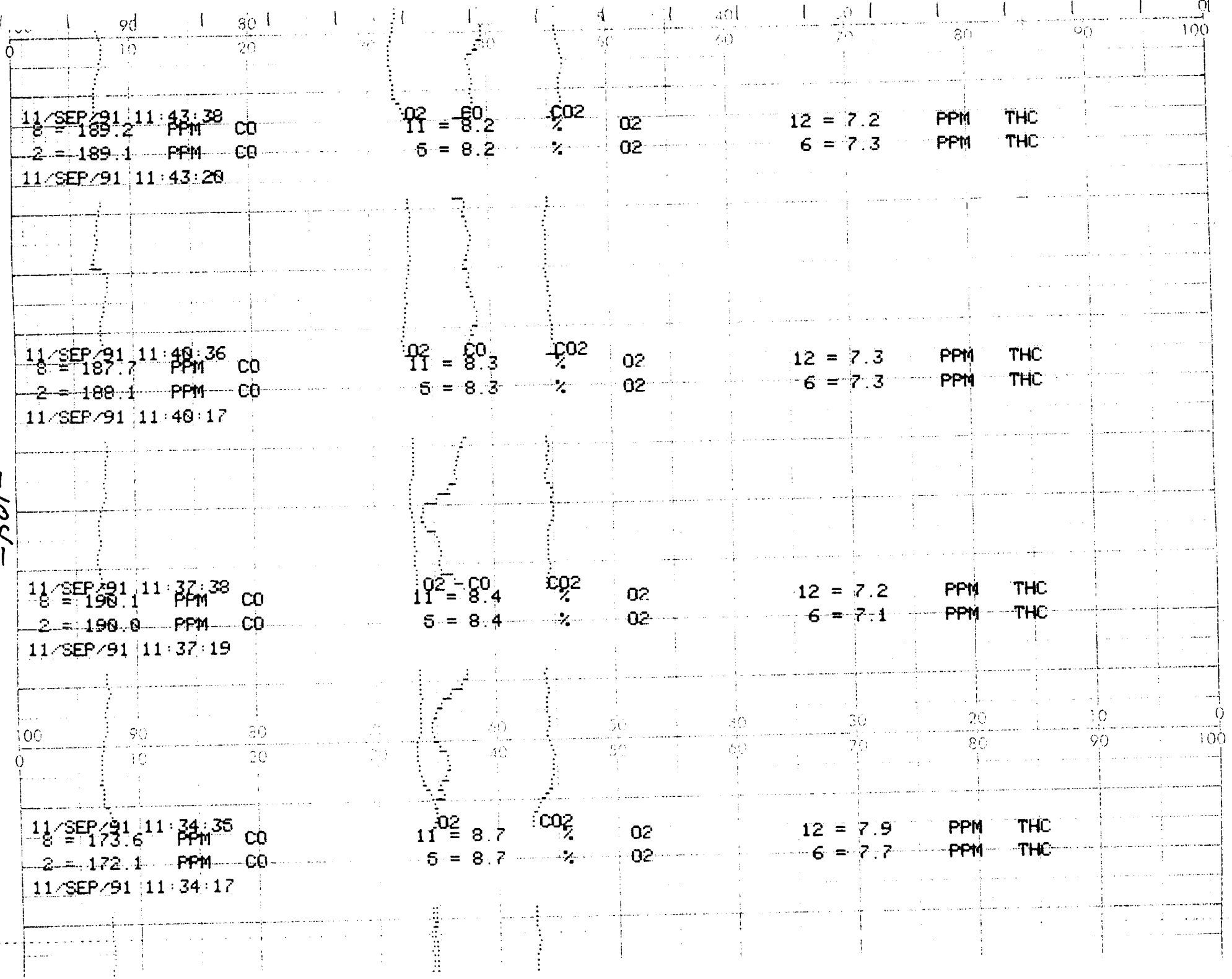
11/SEP/91 11:17:28
2 = 158.1 PPM CO 5 = 11.2 % O2 6 = 34.6 PPM THC
11/SEP/91 11:17:16

11/SEP/91 11:14:59
THC CALIBRATIONS

11/SEP/91 11:14:43
2 = 500.0 PPM CO 5 = 11.6 % O2 6 = 27.8 PPM THC
11/SEP/91 11:14:14

11/SEP/91 11:13: 1
12.1% O2

11/SEP/91 11:11:26
2 = 148.5 PPM CO 5 = 0.3 % O2 6 = 39.6 PPM THC
11/SEP/91 11:11:12


11/SEP/91 11:43:38
8 = 189.2 PPM CO
2 = 189.1 PPM CO
11/SEP/91 11:43:20
O2 CO CO2
11 = 8.2 % O2
5 = 8.2 % O2
12 = 7.2 PPM THC
6 = 7.3 PPM THC
11/SEP/91 11:40:36
8 = 187.7 PPM CO
2 = 188.1 PPM CO
11/SEP/91 11:40:17
O2 CO CO2
11 = 8.3 % O2
5 = 8.3 % O2
12 = 7.3 PPM THC
6 = 7.3 PPM THC
11/SEP/91 11:37:38
8 = 190.1 PPM CO
2 = 190.0 PPM CO
11/SEP/91 11:37:19
O2 CO CO2
11 = 8.4 % O2
5 = 8.4 % O2
12 = 7.2 PPM THC
6 = 7.1 PPM THC
11/SEP/91 11:34:35
8 = 173.6 PPM CO
2 = 172.1 PPM CO
11/SEP/91 11:34:17
O2 CO2
11 = 8.7 % O2
5 = 8.7 % O2
12 = 7.9 PPM THC
6 = 7.7 PPM THC

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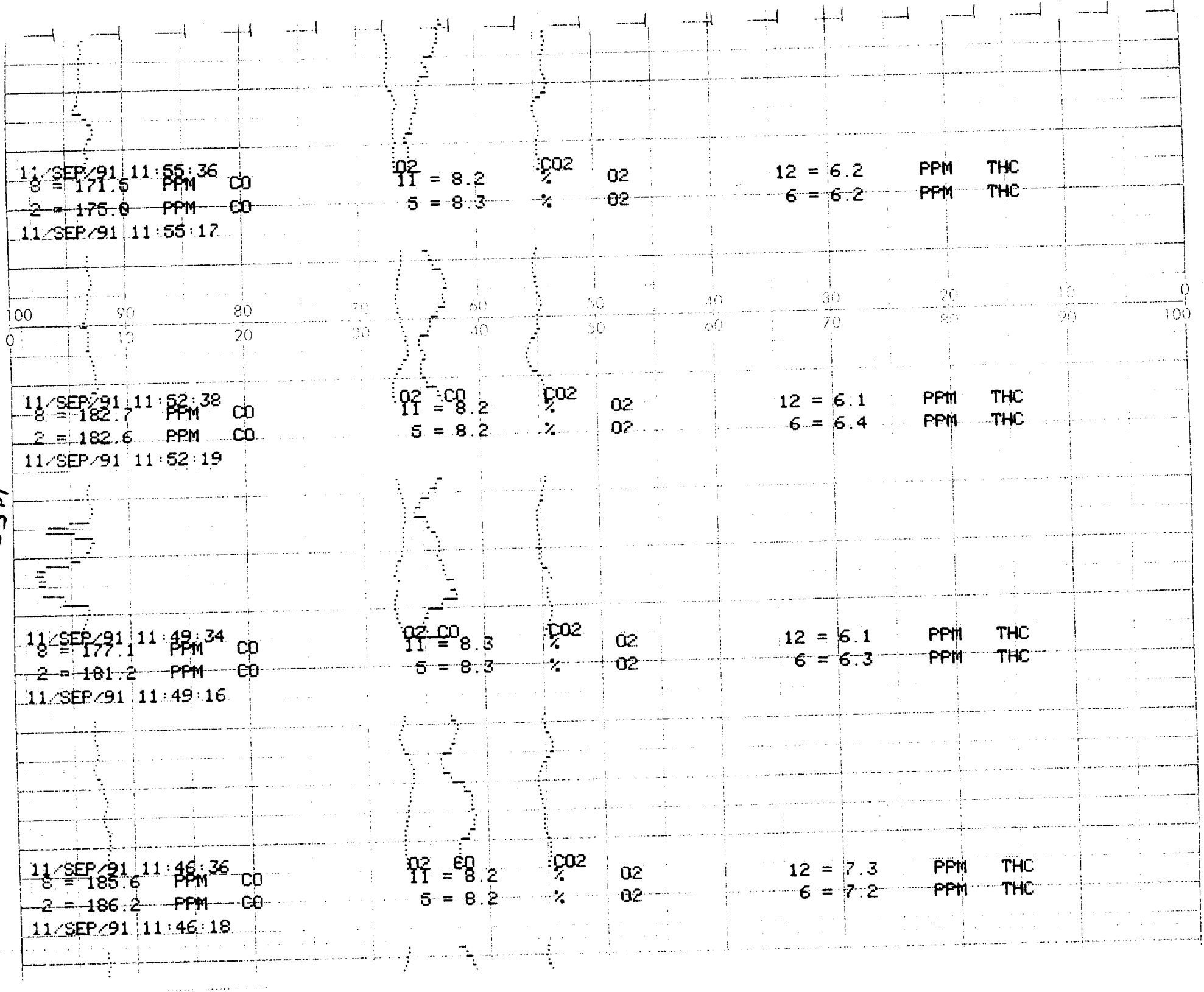
11/SEP/91 11:55:36
8 = 171.5 PPM CO
2 = 175.0 PPM CO
11/SEP/91 11:55:17
O2
11 = 8.2
5 = 8.3
CO2
%
O2
%
O2
12 = 6.2 PPM THC
6 = 6.2 PPM THC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
11/SEP/91 11:52:38
8 = 182.7 PPM CO
2 = 182.6 PPM CO
11/SEP/91 11:52:19
O2 CO
11 = 8.2
5 = 8.2
CO2
%
O2
%
O2
12 = 6.1 PPM THC
6 = 6.4 PPM THC
11/SEP/91 11:49:34
8 = 177.1 PPM CO
2 = 181.2 PPM CO
11/SEP/91 11:49:16
O2 CO
11 = 8.3
5 = 8.3
CO2
%
O2
%
O2
12 = 6.1 PPM THC
6 = 6.3 PPM THC
11/SEP/91 11:46:36
8 = 185.6 PPM CO
2 = 186.2 PPM CO
11/SEP/91 11:46:18
O2 CO
11 = 8.2
5 = 8.2
CO2
%
O2
%
O2
12 = 7.3 PPM THC
6 = 7.2 PPM THC

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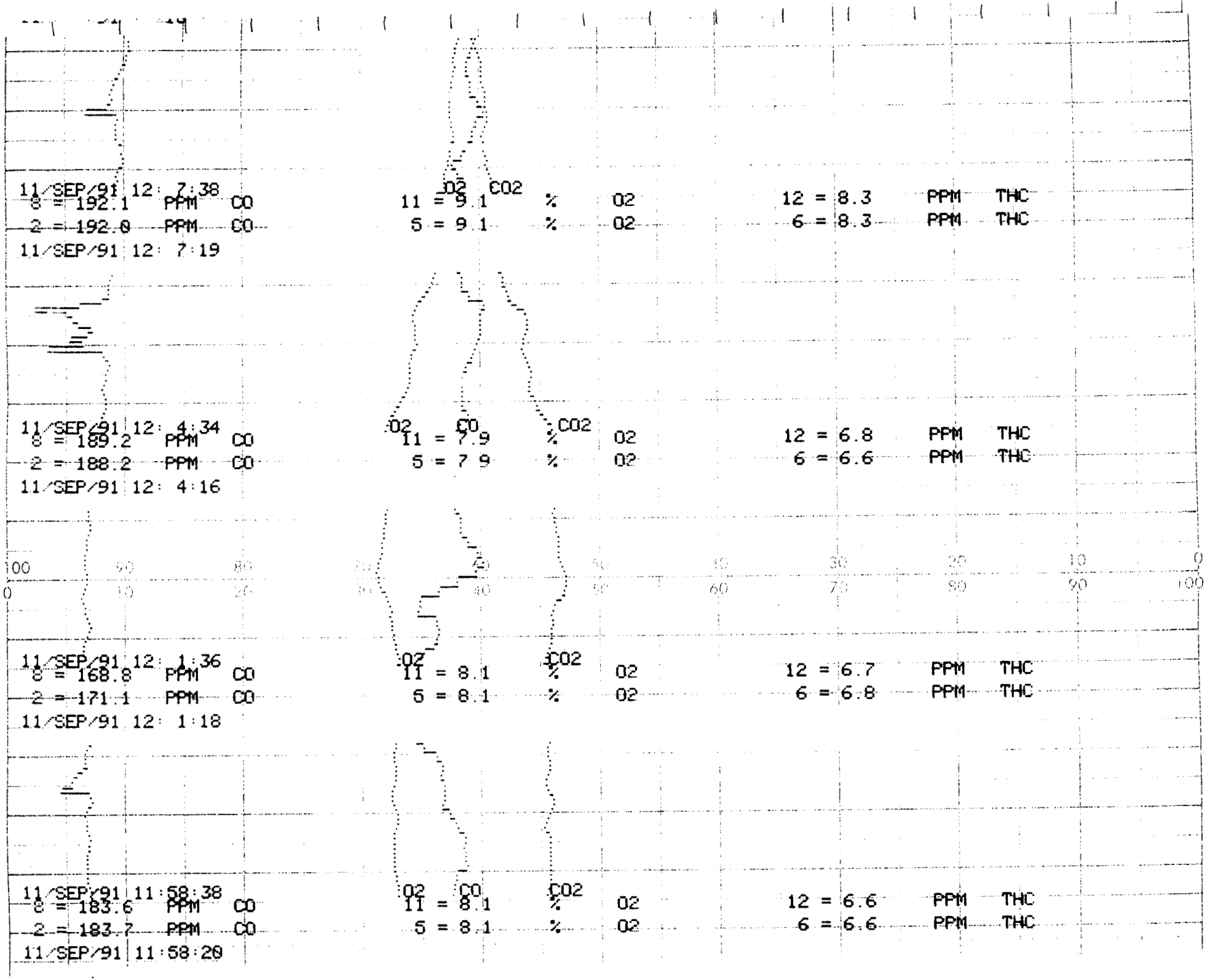

11/SEP/91 12: 7:38
8 = 192.1 PPM CO
2 = 192.0 PPM CO
11/SEP/91 12: 7:19
O2 CO2
11 = 9.1 % O2
5 = 9.1 % O2
12 = 8.3 PPM THC
6 = 8.3 PPM THC
11/SEP/91 12: 4:34
8 = 189.2 PPM CO
2 = 188.2 PPM CO
11/SEP/91 12: 4:16
O2 CO CO2
11 = 7.9 % O2
5 = 7.9 % O2
12 = 6.8 PPM THC
6 = 6.6 PPM THC
11/SEP/91 12: 1:36
8 = 168.8 PPM CO
2 = 171.1 PPM CO
11/SEP/91 12: 1:18
O2 CO2
11 = 8.1 % O2
5 = 8.1 % O2
12 = 6.7 PPM THC
6 = 6.8 PPM THC
11/SEP/91 11:58:38
8 = 183.6 PPM CO
2 = 183.7 PPM CO
11/SEP/91 11:58:20
O2 CO CO2
11 = 8.1 % O2
5 = 8.1 % O2
12 = 6.6 PPM THC
6 = 6.6 PPM THC

11/SEP/91 12:22:19

11/SEP/91 12:19:34
8 = 174.6 PPM CO
2 = 176.4 PPM CO
11/SEP/91 12:19:16

O2 CO2
11 = 9.4 % O2
5 = 9.4 % O2

12 = 8.0 PPM THC
6 = 8.2 PPM THC

11/SEP/91 12:16:37
8 = 185.8 PPM CO
2 = 186.3 PPM CO
11/SEP/91 12:16:18

O2
11 = 9.6 % O2
5 = 9.6 % O2

12 = 10.8 PPM THC
6 = 10.7 PPM THC

11/SEP/91 12:13:38
8 = 199.6 PPM CO
2 = 199.5 PPM CO
11/SEP/91 12:13:20

O2
11 = 9.5 % O2
5 = 9.5 % O2

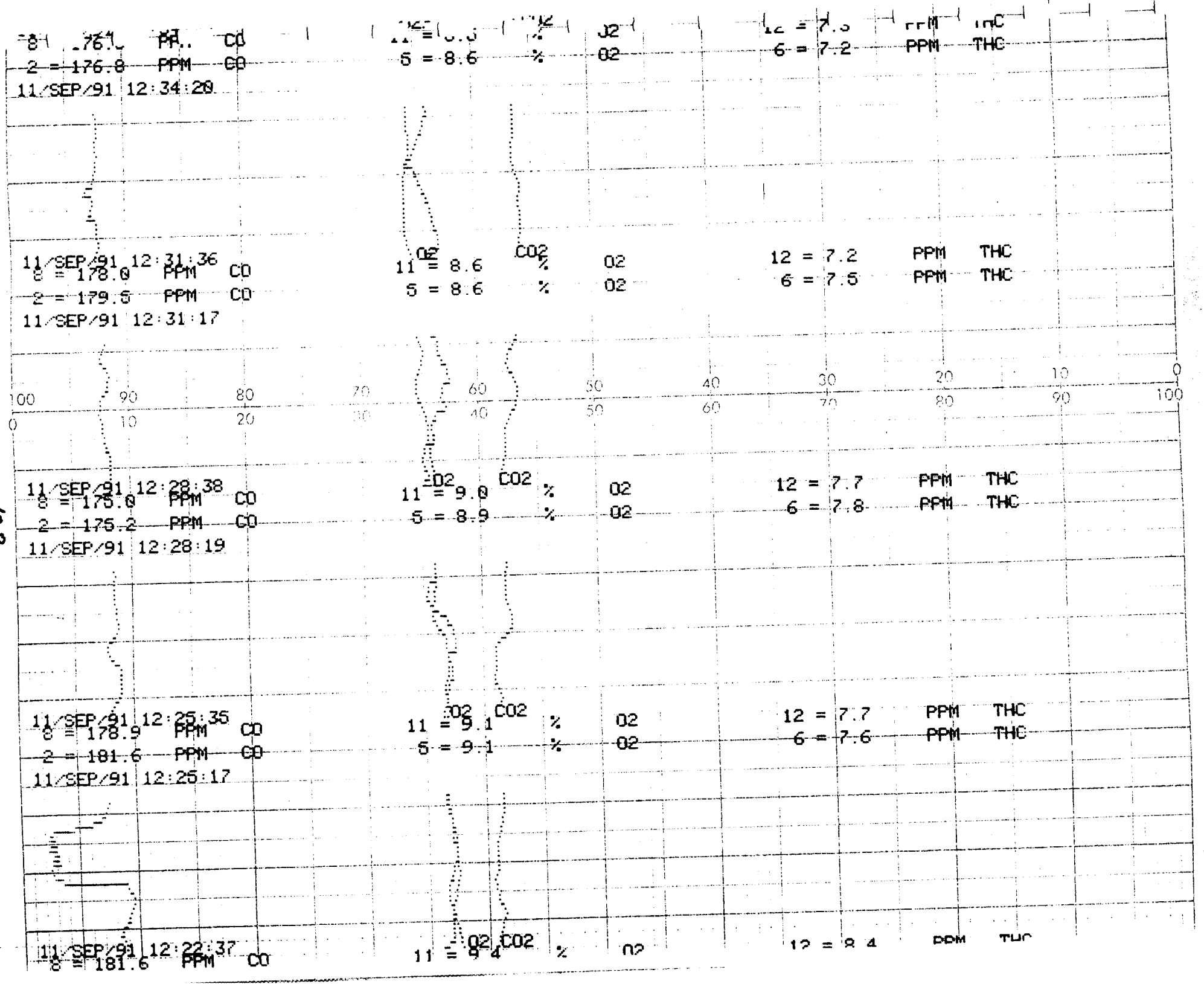
12 = 9.2 PPM THC
6 = 9.3 PPM THC

11/SEP/91 12:10:36
8 = 199.4 PPM CO
2 = 197.1 PPM CO
11/SEP/91 12:10:17

O2 CO
11 = 9.5 % O2
5 = 9.6 % O2

12 = 9.5 PPM THC
6 = 9.6 PPM THC

CHART NO. 414446



8 = 176.0 PPM CO
2 = 176.8 PPM CO
11/SEP/91 12:34:20
5 = 8.6 % O2
6 = 7.2 PPM THC
11/SEP/91 12:31:36
8 = 178.0 PPM CO
2 = 179.5 PPM CO
11/SEP/91 12:31:17
O2 CO2
11 = 8.6 % O2
5 = 8.6 % O2
12 = 7.2 PPM THC
6 = 7.5 PPM THC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
11/SEP/91 12:28:38
8 = 175.0 PPM CO
2 = 175.2 PPM CO
11/SEP/91 12:28:19
O2 CO2
11 = 9.0 % O2
5 = 8.9 % O2
12 = 7.7 PPM THC
6 = 7.8 PPM THC
11/SEP/91 12:25:35
8 = 178.9 PPM CO
2 = 181.6 PPM CO
11/SEP/91 12:25:17
O2 CO2
11 = 9.1 % O2
5 = 9.1 % O2
12 = 7.7 PPM THC
6 = 7.6 PPM THC
11/SEP/91 12:22:37
8 = 181.6 PPM CO
O2 CO2
11 = 9.4 % O2
12 = 8.4 PPM THC

11/SEP/91 12:45:12

11/SEP/91 12:41:29
8 = 38.4 PPM CO
2 = 38.0 PPM CO
11/SEP/91 12:41:11

11 = 1.9 % O2
5 = 3.3 % O2

12 = 1.0 PPM THC
6 = 0.9 PPM THC

11/SEP/91 12:40:59
141 PPM CO

O2

11/SEP/91 12:40:39
8 = 1.0 PPM CO
2 = 1.0 PPM CO
11/SEP/91 12:40:20

O2

11 = 11.8 % O2
5 = 11.8 % O2

12 = 1.1 PPM THC
6 = 1.1 PPM THC

11/SEP/91 12:39:51
12.1% O2

O2

11/SEP/91 12:37:35
8 = 11.9 PPM CO
2 = 15.9 PPM CO
11/SEP/91 12:37:17

11 = 11.4 % O2
5 = 11.4 % O2

12 = 1.2 PPM THC
6 = 1.2 PPM THC

11/SEP/91 12:36:34
END TEST #6 BEGIN SYSTEM CALIBRATIONS

O2 CO2

11/SEP/91 12:36:53
END TEST #6 BEGIN SYSTEM CALIBRATIONS

CO CO2

11/SEP/91 12:34:20

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CHART NO. 414446

11/SEP/91 12:56:22
2 = 9.4 PPM CO
5 = 11.9 % O2
11/SEP/91 12:56:10
O2
6 = 0.9 PPM THC

11/SEP/91 12:54:18
12.1% O2
CO
O2

11/SEP/91 12:53:27
2 = 147.1 PPM CO
CO
5 = 18.5 % O2
O2
6 = 1.6 PPM THC
11/SEP/91 12:53:15
11/SEP/91 12:53: 9
CO
O2

11/SEP/91 12:51:31
141 PPM CO
O2

11/SEP/91 12:50:55
START ANALYZER CALIBRATIONS
O2

11/SEP/91 12:49:56
8 = 1.9 PPM CO
11 = 0.1 % O2
12 = 3.2 PPM THC
2 = 1.9 PPM CO
5 = 0.1 % O2
6 = 3.6 PPM THC
11/SEP/91 12:49:15

11/SEP/91 12:46:38
THC CALIBRATIONS
THC

11/SEP/91 12:45:30
8 = 146.0 PPM CO
CO
11 = 0.1 % O2

Aztec (Virgin)

YSC

9-11-91

CHECK for CYCLONIC FLOW

METHOD 1, Section 2.4

Start Test 4

TRAVERSE POINT	ANGLE where Δ p=0
A-1	213
2	213
3	213
4	214
5	213
6	213
7	213
8	213
9	213
10	213
11	212
12	210
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p=0
B-1	213
2	213
3	213
4	213
5	213
6	213
7	213
8	213
9	213
10	213
11	212
12	211
AVERAGE	213

YSC

PLANT Wynton
DATE 9-11-91
SAMPLING LOCATION Aztec
SAMPLE TYPE Moisture
RUN NUMBER 4
OPERATOR JVM
AMBIENT TEMPERATURE 68°F
BAROMETRIC PRESSURE 29.65
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.01 @ 15 "Hg
Final 0.0 @ 2.5 "Hg

Impinger Volume
Final ml
Initial ml
Net Gain ml

PROBE LENGTH AND TYPE 5' Glass
NOZZLE I.D. 3/8
ASSUMED MOISTURE, % 6
SAMPLE BOX NUMBER 1944
METER BOX NUMBER
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

Virgin

READ AND RECORD ALL DATA EVERY 1 hr MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	FILTER	IMPINGER TEMPERATURE, °F
	1hr 0655	534.085										
			N/A	0.75	0.75	212	82	74	2.0	231	234	67
	0717	544.600		0.75	0.75	213	82	78	2.5	241	238	59
	0744	558.700		0.75	0.75	214	92	85	2.5	243	241	67
	0755	564.692		0.75	0.75	214	94	86	2.5	244	244	68
		30.607				(213)		(84.3)				
			Start	Stop	Net							
		1st Imp	614.8	887.0	272.2							
		2nd Imp	615.7	645.1	29.4							
		3rd Imp	484.3	496.4	2.1							
		5th	824.8	832.7	7.9							
					311.6							

Aztec (Virgin)

YSC

CHECK for CYCLONIC FLOW

9-11-91

METHOD 1, Section 2.4

Stop Test No. 4
Start Test No. 5

TRAVERSE POINT	ANGLE where $\Delta p \pm 0$
A-1	215
2	215
3	215
4	216
5	216
6	216
7	215
8	215
9	215
10	214
11	214
12	213
AVERAGE	

TRAVERSE POINT	ANGLE where $\Delta p \pm 0$
B-1	214
2	215
3	215
4	215
5	215
6	216
7	215
8	215
9	215
10	215
11	214
12	214
AVERAGE	215

889.6
(642.8)
609.6
488.4
837.4 SG

YSC

Plant U-dot.
DATE 9-11-91
SAMPLING LOCATION Aztec
SAMPLE TYPE Moisture
RUN NUMBER 3
OPERATOR JVM
AMBIENT TEMPERATURE 92
BAROMETRIC PRESSURE 29.70
STATIC PRESSURE (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15 "Hg
Final 0.0 @ 2.5 "Hg

Impinger Volume
Final ml
Initial ml
Net Gain ml

PROBE LENGTH AND TYPE 5 ft Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

Virgin

READ AND RECORD ALL DATA EVERY 1 hr MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
		564.719										
	0952		N/A	0.75	0.75	179	86	84	2.5	223	245	70
	1029	583.400		0.75	0.75	206	96	89	2.5	237	250	67
	1052	595.259		0.75	0.75	210	98	91	2.5	27	249	75
		30.540				(198)		(90.7)				
			Start	Stop	Net							
		1st Imp	587.2	842.5	255.3							
		2nd Imp	603.0	630.0	27.0							
		3rd Imp	489.5	489.5	0.0							
		SG	766.4	769.4	3.0							
				Total	285.3							

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Aztec (Virgin)

9-11-91

YSC

CHECK for CYCLONIC FLOW

METHOD 1, Section 2.4

Stop Test No. 5
Start Test No. 6

TRAVERSE POINT	ANGLE where Δ p≈0
A-1	194
2	195
3	196
4	197
5	197
6	196
7	196
8	196
9	196
10	196
11	195
12	194
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p≈0
B 1	195
2	196
3	196
4	196
5	196
6	196
7	196
8	197
9	196
10	196
11	196
12	195
AVERAGE	196

YSC

PLANT Weldon
DATE 8-11-91
SAMPLING LOCATION Aztec
SAMPLE TYPE Moisture
RUN NUMBER 6
OPERATOR JVM
AMBIENT TEMPERATURE 82
BAROMETRIC PRESSURE 29.75
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.01 @ 15.0 "Hg
Final 0.0 @ 2.5 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 5 ft Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

Virgin

READ AND RECORD ALL DATA EVERY 1hr MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
		595.484										
	1034	~~6~~	N/A	0.75	0.75	193	84	84	2.0	250	236	76
	1208	612.400	↓	0.75	0.75	205	89	86	2.5	238	247	60
	1234	625.544	↓	0.75	0.75	210	93	90	2.5	242	254	65
		30.060				(203)		(87.7)				
			Start	Stop	Net							
		1st Imp	652.7	889.6	236.9							
		2nd Imp	585.8	609.6	23.8							
		3rd Imp	486.4	488.4	2.0							
		S.G.	832.7	837.4	4.7							
				Total	267.4							

Aztec (Virgin) Temp. Traverse

YSC

CHECK for ~~CYCLONIC FLOW~~

METHOD 1, Section 2.4

End Test No. 6

TRAVERSE POINT	ANGLE where Δp=0
A-1	204
2	205
3	205
4	205
5	205
6	205
7	206
8	206
9	205
10	205
11	204
12	204
~~13~~	204
AVERAGE	

TRAVERSE POINT	ANGLE where Δp=0
B-1	205
2	205
3	205
4	205
5	206
6	206
7	205
8	205
9	205
10	204
11	204
12	204
AVERAGE	205

Aztec (Virgin) 9-11-91

Operation Data

	Test No. 4			Test No. 5			Test No. 6		
	Start	Mid	Stop	Start	Mid.	Stop	Start	Mid	Stop
Sand	24	24	24	24	24	24	24	24	24
Scrn.	33	33	33	33	33	33	33	33	33
Stone	43	43	43	43	43	43	43	43	43
RAP	0	0	0						
AC 20	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Fuel GPM	6.36	6.36	6.36	6.17	6.17	6.17	6.25	6.39	6.10
Baghouse	3.5	4	4	4	3	3.5	4.25	3.5	4.5
Ton/hr	—	—	—	—	276	276	283	284	284

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EPA METHOD 5 CALCULATIONS
USING STP AS 68 DEG F AND 29.92 in Hg

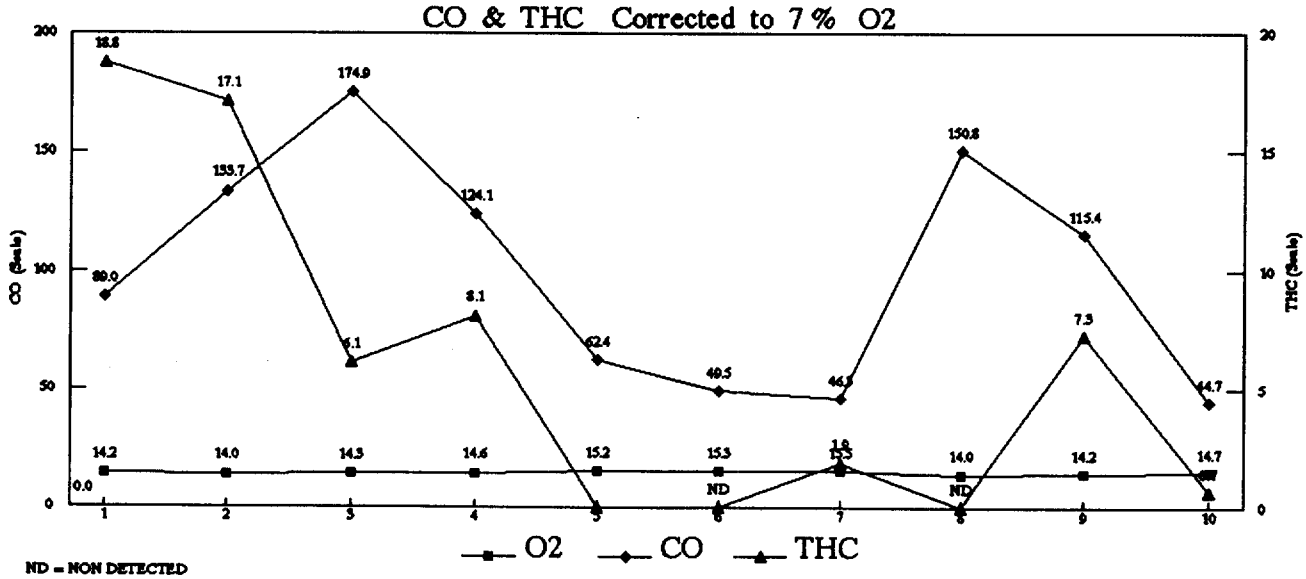
DESCRIPTION OF PARAMETERS	(UNITS)	RUN # 1	RUN # 2	RUN # 3
PROJECT WELDON ASPHALT COMPANY (WAC)		(WAC)	(WAC)	(WAC)
DATE		9/13/91	9/13/91	9/13/91
LOCATION		MADSEN	MADSEN	MADSEN
TIME		1155-1255	1336-1436	1517-1618
LOAD (Mw)		BATCH	BATCH	BATCH
MATRIX		MOISTURE	MOISTURE	MOISTURE
PITOT TUBE CONSTANT (Cp)				
TOTAL VOLUME H2O COLLECTED (VH2O)	(ml)	258.8	253	85.7
AVERAGE GAS METER TEMPERATURE (Tm)	(DEG F)	87.3	98	103
METER VOLUME SAMPLED (Vm)	(acf)	31.046	31.729	32.179
TOTAL SAMPLING TIME	(min)	60	60	61
BAROMETRIC PRESSURE (Pbar)	(in Hg a)	29.88	29.88	29.89
STACK PRESSURE (Ps)	(in Hg a)			
AVERAGE STACK TEMPERATURE (Ts)	(DEG F)	185	181	172
AVG ORIFICE METER PRESSURE DROP(DHavg)	(in H2O)	0.75	0.75	0.75
SQRT AVG PITOT TUBE PRESSURE DROP	(in H2O^0.5)	0.0000	0.0000	0.0000
AVERAGE PITOT TUBE PRESSURE DROP(DPavg)	(in Hg H2O)			
VOLUME OF H2O AS GAS AT STP (Vwc)	(sfc)	12.22	11.94	4.05
METER VOLUME AT STP (Vmc)	(sfc)	29.97	30.04	30.21
STACK MOISTURE CONTENT (Bws)	(%)	28.96	28.44	11.81
STACK GAS ANALYSIS				
CO2	(%)			
O2	(%)			
CO	(ppm)			
N2	(%)	100	100	100
DRY MOLECULAR WEIGHT (Md)	(g/g mole)	28.00	28.00	28.00
STACK MOLECULAR WEIGHT (Ms)	(g/g mole)	25.10	25.16	26.82
AVERAGE STACK VELOCITY (Vsavg)	(ft/sec)	ERR	ERR	ERR
STACK AREA (A)	(ft2)			
STACK FLOW RATE (QSA)	(afcm)	ERR	ERR	ERR
STACK FLOW RATE (QSW)	(scfm dry)	ERR	ERR	ERR
STACK FLOW RATE (QSD)	(scfm wet)	ERR	ERR	ERR
NOZZLE DIAMETER (Dn)	(in)			
% ISOKINETIC VARIATION (I)	(%)	ERR	ERR	ERR
MASS OF PARTICULATE COLLECTED ON FILTER (Mf)	(g)			
MASS OF PARTICULATE COLLECTED ON PROBE AND CYCLONE	(g)			
TOTAL MASS OF PARTICULATE (Mn)	(g)	0.0000	0.0000	0.0000
PERCENTAGE OF TOTAL PARTICULATE COLLECTED ON FILTER	(%)	ERR	ERR	ERR
STACK PARTICULATE CONCENTRATION (Cs)	(g/scfc)	0.0000	0.000	0.000
PARTICULATE MASS RATE (pmr)	(lb/hr)	ERR	ERR	ERR
PARTICULATE MASS RATE	(Lb/MBTU)	ERR	ERR	ERR

WELDON ASPHALT COMPANY

Run # : One
Period : 6 Minute Average
Number of samples: 10

Date: 09/13/1991
Plant name: Madsen
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	11 : 58	Start sampling				
1	12 : 04	42.9	9.0	14.2	89.0	18.8
2	12 : 10	66.0	8.5	14.0	133.7	17.1
3	12 : 16	83.5	2.9	14.3	174.9	6.1
4	12 : 22	56.6	3.7	14.6	124.1	8.1
5	12 : 28	25.4	0.0	15.2	62.4	0.0
6	12 : 34	20.0	ND	15.3	49.5	ND
7	12 : 40	17.9	0.7	15.5	46.3	1.9
8	12 : 46	74.4	ND	14.0	150.8	ND
9	12 : 52	55.4	3.5	14.2	115.4	7.3
10	12 : 58	19.9	0.3	14.7	44.7	0.7
Average		46.2	3.6	14.6	99.1	7.5

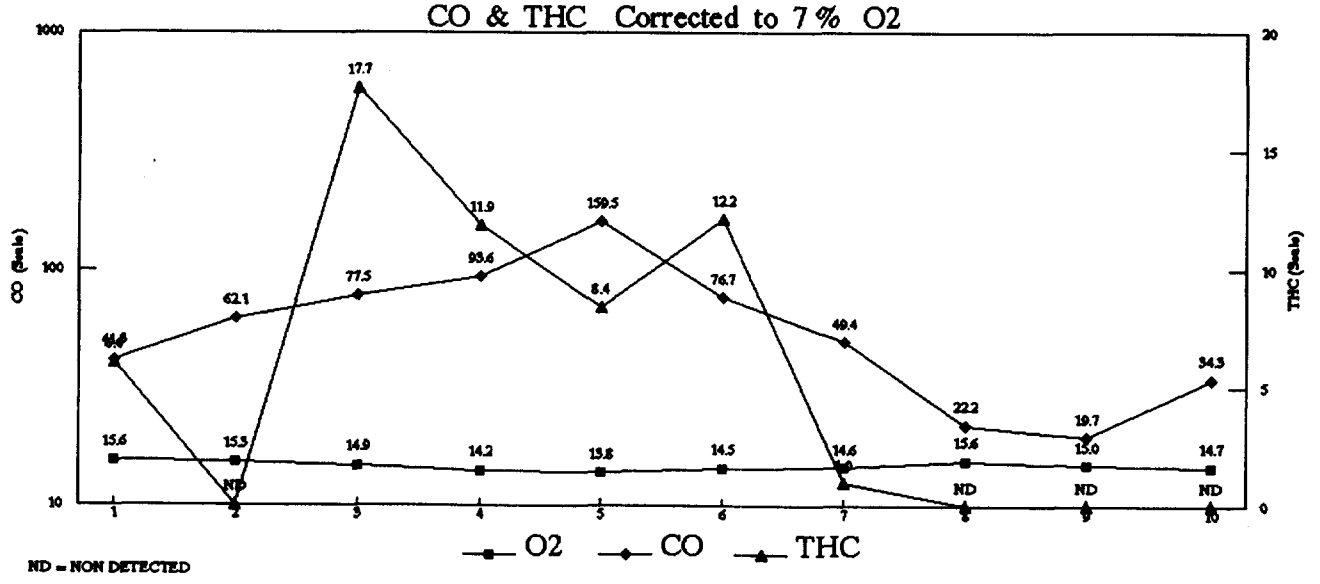


WELDON ASPHALT COMPANY

Run # : Two
Period : 6 Minute Average
Number of samples: 10

Date: 09/13/1991
Plant name: Madsen
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	13 : 35	Start sampling				
1	13 : 41	15.9	2.3	15.6	41.3	6.0
2	13 : 47	24.9	ND	15.3	62.1	ND
3	13 : 53	33.4	7.6	14.9	77.5	17.7
4	13 : 59	45.3	5.8	14.2	93.6	11.9
5	14 : 5	80.9	4.3	13.8	159.5	8.4
6	14 : 11	35.2	5.6	14.5	76.7	12.2
7	14 : 17	22.4	0.4	14.6	49.4	1.0
8	14 : 23	8.4	ND	15.6	22.2	ND
9	14 : 29	8.4	ND	15.0	19.7	ND
10	14 : 35	15.4	ND	14.7	34.3	ND
Average		29.0	3.8	14.8	63.6	9.5

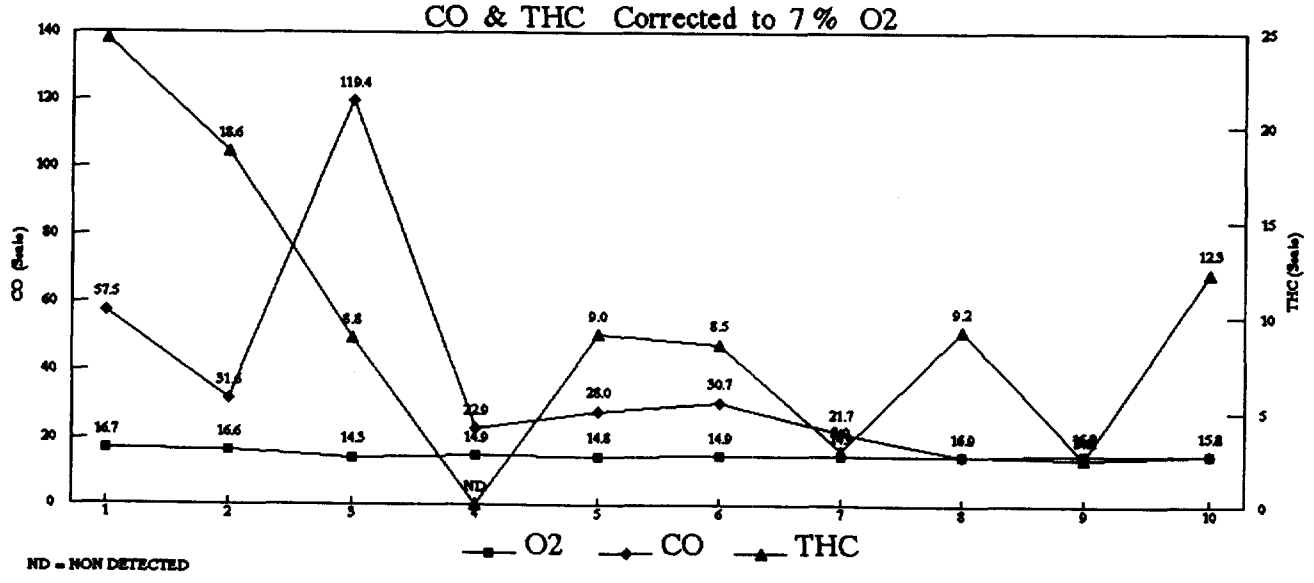


WELDON ASPHALT COMPANY

Run # : Three
Period : 6 Minute Average
Number of samples: 10

Date: 09/13/1991
Plant name: Madsen
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	15 : 12	Start sampling				
1	15 : 18	17.4	7.5	16.7	57.5	24.6
2	15 : 24	9.8	5.8	16.6	31.6	18.6
3	15 : 30	56.5	4.2	14.3	119.4	8.8
4	15 : 36	9.8	ND	14.9	22.9	ND
5	15 : 42	12.4	4.0	14.8	28.0	9.0
6	15 : 48	13.3	3.7	14.9	30.7	8.5
7	15 : 54	9.3	1.3	14.9	21.7	3.0
8	16 : 0	6.4	3.9	15.0	14.9	9.2
9	16 : 6	5.8	1.1	15.2	14.1	2.6
10	16 : 12	6.3	5.0	15.2	15.4	12.3
Average		14.7	4.0	15.2	35.6	10.7



13/SEP/91 8:20:32
2 = 0.0 PPM CO 5 = 0.0 % O2 6 = 11.2 PPM THC
13/SEP/91 8:20:20
13/SEP/91 8:20:14
ZERO GAS
BEGIN CALIBRATIONS
13/SEP/91 7:55: 3
LENGTH LEFT ON PRESENT ROLL IS 17 FEET11 INCH(ES)
13/SEP/91 7:54:50 COLD JUNCTION IS 78.8 F ALARM TYPES LOW/HIGH
13/SEP/91 7:54:37
DAYTON PLANT BEGIN DAY
13/SEP/91 7:54:13
13/SEP/91 7:54: 7 O2 CO

RECORDER/DATA LOGGER VRS 5H

RECORDER/DATA LOGGER VRS 5H

RECORDER/DATA LOGGER VRS 5H

11/SEP/91 13: 2:24 O2 THC
2 = 1.6 PPM CO 5 = 11.8 % O2 6 = 51.9 PPM THC
11/SEP/91 13: 2:12

11/SEP/91 12:59:23 THC O2
2 = 7.4 PPM CO 5 = 11.8 % O2 6 = 36.1 PPM THC
11/SEP/91 12:59:10

11/SEP/91 12:56:53 O2
THC CALIBRATIONS

-123-

STA QNA ER IBA ONS

13/SEP/91 8:33:32

13/SEP/91 8:33: 5

2 = 0.0 PPM CO 5 = 0.0 % O2 6 = 0.1 PPM THC

13/SEP/91 8:32:29

13/SEP/91 8:31:41

2 = 0.0 PPM CO 5 = 0.0 % O2 6 = -0.3 PPM THC

13/SEP/91 8:31:29

13/SEP/91 8:31:23

13/SEP/91 8:31:10

2 = 0.0 PPM CO 5 = 0.0 % O2 6 = -0.4 PPM THC

13/SEP/91 8:30:57

13/SEP/91 8:26:58

13/SEP/91 8:26:29

2 = 0.0 PPM CO 5 = 0.0 % O2 6 = 3.9 PPM THC

13/SEP/91 8:26:17

13/SEP/91 8:23:29

2 = 0.0 PPM CO 5 = 0.0 % O2 6 = -5.8 PPM THC

13/SEP/91 8:23:17

13/SEP/91 8:43:44
2 = 500.0 PPM CO 5 = 0.6 % O2 6 = 10.0 PPM THC
13/SEP/91 8:43:32

13/SEP/91 8:42:44
2 = 141.6 PPM CO 5 = 0.5 % O2 6 = 9.6 PPM THC
13/SEP/91 8:42:32

13/SEP/91 8:41:48
2 = 171.6 PPM CO 5 = 0.5 % O2 6 = 9.2 PPM THC
13/SEP/91 8:41:36

13/SEP/91 8:41: 8
141 PPM CO

13/SEP/91 8:40:48
2 = 426.6 PPM CO 5 = 0.5 % O2 6 = 8.6 PPM THC
13/SEP/91 8:40:35

13/SEP/91 8:39:46
2 = 425.9 PPM CO 5 = 0.4 % O2 6 = 93.2 PPM THC
13/SEP/91 8:39:34

13/SEP/91 8:38:22
SPAN GAS CO 421 PPM

13/SEP/91 8:35:33

13/SEP/91 8:34:12
2 = 130.0 PPM CO 5 = 0.1 % O2 6 = 139.0 PPM THC
13/SEP/91 8:34: 0
141 PPM CO
13/SEP/91 8:33:48

-125-

13/SEP/91 8:54:29

13/SEP/91 8:53:58
2 = 500.1 PPM CO 5 = 15.1 % O2 6 = 17.7 PPM THC
13/SEP/91 8:53:46
12.1% O2
2 = 500.0 PPM CO 5 = 20.8 % O2 6 = 19.1 PPM THC
13/SEP/91 8:53:28

13/SEP/91 8:52:43
2 = 500.0 PPM CO 5 = 21.0 % O2 6 = 2.6 PPM THC
13/SEP/91 8:52:31
13/SEP/91 8:52:25
SPAN O2
2 = 311.1 PPM CO 5 = 0.8 % O2 6 = 10.9 PPM THC
13/SEP/91 8:49:33

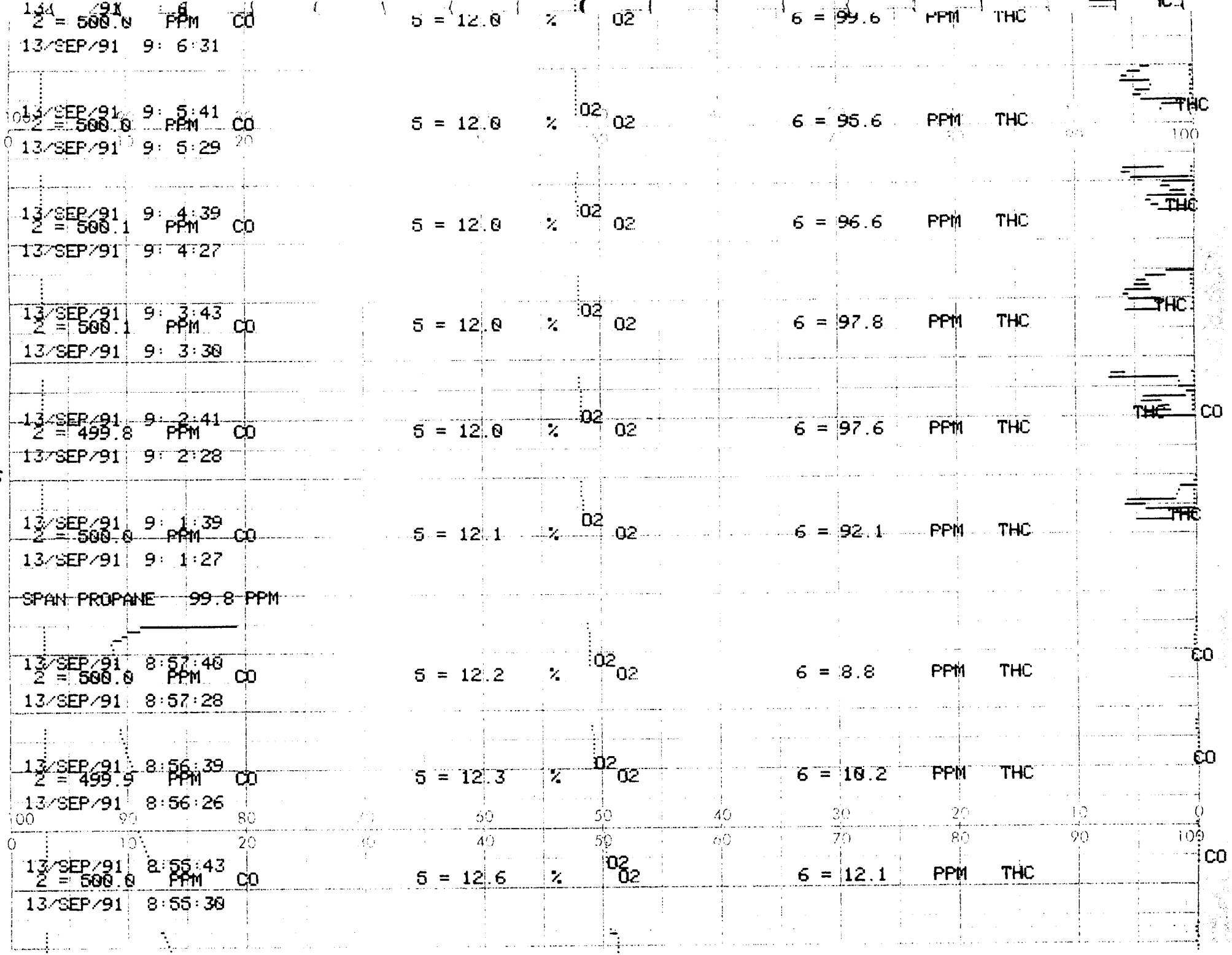
13/SEP/91 8:48:44
2 = 307.8 PPM CO 5 = 0.7 % O2 6 = 10.9 PPM THC
13/SEP/91 8:48:32

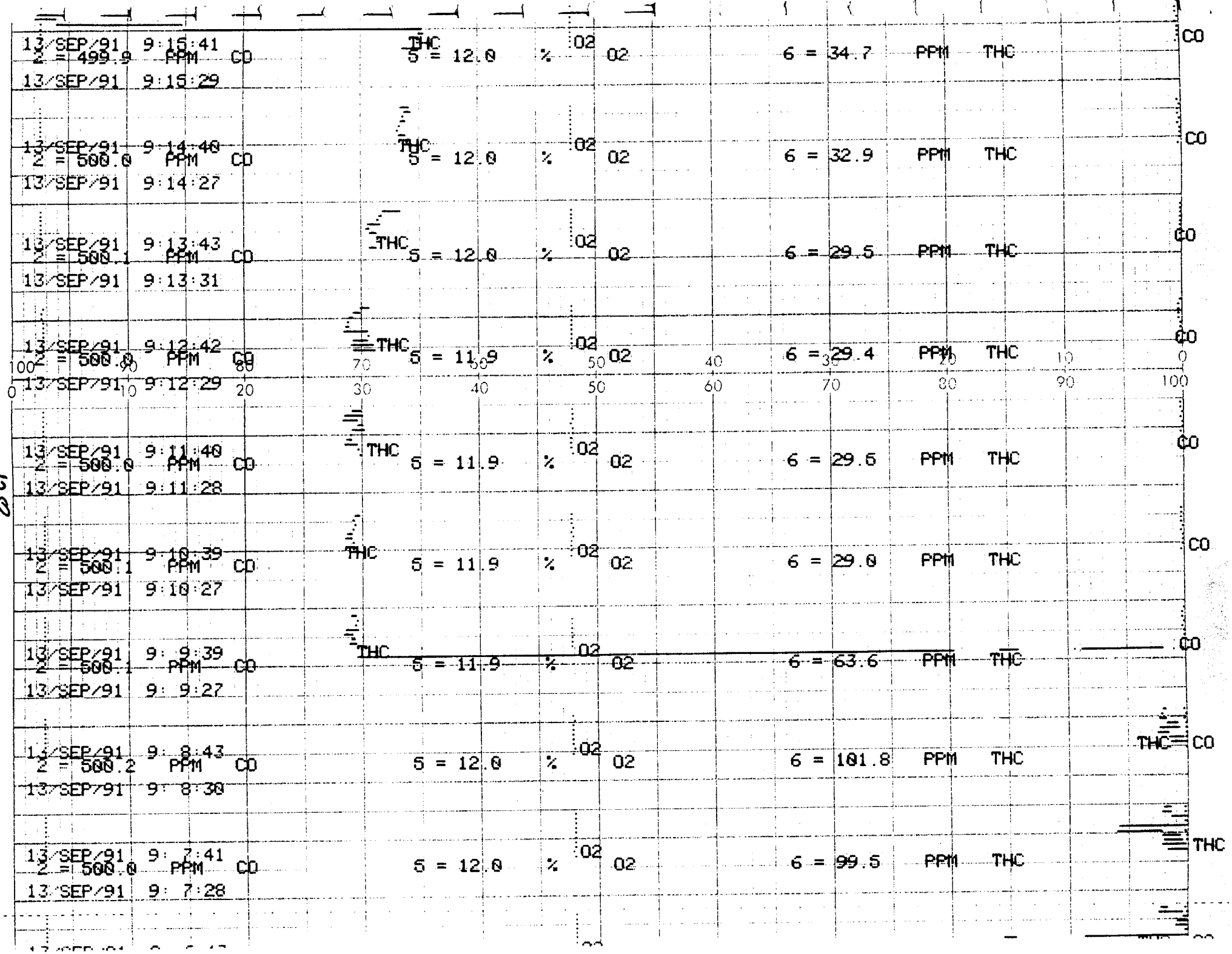
13/SEP/91 8:47:43
2 = 306.5 PPM CO 5 = 0.7 % O2 6 = 11.1 PPM THC
13/SEP/91 8:47:31

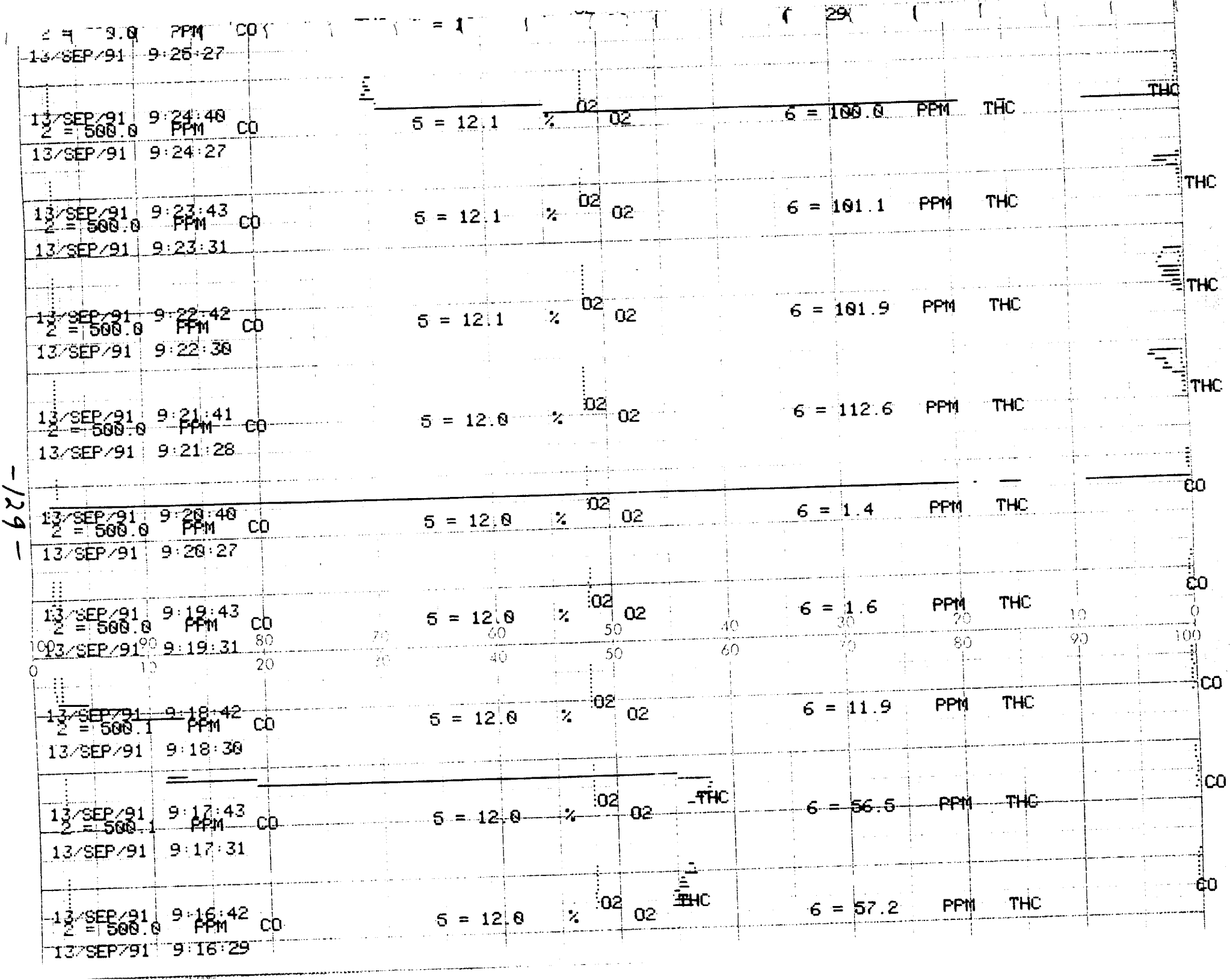
13/SEP/91 8:46:47
2 = 302.9 PPM CO 5 = 0.7 % O2 6 = 10.8 PPM THC
13/SEP/91 8:46:35

13/SEP/91 8:45:46
2 = 294.9 PPM CO 5 = 0.6 % O2 6 = 9.9 PPM THC
13/SEP/91 8:45:34

13/SEP/91 8:44:49
2 = 278.5 PPM CO 5 = 0.6 % O2 6 = 9.2 PPM THC
13/SEP/91 8:44:37
31.7 PPM CO


2 = 500.0 PPM CO
5 = 12.0 % O2
6 = 99.6 PPM THC
13/SEP/91 9: 6:31
13/SEP/91 9: 5:41
2 = 500.0 PPM CO
5 = 12.0 % O2
6 = 95.6 PPM THC
13/SEP/91 9: 5:29
13/SEP/91 9: 4:39
2 = 500.1 PPM CO
5 = 12.0 % O2
6 = 96.6 PPM THC
13/SEP/91 9: 4:27
13/SEP/91 9: 3:43
2 = 500.1 PPM CO
5 = 12.0 % O2
6 = 97.8 PPM THC
13/SEP/91 9: 3:30
13/SEP/91 9: 2:41
2 = 499.8 PPM CO
5 = 12.0 % O2
6 = 97.6 PPM THC
13/SEP/91 9: 2:28
13/SEP/91 9: 1:39
2 = 500.0 PPM CO
5 = 12.1 % O2
6 = 92.1 PPM THC
13/SEP/91 9: 1:27
SPAN PROPANE 99.8 PPM
13/SEP/91 8:57:40
2 = 500.0 PPM CO
5 = 12.2 % O2
6 = 8.8 PPM THC
13/SEP/91 8:57:28
13/SEP/91 8:56:39
2 = 499.9 PPM CO
5 = 12.3 % O2
6 = 10.2 PPM THC
13/SEP/91 8:56:26
13/SEP/91 8:55:43
2 = 500.0 PPM CO
5 = 12.6 % O2
6 = 12.1 PPM THC
13/SEP/91 8:55:30
THC
CO
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


13/SEP/91 9:15:41
2 = 499.9 PPM CO
13/SEP/91 9:15:29
THC 5 = 12.0 % O2 O2 6 = 34.7 PPM THC
13/SEP/91 9:14:40
2 = 500.0 PPM CO
13/SEP/91 9:14:27
THC 5 = 12.0 % O2 O2 6 = 32.9 PPM THC
13/SEP/91 9:13:43
2 = 500.1 PPM CO
13/SEP/91 9:13:31
THC 5 = 12.0 % O2 O2 6 = 29.5 PPM THC
13/SEP/91 9:12:42
2 = 500.0 PPM CO
13/SEP/91 9:12:29
THC 5 = 11.9 % O2 O2 6 = 29.4 PPM THC
13/SEP/91 9:11:40
2 = 500.0 PPM CO
13/SEP/91 9:11:28
THC 5 = 11.9 % O2 O2 6 = 29.5 PPM THC
13/SEP/91 9:10:39
2 = 500.1 PPM CO
13/SEP/91 9:10:27
THC 5 = 11.9 % O2 O2 6 = 29.0 PPM THC
13/SEP/91 9: 9:39
2 = 500.1 PPM CO
13/SEP/91 9: 9:27
THC 5 = 11.9 % O2 O2 6 = 63.6 PPM THC
13/SEP/91 9: 8:43
2 = 500.2 PPM CO
13/SEP/91 9: 8:30
THC 5 = 12.0 % O2 O2 6 = 101.8 PPM THC
13/SEP/91 9: 7:41
2 = 500.0 PPM CO
13/SEP/91 9: 7:28
THC 5 = 12.0 % O2 O2 6 = 99.5 PPM THC
CO
0 10 20 30 40 50 60 70 80 90 100



2 = 9.0 PPM CO
13/SEP/91 9:25:27
13/SEP/91 9:24:40
2 = 500.0 PPM CO
13/SEP/91 9:24:27
5 = 12.1 % O2 O2
6 = 100.0 PPM THC
13/SEP/91 9:23:43
2 = 500.0 PPM CO
13/SEP/91 9:23:31
5 = 12.1 % O2 O2
6 = 101.1 PPM THC
13/SEP/91 9:22:42
2 = 500.0 PPM CO
13/SEP/91 9:22:30
5 = 12.1 % O2 O2
6 = 101.9 PPM THC
13/SEP/91 9:21:41
2 = 500.0 PPM CO
13/SEP/91 9:21:28
5 = 12.0 % O2 O2
6 = 112.6 PPM THC
13/SEP/91 9:20:40
2 = 500.0 PPM CO
13/SEP/91 9:20:27
5 = 12.0 % O2 O2
6 = 1.4 PPM THC
13/SEP/91 9:19:43
2 = 500.0 PPM CO
13/SEP/91 9:19:31
5 = 12.0 % O2 O2
6 = 1.6 PPM THC
13/SEP/91 9:18:42
2 = 500.1 PPM CO
13/SEP/91 9:18:30
5 = 12.0 % O2 O2
6 = 11.9 PPM THC
13/SEP/91 9:17:43
2 = 500.1 PPM CO
13/SEP/91 9:17:31
5 = 12.0 % O2 O2
6 = 56.5 PPM THC
13/SEP/91 9:16:42
2 = 500.0 PPM CO
13/SEP/91 9:16:29
5 = 12.0 % O2 O2
6 = 57.2 PPM THC
THC
CO

13/SEP/91 9:34:41
2 = 500.0 PPM CO
13/SEP/91 9:34:29

THC 5 = 12.3 % O2 O2 6 = 29.5 PPM THC CO

13/SEP/91 9:33:40
2 = 500.0 PPM CO
13/SEP/91 9:33:28

THC 5 = 12.3 % O2 O2 6 = 29.3 PPM THC CO

100 90 80 70 60 50 40 30 20 10 0

0 10 20 40 50 60 70 80 90 100

13/SEP/91 9:32:43
2 = 499.9 PPM CO
13/SEP/91 9:32:31

THC 5 = 12.3 % O2 O2 6 = 29.7 PPM THC CO

13/SEP/91 9:31:42
2 = 499.9 PPM CO
13/SEP/91 9:31:30

THC 5 = 12.2 % O2 O2 6 = 27.7 PPM THC CO

13/SEP/91 9:30:41
2 = 500.0 PPM CO
13/SEP/91 9:30:29

THC 5 = 12.2 % O2 O2 6 = 27.8 PPM THC CO

13/SEP/91 9:29:40
2 = 500.1 PPM CO
13/SEP/91 9:29:27

THC 5 = 12.2 % O2 O2 6 = 28.2 PPM THC CO

13/SEP/91 9:28:43
2 = 499.9 PPM CO
13/SEP/91 9:28:31

THC 5 = 12.2 % O2 O2 6 = 28.5 PPM THC CO

13/SEP/91 9:27:42
2 = 500.0 PPM CO
13/SEP/91 9:27:30

THC 5 = 12.2 % O2 O2 6 = 28.9 PPM THC CO

13/SEP/91 9:26:41
2 = 499.9 PPM CO
13/SEP/91 9:26:29

THC 5 = 12.1 % O2 O2 6 = 29.2 PPM THC CO

100 90 80 70 60 50 40 30 20 10 0

0 10 20 40 50 60 70 80 90 100

13/SEP/91 9:25:40

THC O2

13/SEP/91 9:52:47
12 = 101.5 PPM THC
2 = 500.0 PPM CO
13/SEP/91 9:52:29

5 = 12.2 % O2

6 = 100.6 PPM THC

13/SEP/91 9:51:48
12 = 99.9 PPM THC
2 = 499.9 PPM CO
13/SEP/91 9:51:30
13/SEP/91 9:51:24

5 = 12.2 % O2

6 = 99.7 PPM THC

13/SEP/91 9:41:41
2 = 499.9 PPM CO
13/SEP/91 9:41:29

5 = 17.5 % O2

6 = 8.6 PPM THC

13/SEP/91 9:40:40
2 = 500.0 PPM CO
13/SEP/91 9:40:28

5 = 14.6 % O2

6 = 131.4 PPM THC

13/SEP/91 9:39:39
2 = 500.0 PPM CO
13/SEP/91 9:39:27

5 = 14.3 % O2

6 = 110.8 PPM THC

13/SEP/91 9:38:42
2 = 500.1 PPM CO
13/SEP/91 9:38:29

5 = 12.4 % O2

6 = 29.0 PPM THC

13/SEP/91 9:37:40
2 = 500.1 PPM CO
13/SEP/91 9:37:28

5 = 12.4 % O2

6 = 29.5 PPM THC

13/SEP/91 9:36:39
2 = 500.0 PPM CO
13/SEP/91 9:36:27

5 = 12.3 % O2

6 = 30.2 PPM THC

13/SEP/91 9:35:43
2 = 500.0 PPM CO
13/SEP/91 9:35:30

5 = 12.3 % O2

6 = 29.7 PPM THC

13/SEP/91 10: 0:47
12 = 97.5 PPM THC
2 = 499.9 PPM CO
13/SEP/91 10: 0:29

5 = 12.4 % O2

6 = 97.5 PPM THC

13/SEP/91 9:59:44
12 = 97.3 PPM THC
2 = 500.0 PPM CO
13/SEP/91 9:59:27

5 = 12.4 % O2

6 = 97.7 PPM THC

13/SEP/91 9:58:47
12 = 96.9 PPM THC
2 = 499.9 PPM CO
13/SEP/91 9:58:29

5 = 12.4 % O2

6 = 97.6 PPM THC

13/SEP/91 9:57:45
12 = 96.4 PPM THC
2 = 500.0 PPM CO
13/SEP/91 9:57:27

5 = 12.4 % O2

6 = 96.8 PPM THC

13/SEP/91 9:56:47
12 = 96.6 PPM THC
2 = 500.0 PPM CO
13/SEP/91 9:56:29

5 = 12.3 % O2

6 = 95.2 PPM THC

13/SEP/91 9:55:45
12 = 96.8 PPM THC
2 = 500.0 PPM CO
13/SEP/91 9:55:27

5 = 12.3 % O2

6 = 99.5 PPM THC

13/SEP/91 9:54:43
12 = 100.0 PPM THC
2 = 500.0 PPM CO
13/SEP/91 9:54:25

5 = 12.3 % O2

6 = 98.9 PPM THC

13/SEP/91 9:53:46
12 = 100.0 PPM THC
2 = 499.8 PPM CO

5 = 12.3 % O2

6 = 100.9 PPM THC

13/SEP/91 10: 8:40
12 = 100.1 PPM THC
2 = 499.9 PPM CO 5 = 12.6 % O2 6 = 99.5 PPM THC
13/SEP/91 10: 8:22

13/SEP/91 10: 8:16 O2 CO

13/SEP/91 10: 7:44 O2 THC
12 = 97.4 PPM THC
2 = 499.9 PPM CO 5 = 12.6 % O2 6 = 99.0 PPM THC
13/SEP/91 10: 7:26

100 90 80 70 60 50 40 30 20 10 0

13/SEP/91 10: 6:46 O2 THC CO
12 = 96.7 PPM THC
2 = 499.9 PPM CO 5 = 12.6 % O2 6 = 96.6 PPM THC
13/SEP/91 10: 6:28

13/SEP/91 10: 5:44 O2 THC CO
12 = 96.9 PPM THC
2 = 499.9 PPM CO 5 = 12.5 % O2 6 = 97.0 PPM THC
13/SEP/91 10: 5:26

13/SEP/91 10: 4:47 O2 THC
12 = 96.6 PPM THC
2 = 499.9 PPM CO 5 = 12.5 % O2 6 = 95.0 PPM THC
13/SEP/91 10: 4:29

13/SEP/91 10: 3:44 O2 THC CO
12 = 94.8 PPM THC
2 = 499.9 PPM CO 5 = 12.6 % O2 6 = 94.7 PPM THC
13/SEP/91 10: 3:26

13/SEP/91 10: 2:47 O2 THC
12 = 96.8 PPM THC
2 = 499.9 PPM CO 5 = 12.5 % O2 6 = 97.0 PPM THC
13/SEP/91 10: 2:29

13/SEP/91 10: 1:44 O2 THC
12 = 97.3 PPM THC
2 = 500.1 PPM CO 5 = 12.5 % O2 6 = 97.2 PPM THC

JOB NO. 497-01

PLANT Madsen/Waldin

DATE

LOCATION Baghouse Outlet

OPERATOR JVM

STACK I.D. 44 in

DISTANCE TO DISTURBANCE:

UPSTREAM

DOWNSTREAM

BAROMETRIC PRESSURE, in.Hg. 29.88

STACK PRESSURE, in.Hg.

METER BOX I.D. 1944

PROBE I.D.

cp FACTOR

METER TEMPERATURE 1.6

Temp Traverse
Start Test No. 1

9-13-97

Schematic of Port Locations
(Indicate North, Label Ports A,B etc.)

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
A-1		197
2		196
3		196
4		196
5		196
6		196
7		196
8		196
9		196
10		195
11		195
12		194
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
B-1	197	
2	197	
3	196	
4	196	
5	196	
6	196	
7	196	
8	196	
9	196	
10	195	
11	195	
12	195	
AVERAGE		196

YSC

PLANT Weldon/Madsen
DATE 9-13-91
SAMPLING LOCATION Baghouse Outlet
SAMPLE TYPE Moisture
RUN NUMBER 1
OPERATOR JVM
AMBIENT TEMPERATURE 75
BAROMETRIC PRESSURE 29.88
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15 "Hg
Final 0.0 @ 3 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 3ft Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE, % 6
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

READ AND RECORD ALL DATA EVERY ____ MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
		625.246										
B-6	11 55			0.75	0.75	186	74	74	2.5	235	250	80
	12 35	646.200		0.75	0.75	185	96	88	3.0	243	235	68
	12 55	656.292		0.75	0.75	183	100	92	3.0	244	231	62
						(185)		(87.3)				
		31.046										
			Start	Stop	Net							
		#1 Imp	572.5	758.5	186.0							
		#2 Imp	630.0	635.5	05.5							
		#3 Imp	489.3	490.4	01.1							
		SG	769.4	841.6	72.2							
				Total	258.8							

JOB NO. 4937-01

PLANT Weldon / Madsen

DATE

LOCATION Baghouse Outlet

OPERATOR

STACK I.D.

DISTANCE TO DISTURBANCE:

UPSTREAM

DOWNSTREAM

BAROMETRIC PRESSURE, in.Hg. 29.88

STACK PRESSURE, in.Hg.

METER BOX I.D. 1944

PROBE I.D.

Cp FACTOR

METER TEMPERATURE

Temp Traverse 9-13-91
Stop Test No. 1
Start Test No. 2

Schematic of Port Locations
(Indicate North, Label Ports A,B etc.)

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in.H_2O	STACK TEMPERATURE (T_s), °F
A-1	186	
2	185	
3	185	
4	185	
5	185	
6	185	
7	185	
8	185	
9	185	
10	184	
11	184	
12	183	
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in.H_2O	STACK TEMPERATURE (T_s), °F
B-1	187	
2	186	
3	185	
4	185	
5	185	
6	185	
7	185	
8	185	
9	185	
10	184	
11	184	
12	184	
AVERAGE		185

YSC

PLANT Weldon Madsen
DATE 9-13-91
SAMPLING LOCATION Baghouse Outlet
SAMPLE TYPE Moisture
RUN NUMBER 2
OPERATOR JVAA
AMBIENT TEMPERATURE 79
BAROMETRIC PRESSURE 29.88
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15 "Hg
Final 0.0 @ 3 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 5 ft Glass
NOZZLE I.D. 3/8
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 2.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

READ AND RECORD ALL DATA EVERY ____ MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	1336	656.318	~~172~~	0.75	0.75	179	86	88	2.5	267	236	80
	1420	678.500		0.75	0.75	183	106	100	3.0	267	234	76
	1436	688.047		0.75	0.75	180	106	102	3.0	254	235	74
		31.729				(181)		(98)				
			Start	Stop	Net							
		#1 Imp	642.8	792.3	149.5							
		#2 Imp	609.6	646.5	36.9							
		#3 Imp	488.4	496.0	7.6							
		SG	837.4	846.4	9.0							
				Total	255.0							

JOB NO. 4937-01

PLANT Weldon / Madson

DATE

LOCATION Baghouse/Outlet

OPERATOR JVM

STACK I.D. 111 in

DISTANCE TO DISTURBANCE:

UPSTREAM

DOWNSTREAM

BAROMETRIC PRESSURE, in.Hg. 29.99

STACK PRESSURE, in.Hg.

METER BOX I.D. 1944

PROBE I.D.

cp FACTOR

METER TEMPERATURE N/A

9-13-91

Temp Traverse
Stop Test No. 2
Start Test No. 3

Schematic of Port Locations
(Indicate North, Label Ports A,B etc.)

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
A-1		179
2		177
3		176
4		176
5		176
6		176
7		176
8		176
9		176
10		175
11		175
12		175
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
B-1		179
2		177
3		176
4		176
5		176
6		176
7		176
8		176
9		176
10		175
11		175
12		174
AVERAGE		176

YSC

PLANT Union/Madsen
DATE 9-13-91
SAMPLING LOCATION Baghouse Outlet
SAMPLE TYPE Moisture
RUN NUMBER 3
OPERATOR JVM
AMBIENT TEMPERATURE 82
BAROMETRIC PRESSURE 29.99
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial ____ @ ____ "Hg
Final ____ @ ____ "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 3' + Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE, % ____
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR ____
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp ____

Silica Gel
Final Weight ____
Initial Weight ____
Net Gain ____

READ AND RECORD ALL DATA EVERY ____ MINUTES

TRAVERSE POINT NUMBER	CLOCK TIME (24-hr CLOCK) / SAMPLING TIME, min	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	15:17	688.047		0.75	0.75	174	100	100	2.5	273	237	61
	15:60	705.900		0.75	0.75	170	105	105	2.5	270	238	68
	16:18	726.226		0.75	0.75	172	105	105	2.5	270	240	67
		32.179				(172)		(103)				
			Start	Stop	Net							
		#1 Imp	658.4	744.9	76.5							
		#2 Imp	635.5	657.8	2.3							
		#3 Imp	490.5	491.5	1.0							
		SG	841.4	847.3	5.9							
				Total	85.7							

JOB NO. Weldon/Madsen

PLANT 4937-01

DATE

LOCATION Baghouse Outlet

OPERATOR JVM

STACK I.D. 44 in

DISTANCE TO DISTURBANCE:

UPSTREAM

DOWNSTREAM

BAROMETRIC PRESSURE, in.Hg. 29.90

STACK PRESSURE, in.Hg.

METER BOX I.D. 1944

PROBE I.D.

Cp FACTOR

METER TEMPERATURE N/A

9-13-91

End Test No 3
Temp Traverse

Schematic of Port Locations
(Indicate North, Label Ports A,B etc.)

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
A-1	170	
2	169	
3	167	
4	167	
5	167	
6	167	
7	167	
8	167	
9	168	
10	167	
11	166	
12	165	
AVERAGE		

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
B-1		169
2		169
3		168
4		167
5		167
6		167
7		167
8		167
9		168
10		167
11		165
12		165
AVERAGE		167

EPA METHOD 5 CALCULATIONS
USING STP AS 68 DEG F AND 29.92 in Hg

DESCRIPTION OF PARAMETERS	(UNITS)	RUN # 1	RUN # 2	RUN # 3
PROJECT WELDON ASPHALT COMPANY (WAC)		(WAC)	(WAC)	(WAC)
DATE		9/14/91	9/14/91	9/14/91
LOCATION		DAYTON	DAYTON	DAYTON
TIME		0703-0803	0835-0935	1000-1100
LOAD (Mw)		BATCH	BATCH	BATCH
MATRIX		MOISTURE	MOISTURE	MOISTURE
PITOT TUBE CONSTANT (Cp)				
TOTAL VOLUME H2O COLLECTED (VH2O)	(ml)	138.3	157.3	115.3
AVERAGE GAS METER TEMPERATURE (Tm)	(DEG F)	80.3	90.3	98.3
METER VOLUME SAMPLED (Vm)	(acf)	30.38	30.587	30.301
TOTAL SAMPLING TIME	(min)	60	60	60
BAROMETRIC PRESSURE (Pbar)	(in Hg a)	29.92	29.92	29.92
STACK PRESSURE (Ps)	(in Hg a)			
AVERAGE STACK TEMPERATURE (Ts)	(DEG F)	195	205	196
AVG ORIFICE METER PRESSURE DROP(DHavg)	(in H2O)	0.75	0.75	0.75
SQRT AVG PITOT TUBE PRESSURE DROP	(in H2O^0.5)	0.0000	0.0000	0.0000
AVERAGE PITOT TUBE PRESSURE DROP(DPavg)	(in Hg H2O)			
VOLUME OF H2O AS GAS AT STP (Vwc)	(sfc)	6.53	7.42	5.44
METER VOLUME AT STP (Vmc)	(sfc)	29.75	29.41	28.71
STACK MOISTURE CONTENT (Bws)	(%)	17.99	20.16	15.93
STACK GAS ANALYSIS				
CO2	(%)			
O2	(%)			
CO	(ppm)			
N2	(%)	100	100	100
DRY MOLECULAR WEIGHT (Md)	(g/g mole)	28.00	28.00	28.00
STACK MOLECULAR WEIGHT (Ms)	(g/g mole)	26.20	25.98	26.41
AVERAGE STACK VELOCITY (Vsavg)	(ft/sec)	ERR	ERR	ERR
STACK AREA (A)	(ft2)			
STACK FLOW RATE (QSA)	(afcm)	ERR	ERR	ERR
STACK FLOW RATE (QSW)	(scfm dry)	ERR	ERR	ERR
STACK FLOW RATE (QSD)	(scfm wet)	ERR	ERR	ERR
NOZZLE DIAMETER (Dn)	(in)			
% ISOKINETIC VARIATION (I)	(%)	ERR	ERR	ERR
MASS OF PARTICULATE COLLECTED ON FILTER (Mf)	(g)			
MASS OF PARTICULATE COLLECTED ON PROBE AND CYCLONE	(g)			
TOTAL MASS OF PARTICULATE (Mn)	(g)	0.0000	0.0000	0.0000
PERCENTAGE OF TOTAL PARTICULATE COLLECTED ON FILTER	(%)	ERR	ERR	ERR
STACK PARTICULATE CONCENTRATION (Cs)	(g/scfc)	0.0000	0.000	0.000
PARTICULATE MASS RATE (pmr)	(lb/hr)	ERR	ERR	ERR
PARTICULATE MASS RATE	(Lb/MBTU)	ERR	ERR	ERR

WELDON ASPHALT COMPANY

Run # : One
Period : 6 Minute Average
Number of samples: 10

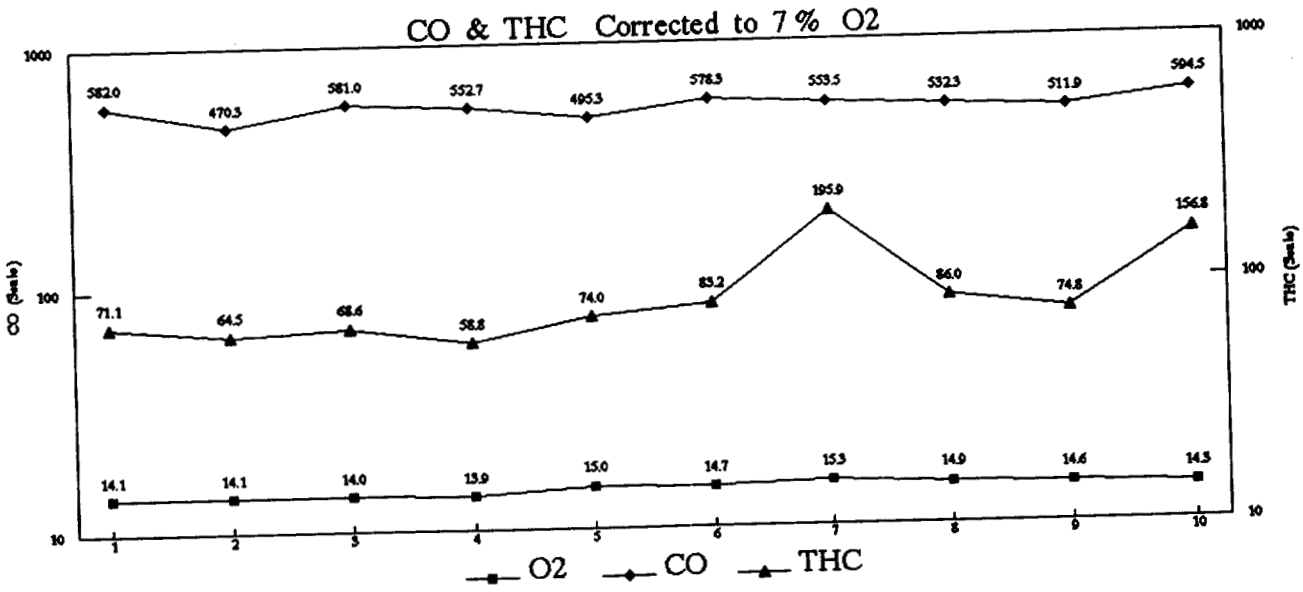
Date: 09/14/1991
Plant name: Dayton
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	7 : 2	Start sampling				
1	7 : 8	284.5	34.8	14.1	582.0	71.1
2	7 : 14	229.9	31.5	14.1	470.3	64.5
3	7 : 20	286.8	33.9	14.0	581.0	68.6
4	7 : 26	280.0	29.8	13.9	552.7	58.8
5	7 : 32	210.1	31.4	15.0	495.3	74.0
6	7 : 38	256.6	36.9	14.7	578.3	83.2
7	7 : 44	223.9	79.2	15.3	553.5	195.9
8	7 : 50	231.4	37.4	14.9	532.3	86.0
9	7 : 56	231.0	33.8	14.6	511.9	74.8
10	8 : 2	284.0	74.9	14.3	594.5	156.8
Average		251.8	42.4	14.5	545.2	93.4

$\frac{21-7}{21-14.5} = \frac{14}{6.5} = 2.154$

$251.8 \times 2.154 = 542.37$

$42.4 \times 2.154 = 91.33$



WELDON ASPHALT COMPANY

Run # : Two
Period : 6 Minute Average
Number of samples: 10

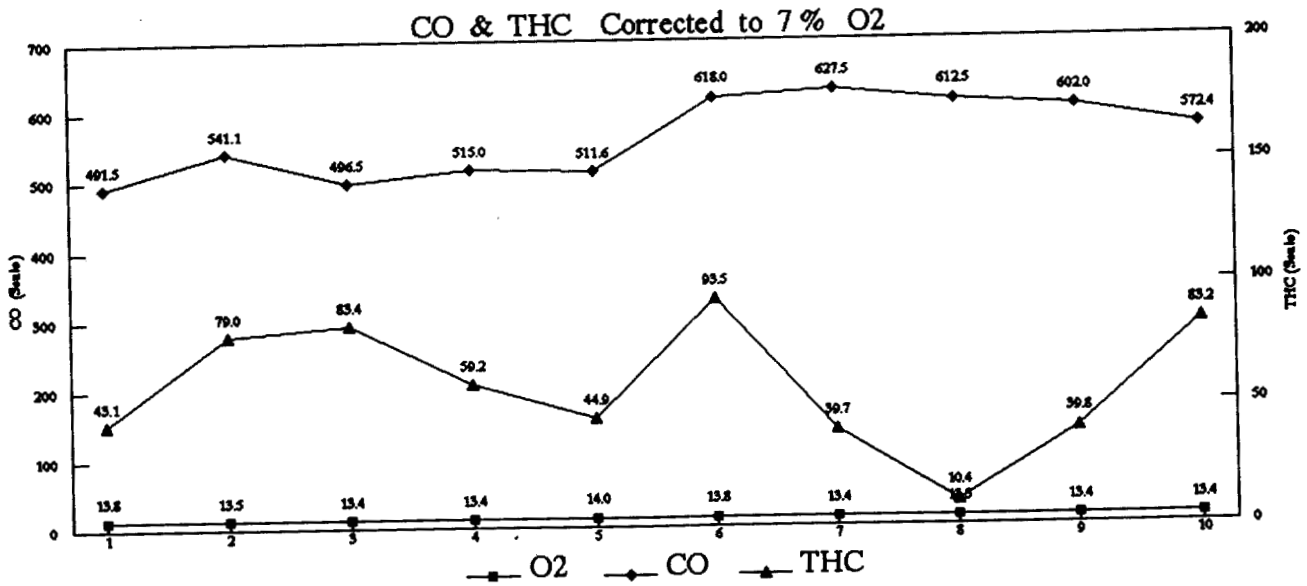
Date: 09/14/1991
Plant name: Dayton
Unit Tested: Drum Mix
Product Tested: Virgin

	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	8 : 31	Start sampling				
1	8 : 37	251.5	22.1	13.8	491.5	43.1
2	8 : 43	289.6	42.3	13.5	541.1	79.0
3	8 : 49	268.8	45.1	13.4	496.5	83.4
4	8 : 55	276.6	31.8	13.4	515.0	59.2
5	9 : 1	255.2	22.4	14.0	511.6	44.9
6	9 : 7	314.6	47.6	13.8	618.0	93.5
7	9 : 13	339.2	21.5	13.4	627.5	39.7
8	9 : 19	333.1	5.6	13.3	612.5	10.4
9	9 : 25	324.1	21.4	13.4	602.0	39.8
10	9 : 31	308.8	44.9	13.4	572.4	83.2
Average		296.2	30.5	13.5	558.8	57.6

$\frac{21-7}{21-13.5} = \frac{14}{7.5} = 1.867$

$296.2 \times 1.867 = 552.91$

$30.5 \times 1.867 = 56.94$



WELDON ASPHALT COMPANY

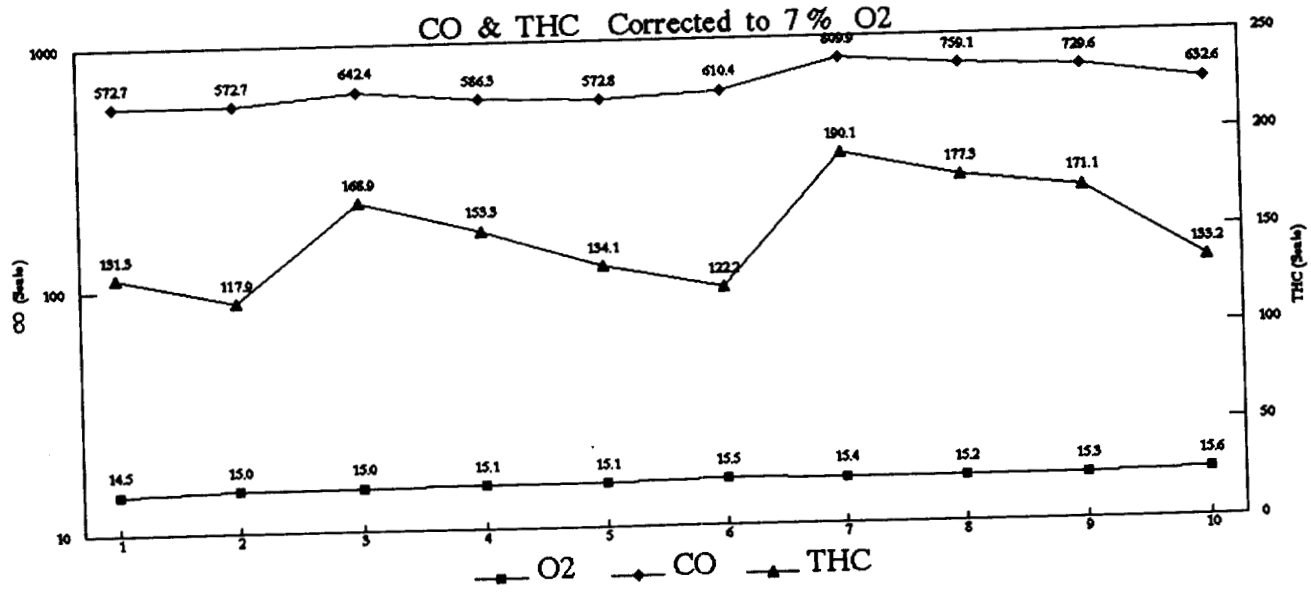
Run # : Three
Period : 6 Minute Average
Number of samples: 10

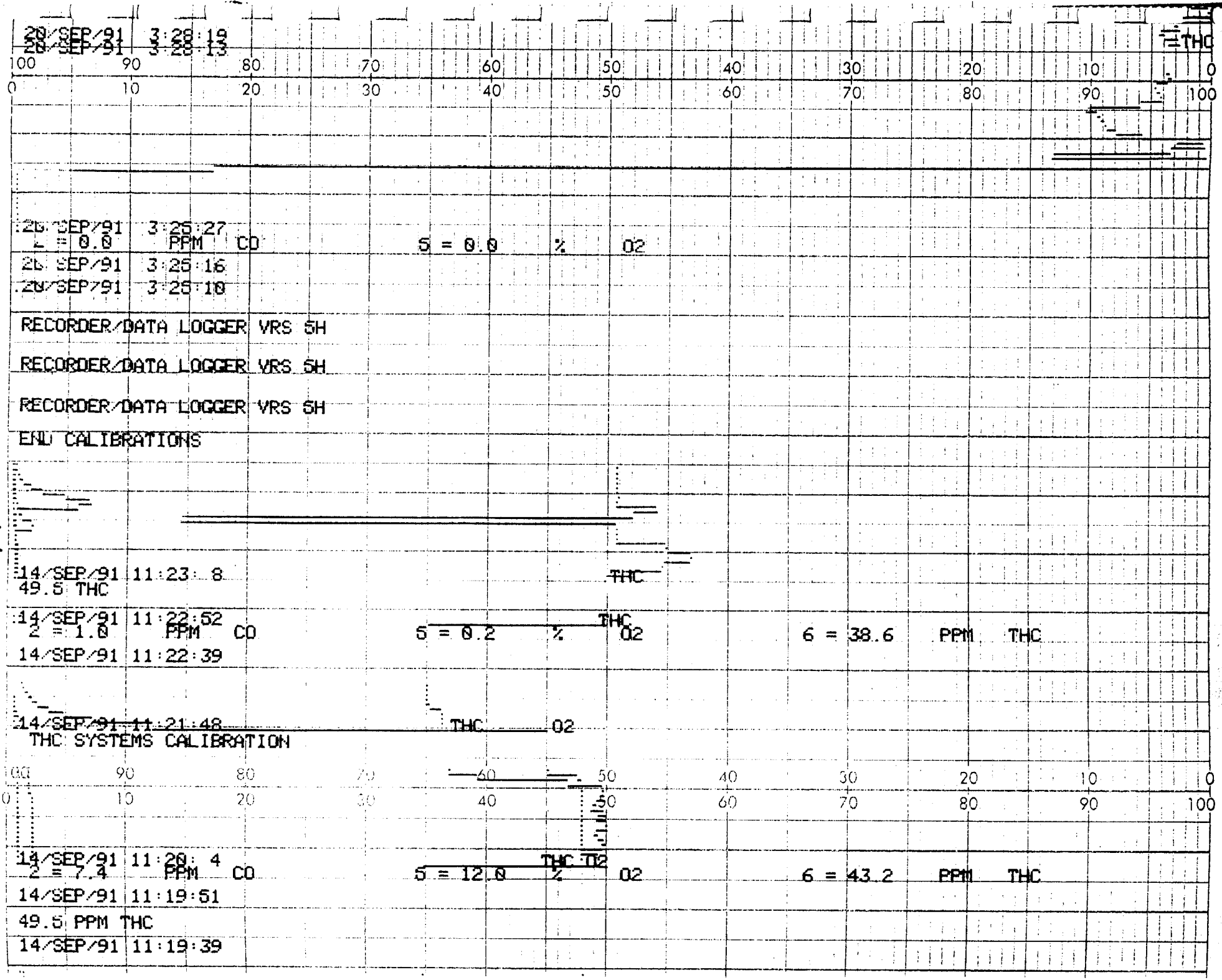
Date: 09/14/1991
Plant name: Dayton
Unit Tested: Drum Mix
Product Tested: Virgin

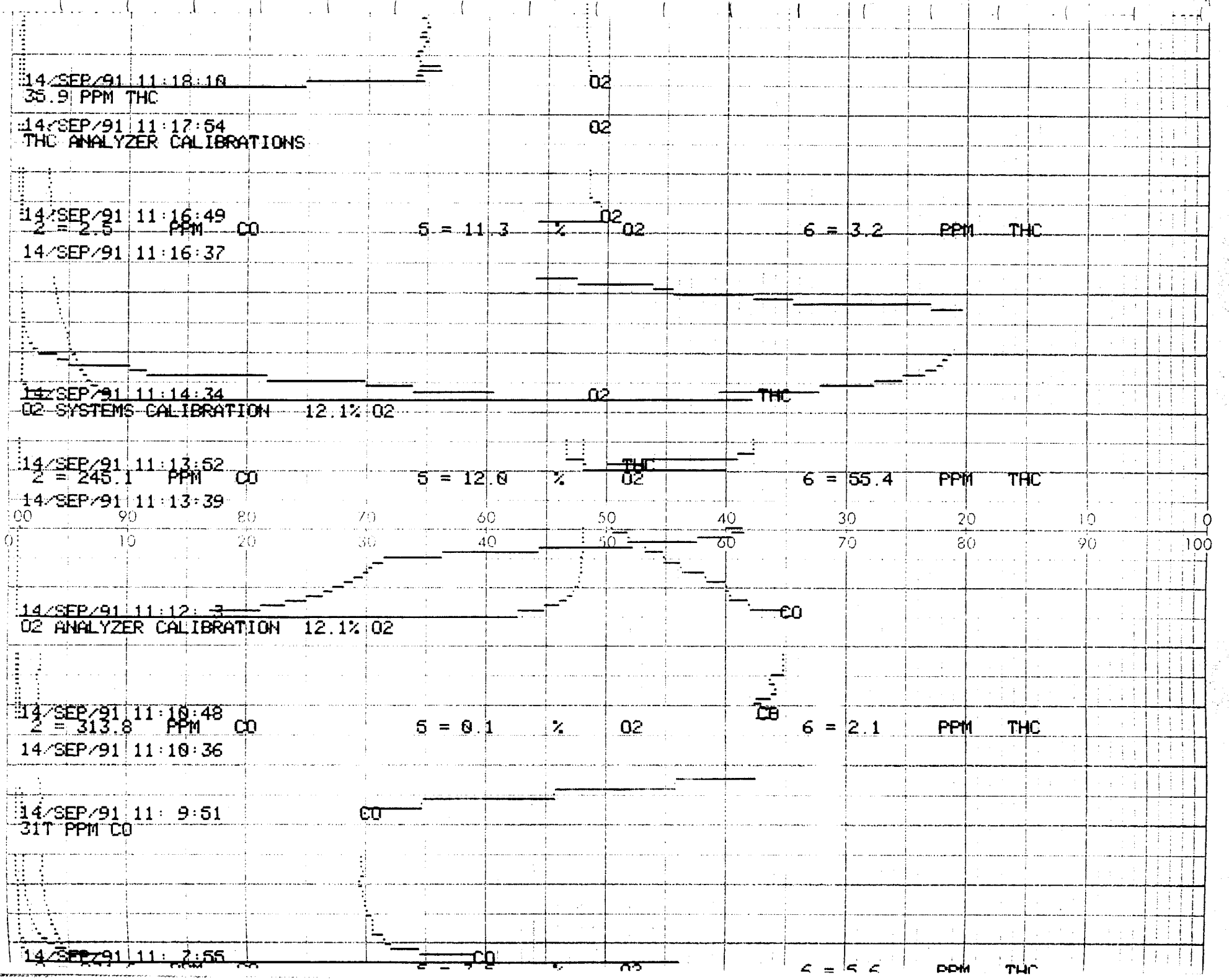
	Time	Parameters			7 % O2 Correction Parameters	
Sample #	Hr : Min	CO	THC	O2	CO	THC
	9 : 58	Start sampling				
1	10 : 4	263.8	60.5	14.5	572.7	131.3
2	10 : 10	243.2	50.1	15.0	572.7	117.9
3	10 : 16	271.2	71.3	15.0	642.4	168.9
4	10 : 22	244.1	63.8	15.1	586.3	153.3
5	10 : 28	237.7	55.7	15.1	572.8	134.1
6	10 : 34	236.9	47.4	15.5	610.4	122.2
7	10 : 40	321.0	75.4	15.4	809.9	190.1
8	10 : 46	308.6	72.1	15.2	759.1	177.3
9	10 : 52	296.3	69.5	15.3	729.6	171.1
10	10 : 58	241.2	50.8	15.6	632.6	133.2
Average		266.4	61.6	15.2	648.8	149.9

$\frac{21-7}{21-15.2} = \frac{14}{5.8} = 2.41$

266.4 x 2.41 = 643.03
-61.6 x 2.41 = 148.46




20/SEP/91 3:28:19
20/SEP/91 3:28:13
THC
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
26/SEP/91 3:25:27
2 = 0.0 PPM CO
5 = 0.0 % O2
26/SEP/91 3:25:16
26/SEP/91 3:25:10
RECORDER/DATA LOGGER VRS 5H
RECORDER/DATA LOGGER VRS 5H
RECORDER/DATA LOGGER VRS 5H
END CALIBRATIONS
14/SEP/91 11:23: 8
49.5 THC
THC
14/SEP/91 11:22:52
2 = 1.0 PPM CO
5 = 0.2 % O2
THC
6 = 38.6 PPM THC
14/SEP/91 11:22:39
14/SEP/91 11:21:48
THC O2
THC SYSTEMS CALIBRATION
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
14/SEP/91 11:20: 4
2 = 7.4 PPM CO
5 = 12.0 % O2
THC O2
6 = 43.2 PPM THC
14/SEP/91 11:19:51
49.5 PPM THC
14/SEP/91 11:19:39


14/SEP/91 11:18:10
35.9 PPM THC
O2
14/SEP/91 11:17:54
THC ANALYZER CALIBRATIONS
O2
14/SEP/91 11:16:49
2 = 2.5 PPM CO
5 = 11.3 % O2
6 = 3.2 PPM THC
O2
14/SEP/91 11:16:37
14/SEP/91 11:14:34
O2 SYSTEMS CALIBRATION 12.1% O2
O2
THC
14/SEP/91 11:13:52
2 = 245.1 PPM CO
5 = 12.0 % O2
6 = 55.4 PPM THC
THC
14/SEP/91 11:13:39
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
14/SEP/91 11:12:
O2 ANALYZER CALIBRATION 12.1% O2
CO
14/SEP/91 11:10:48
2 = 313.8 PPM CO
5 = 0.1 % O2
6 = 2.1 PPM THC
CO
14/SEP/91 11:10:36
14/SEP/91 11: 9:51
31T PPM CO
CO
14/SEP/91 11: 7:55
CO

2 = 4.0 PPM CO

14/SEP/91 11: 7:43

141 PPM CO

14/SEP/91 11: 7:29 CO2 O2 THC

CO SYSTEM CALIBRATIONS

14/SEP/91 11: 5:47 CO2 CO THC O2

317 PPM CO

100 90 80 70 60 50 40 30 20 10 0

14/SEP/91 11: 5: 1 CO2 CO THC O2

12 = 52.6 PPM THC

2 = 150.2 PPM CO

5 = 15.1 % O2

6 = 52.9 PPM THC

14/SEP/91 11: 4:43

14/SEP/91 11: 4:36 CO2 CO THC O2

141 PPM CO

CO ANALYZER CALIBRATIONS

END TEST #3 DAYTON PLANT

8 = 282.7 PPM CO

2 = 308.8 PPM CO

11 = 15.1 % O2

5 = 15.1 % O2

12 = 52.5 PPM THC

6 = 52.7 PPM THC

14/SEP/91 11: 3: 6

14/SEP/91 11: 0:25 CO2 CO THC O2

8 = 241.2 PPM CO

2 = 175.2 PPM CO

11 = 15.6 % O2

5 = 15.6 % O2

12 = 45.7 PPM THC

6 = 44.1 PPM THC

14/SEP/91 11: 0: 6

14/SEP/91 10:57:25 CO2 THC O2

8 = 291.1 PPM CO

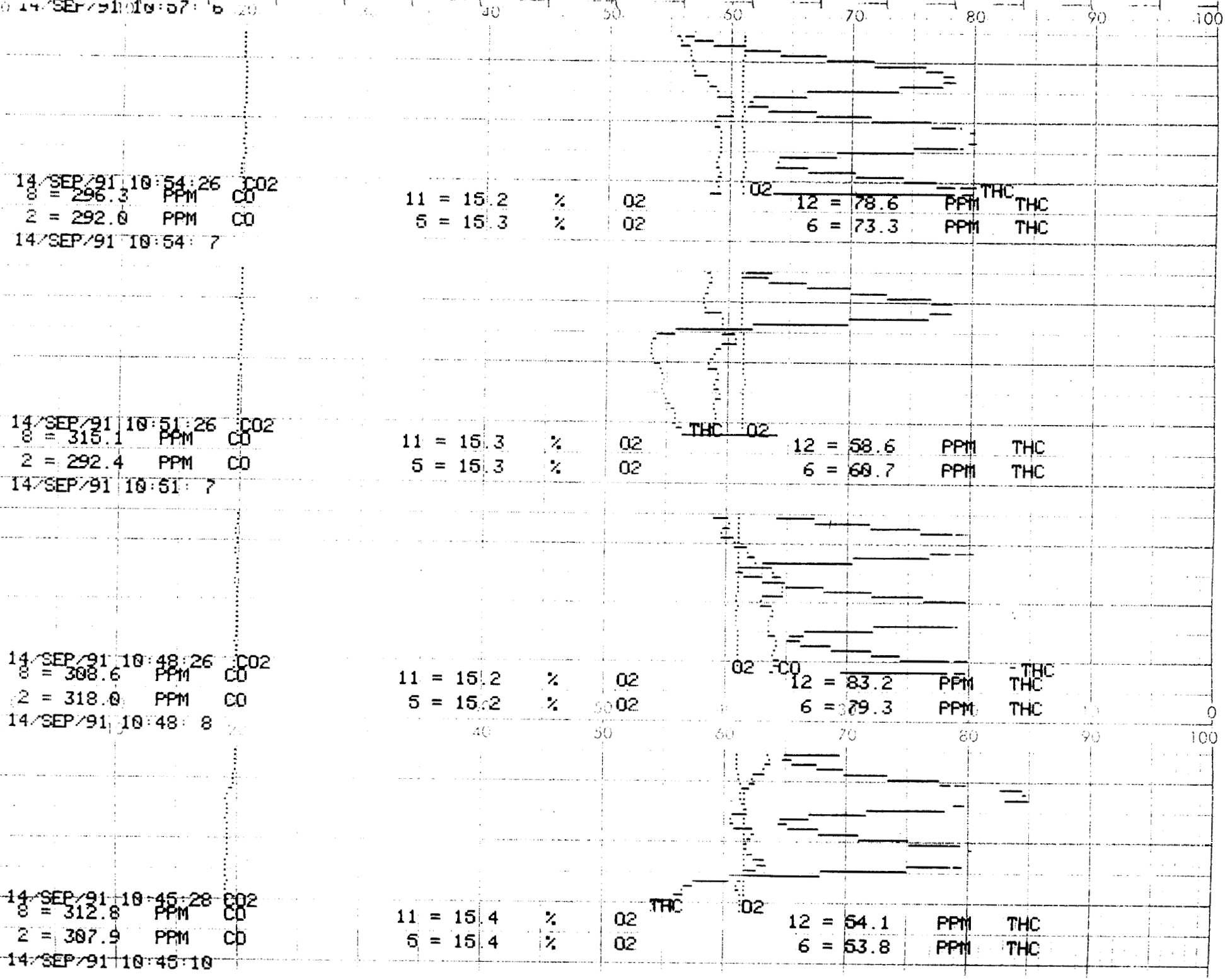
11 = 15.3 % O2

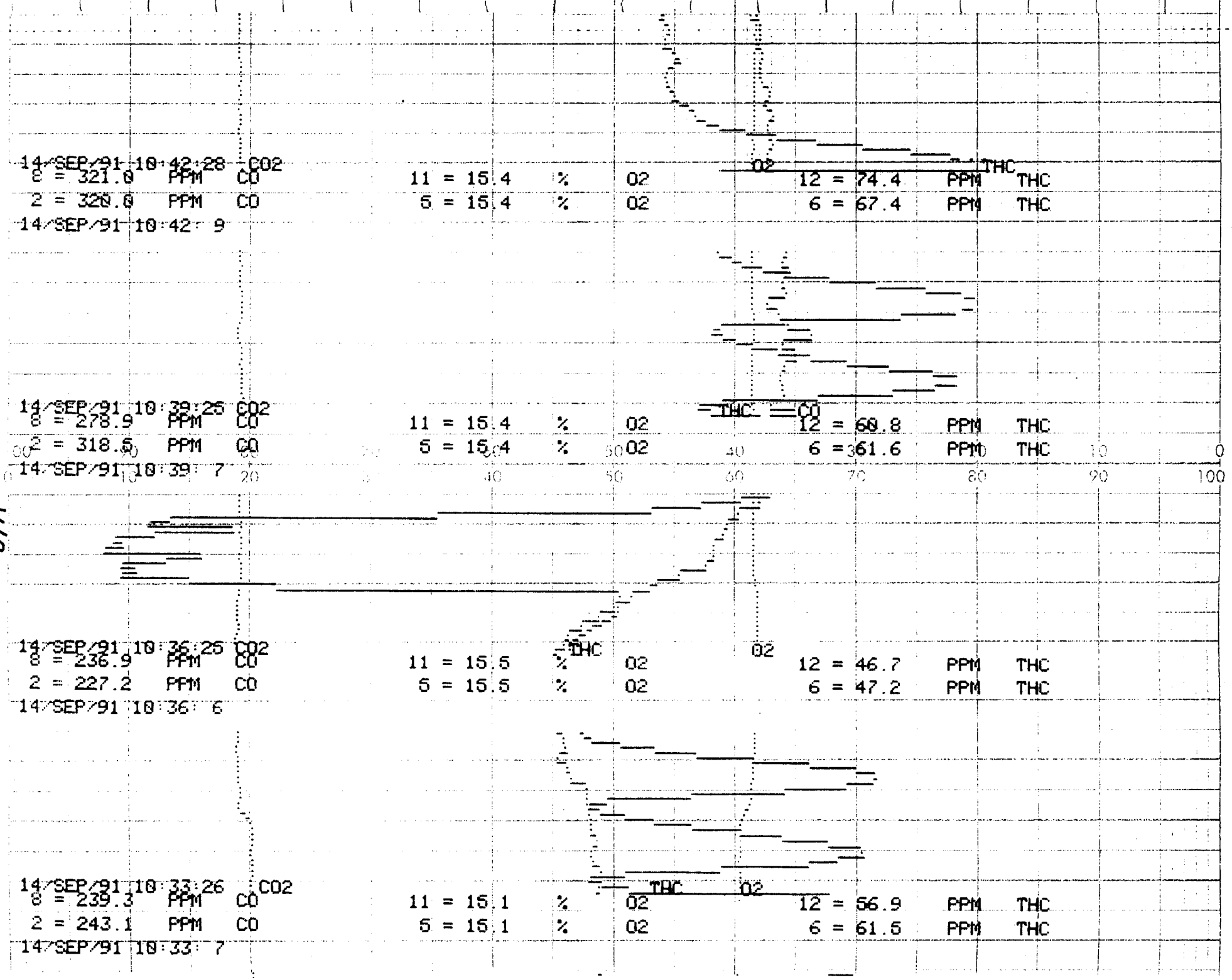
5 = 15.3 % O2

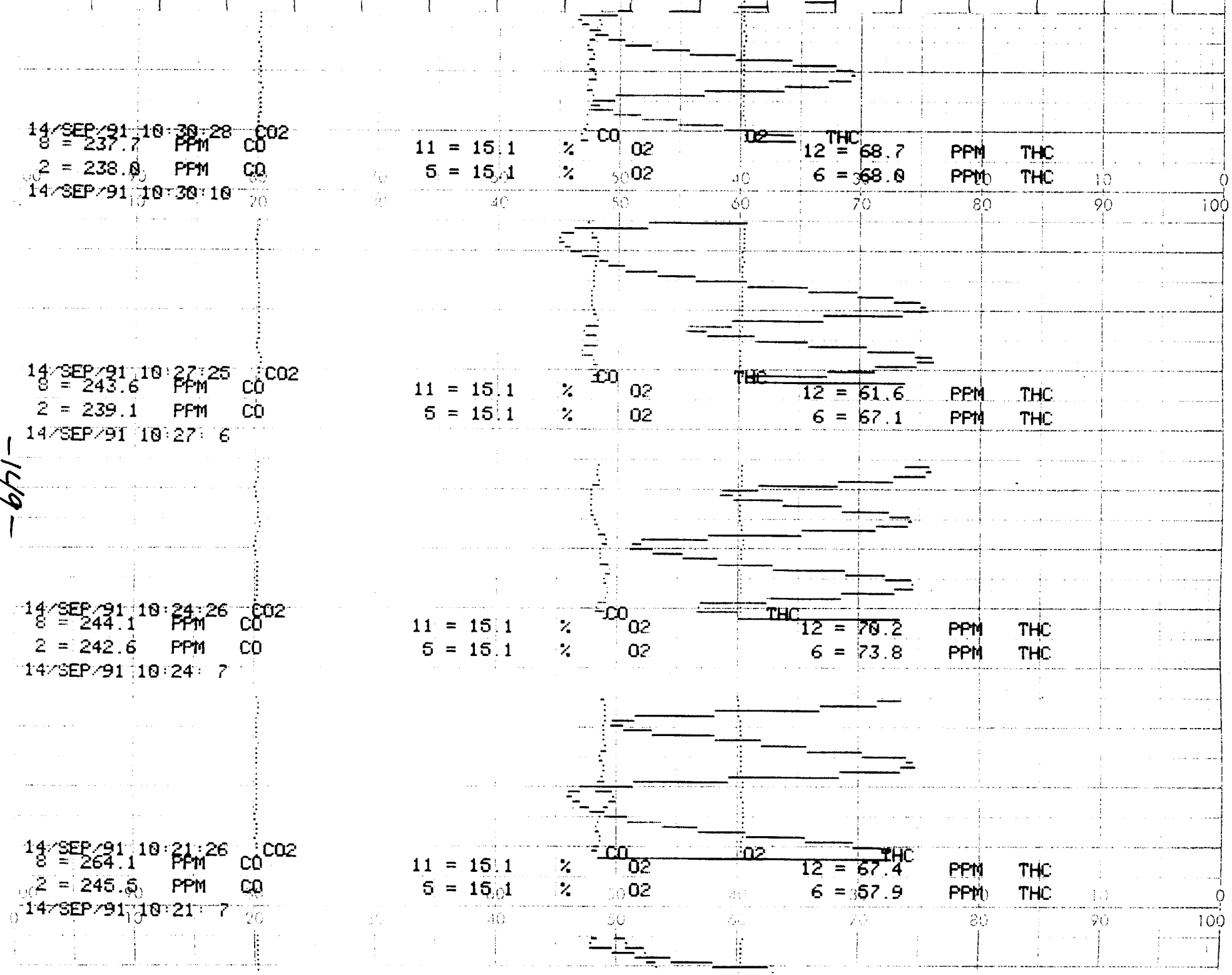
12 = 54.3 PPM THC

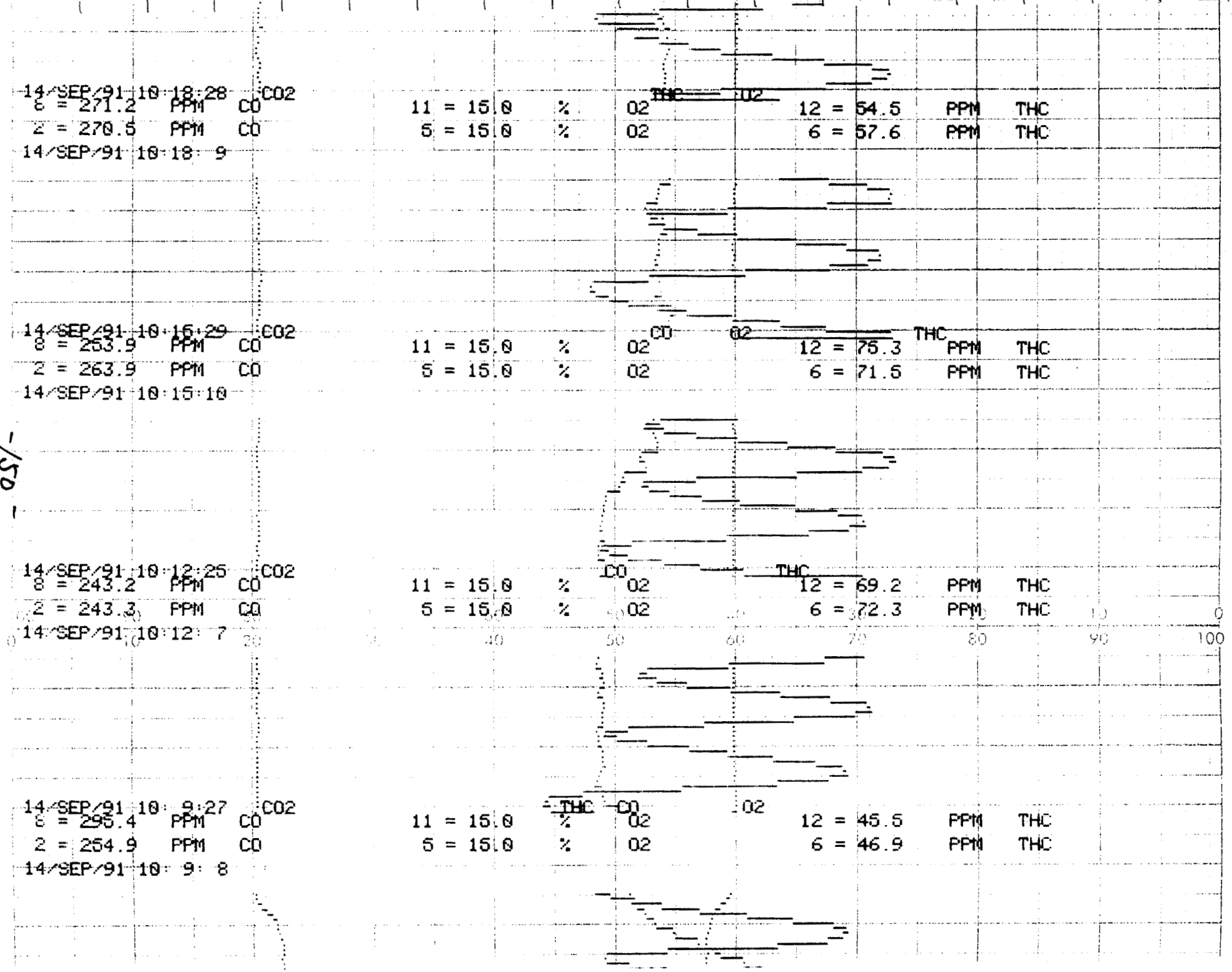
6 = 54.8 PPM THC

14/SEP/91 10:57: 6

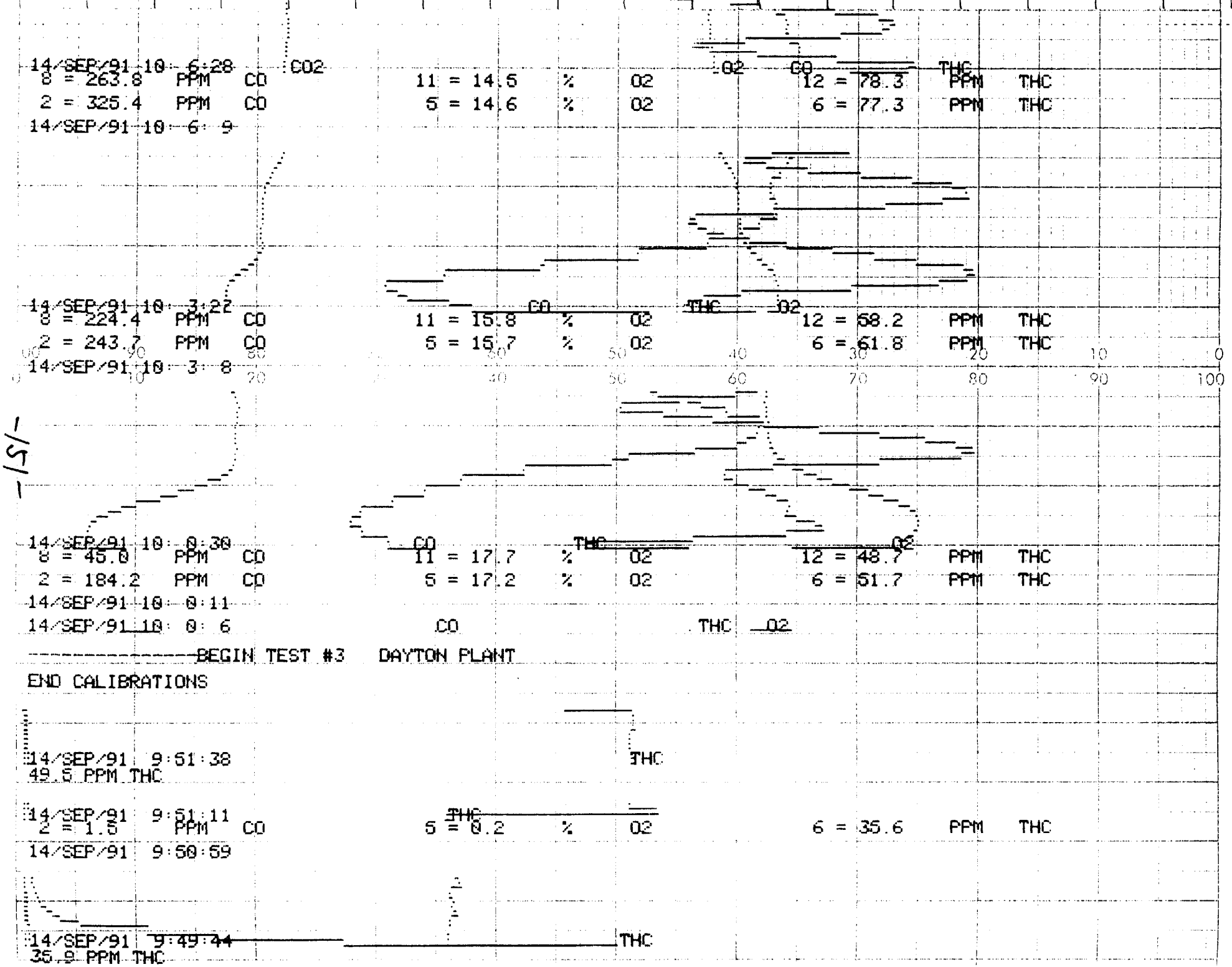



14/SEP/91 10:42:28 CO2
8 = 321.0 PPM CO
2 = 320.0 PPM CO
11 = 15.4 % O2
5 = 15.4 % O2
12 = 74.4 PPM THC
6 = 67.4 PPM THC
14/SEP/91 10:42: 9
14/SEP/91 10:39:25 CO2
8 = 278.9 PPM CO
2 = 318.5 PPM CO
11 = 15.4 % O2
5 = 15.4 % O2
12 = 60.8 PPM THC
6 = 61.6 PPM THC
14/SEP/91 10:39: 7
14/SEP/91 10:36:25 CO2
8 = 236.9 PPM CO
2 = 227.2 PPM CO
11 = 15.5 % O2
5 = 15.5 % O2
12 = 46.7 PPM THC
6 = 47.2 PPM THC
14/SEP/91 10:36: 6
14/SEP/91 10:33:26 CO2
8 = 239.3 PPM CO
2 = 243.1 PPM CO
11 = 15.1 % O2
5 = 15.1 % O2
12 = 56.9 PPM THC
6 = 61.5 PPM THC
14/SEP/91 10:33: 7
THC
O2
CO
0
10
20
30
40
50
60
70
80
90
100


14/SEP/91 10:30:28 CO2
8 = 237.7 PPM CO
2 = 238.0 PPM CO
14/SEP/91 10:30:10
11 = 15.1 % O2
5 = 15.1 % O2
CO
O2
THC
12 = 68.7 PPM THC
6 = 68.0 PPM THC
14/SEP/91 10:27:25 CO2
8 = 243.6 PPM CO
2 = 239.1 PPM CO
14/SEP/91 10:27: 6
11 = 15.1 % O2
5 = 15.1 % O2
CO
THC
12 = 61.6 PPM THC
6 = 67.1 PPM THC
14/SEP/91 10:24:26 CO2
8 = 244.1 PPM CO
2 = 242.6 PPM CO
14/SEP/91 10:24: 7
11 = 15.1 % O2
5 = 15.1 % O2
CO
THC
12 = 70.2 PPM THC
6 = 73.8 PPM THC
14/SEP/91 10:21:26 CO2
8 = 264.1 PPM CO
2 = 245.5 PPM CO
14/SEP/91 10:21: 7
11 = 15.1 % O2
5 = 15.1 % O2
CO
O2
THC
12 = 67.4 PPM THC
6 = 67.9 PPM THC
0
10
20
30
40
50
60
70
80
90
100


14/SEP/91 10:18:28 CO2
8 = 271.2 PPM CO
2 = 270.5 PPM CO
11 = 15.0 % O2
5 = 15.0 % O2
THC O2
12 = 54.5 PPM THC
6 = 57.6 PPM THC
14/SEP/91 10:18: 9
14/SEP/91 10:16:29 CO2
8 = 253.9 PPM CO
2 = 263.9 PPM CO
11 = 15.0 % O2
5 = 15.0 % O2
CO O2 THC
12 = 75.3 PPM THC
6 = 71.5 PPM THC
14/SEP/91 10:15:10
14/SEP/91 10:12:25 CO2
8 = 243.2 PPM CO
2 = 243.3 PPM CO
11 = 15.0 % O2
5 = 15.0 % O2
CO THC
12 = 69.2 PPM THC
6 = 72.3 PPM THC
14/SEP/91 10:12: 7
14/SEP/91 10: 9:27 CO2
8 = 295.4 PPM CO
2 = 254.9 PPM CO
11 = 15.0 % O2
5 = 15.0 % O2
THC CO O2
12 = 45.5 PPM THC
6 = 46.9 PPM THC
14/SEP/91 10: 9: 8
0 10 20 30 40 50 60 70 80 90 100

-/50-


14/SEP/91 10: 6:28
CO2
O2
CO
THC
8 = 263.8 PPM CO
11 = 14.5 % O2
12 = 78.3 PPM THC
2 = 325.4 PPM CO
5 = 14.6 % O2
6 = 77.3 PPM THC
14/SEP/91 10: 6: 9
14/SEP/91 10: 3:22
CO
THC
O2
8 = 224.4 PPM CO
11 = 15.8 % O2
12 = 58.2 PPM THC
2 = 243.7 PPM CO
5 = 15.7 % O2
6 = 61.8 PPM THC
14/SEP/91 10: 3: 8
14/SEP/91 10: 0:30
CO
THC
O2
8 = 45.0 PPM CO
11 = 17.7 % O2
12 = 48.7 PPM THC
2 = 184.2 PPM CO
5 = 17.2 % O2
6 = 51.7 PPM THC
14/SEP/91 10: 0:11
14/SEP/91 10: 0: 6
CO
THC
O2
BEGIN TEST #3 DAYTON PLANT
END CALIBRATIONS
14/SEP/91 9:51:38
49.5 PPM THC
THC
14/SEP/91 9:51:11
THC
2 = 1.5 PPM CO
5 = 0.2 % O2
6 = 35.6 PPM THC
14/SEP/91 9:50:59
14/SEP/91 9:49:44
35.9 PPM THC
THC

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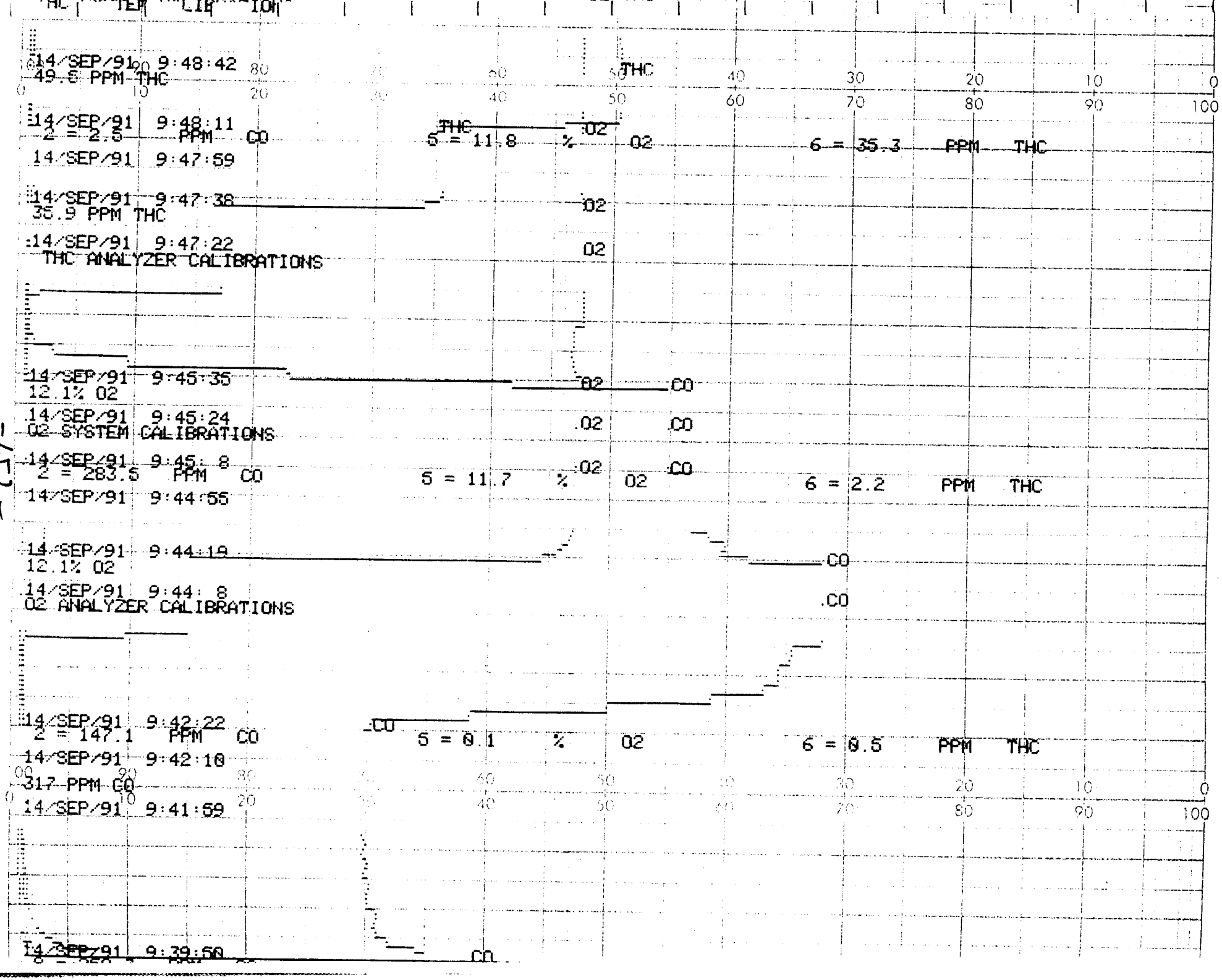

14/SEP/91 9:48:42
49.6 PPM THC
14/SEP/91 9:48:11
2 = 2.5 PPM CO
5 = 11.8 % O2
6 = 35.3 PPM THC
14/SEP/91 9:47:59
14/SEP/91 9:47:38
35.9 PPM THC
14/SEP/91 9:47:22
THC ANALYZER CALIBRATIONS
14/SEP/91 9:45:35
12.1% O2
14/SEP/91 9:45:24
O2 SYSTEM CALIBRATIONS
14/SEP/91 9:45: 8
2 = 283.5 PPM CO
5 = 11.7 % O2
6 = 2.2 PPM THC
14/SEP/91 9:44:55
14/SEP/91 9:44:19
12.1% O2
14/SEP/91 9:44: 8
O2 ANALYZER CALIBRATIONS
14/SEP/91 9:42:22
2 = 147.1 PPM CO
5 = 0.1 % O2
6 = 0.5 PPM THC
14/SEP/91 9:42:10
317 PPM CO
14/SEP/91 9:41:59
14/SEP/91 9:39:50

2 = 244.1 PPM CO 5 = 6.3 % O2 6 = 1.8 PPM THC
14/SEP/91 9:39:31

141 PPM
14/SEP/91 9:39:20

CO SYSTEM CALIBRATIONS
8 = 259.7 PPM CO 11 = 13.5 % O2 12 = 9.8 PPM THC
2 = 322.2 PPM CO 5 = 13.5 % O2 6 = 10.8 PPM THC
14/SEP/91 9:38:56

14/SEP/91 9:37:26 CO2 CO O2
317 PPM CO

14/SEP/91 9:36:36 CO2 CO O2
141 PPM CO

14/SEP/91 9:36:20 THC CO O2
8 = 260.8 PPM CO 11 = 13.4 % O2 12 = 22.1 PPM THC
2 = 161.6 PPM CO 5 = 13.4 % O2 6 = 21.9 PPM THC
14/SEP/91 9:36: 1

14/SEP/91 9:35:54 CO2 CO O2

100 90 80 70 60 50 40 30 20 10 0

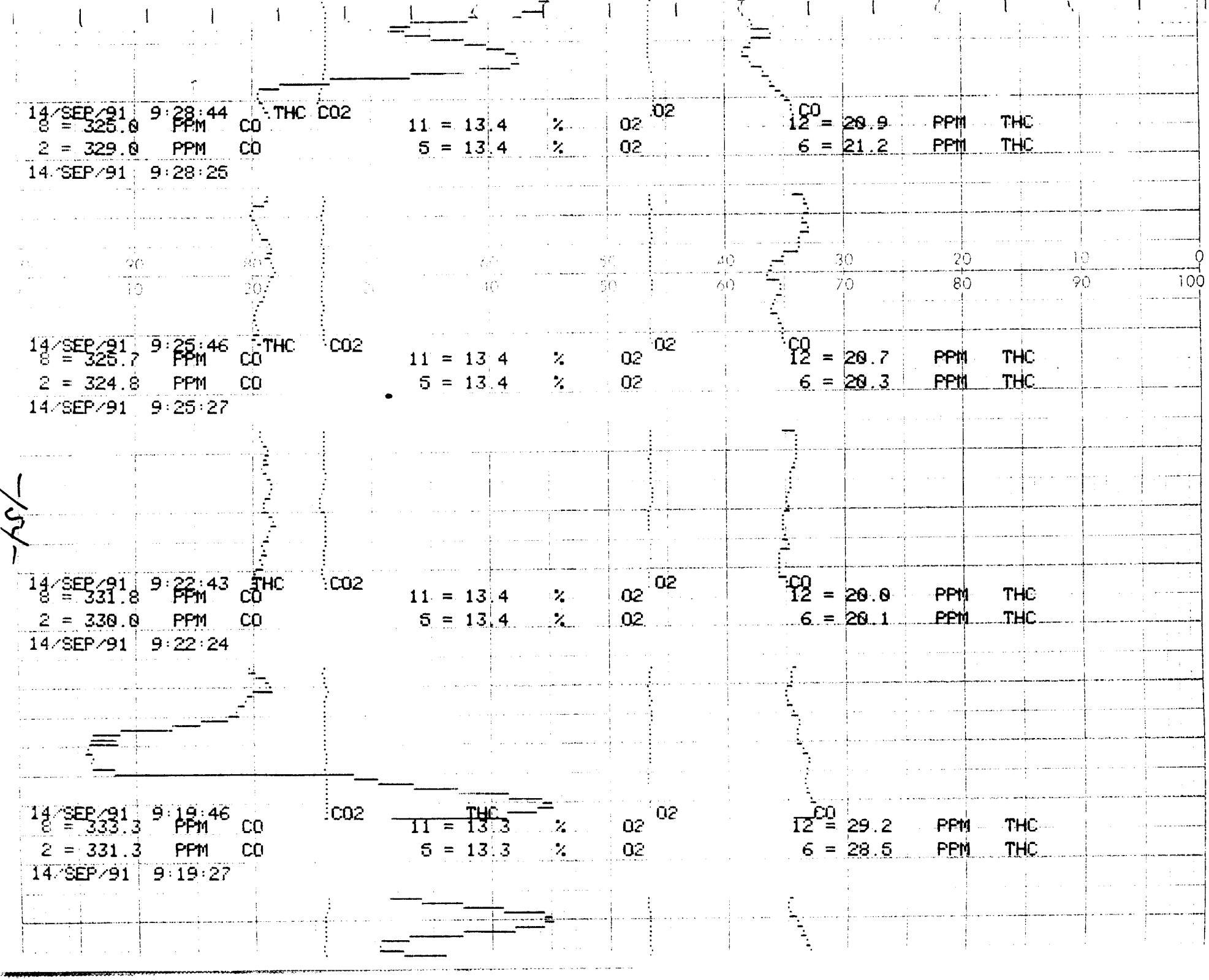
CO ANALYZER CALIBRATION

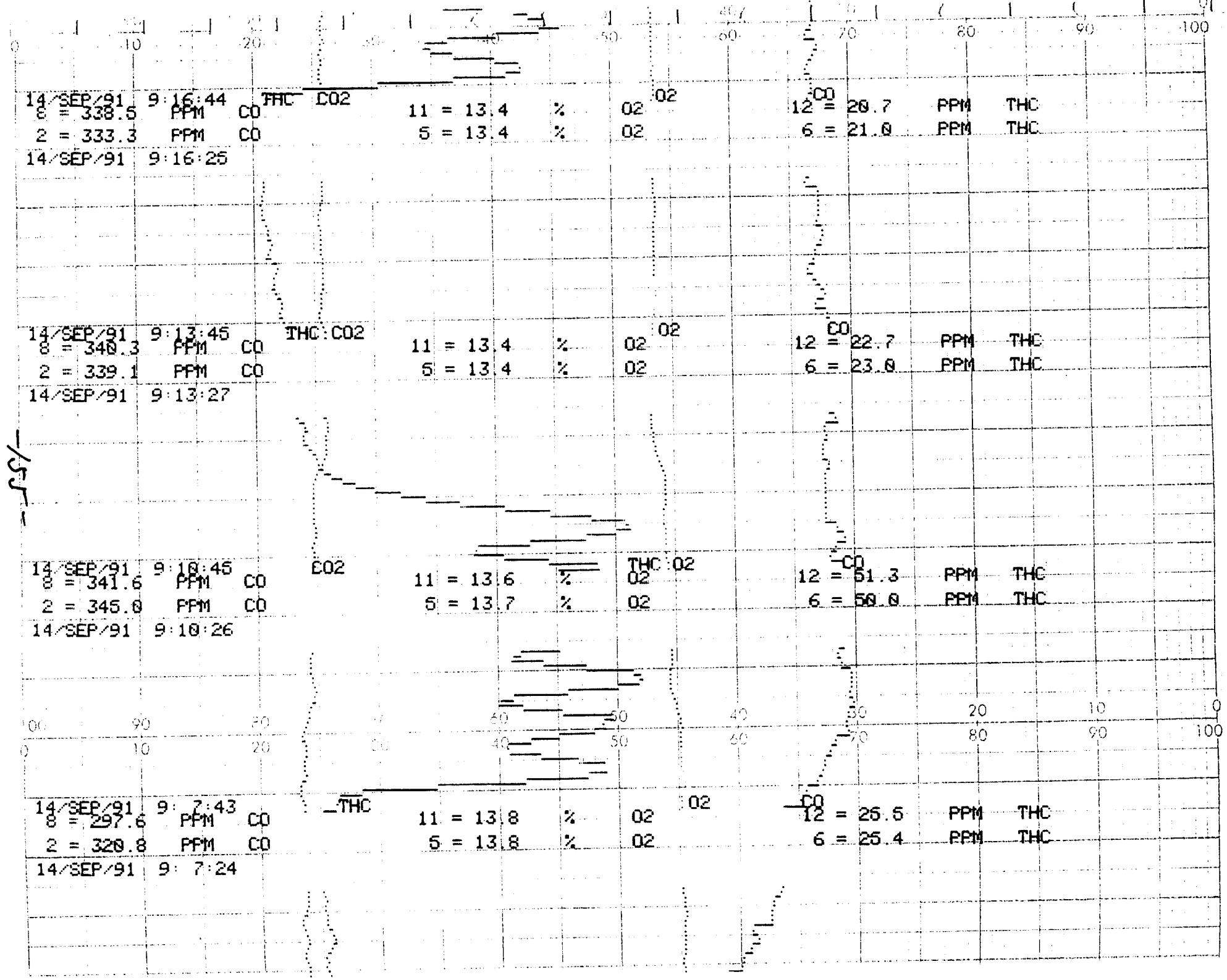
0 10 20 30 40 50 60 70 80 90 100

END TEST #2 BEGIN CO CALIBRATION

14/SEP/91 9:34:43 THC CO2 O2 CO
8 = 305.4 PPM CO 11 = 13.5 % O2 12 = 21.0 PPM THC
2 = 287.5 PPM CO 5 = 13.5 % O2 6 = 21.7 PPM THC
14/SEP/91 9:34:24

14/SEP/91 9:31:46 CO2 THC O2 CO
8 = 316.5 PPM CO 11 = 13.4 % O2 12 = 39.6 PPM THC
2 = 310.8 PPM CO 5 = 13.4 % O2 6 = 43.4 PPM THC
14/SEP/91 9:31:27


14/SEP/91 9:28:44
8 = 325.0 PPM CO
2 = 329.0 PPM CO
THC CO2
11 = 13.4 % O2
5 = 13.4 % O2
O2
CO
12 = 20.9 PPM THC
6 = 21.2 PPM THC
14/SEP/91 9:28:25
14/SEP/91 9:25:46
8 = 325.7 PPM CO
2 = 324.8 PPM CO
THC CO2
11 = 13.4 % O2
5 = 13.4 % O2
O2
CO
12 = 20.7 PPM THC
6 = 20.3 PPM THC
14/SEP/91 9:25:27
14/SEP/91 9:22:43
8 = 331.8 PPM CO
2 = 330.0 PPM CO
THC CO2
11 = 13.4 % O2
5 = 13.4 % O2
O2
CO
12 = 20.0 PPM THC
6 = 20.1 PPM THC
14/SEP/91 9:22:24
14/SEP/91 9:19:46
8 = 333.3 PPM CO
2 = 331.3 PPM CO
CO2
THC
11 = 13.3 % O2
5 = 13.3 % O2
O2
CO
12 = 29.2 PPM THC
6 = 28.5 PPM THC
14/SEP/91 9:19:27


14/SEP/91 9:16:44
8 = 338.5 PPM CO
2 = 333.3 PPM CO
14/SEP/91 9:16:25
THC CO2
11 = 13.4 % O2
5 = 13.4 % O2
O2
CO
12 = 20.7 PPM THC
6 = 21.0 PPM THC
14/SEP/91 9:13:45
8 = 340.3 PPM CO
2 = 339.1 PPM CO
14/SEP/91 9:13:27
THC CO2
11 = 13.4 % O2
5 = 13.4 % O2
O2
CO
12 = 22.7 PPM THC
6 = 23.0 PPM THC
14/SEP/91 9:10:45
8 = 341.6 PPM CO
2 = 345.0 PPM CO
14/SEP/91 9:10:26
CO2
11 = 13.6 % O2
5 = 13.7 % O2
THC O2
CO
12 = 51.3 PPM THC
6 = 50.0 PPM THC
14/SEP/91 9: 7:43
8 = 297.6 PPM CO
2 = 320.8 PPM CO
14/SEP/91 9: 7:24
THC
11 = 13.8 % O2
5 = 13.8 % O2
O2
CO
12 = 25.5 PPM THC
6 = 25.4 PPM THC

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14/SEP/91 9: 4:45
8 = 257.9 PPM CO
2 = 275.5 PPM CO
14/SEP/91 9: 4:26

THC

11 = 13.9 % O2
5 = 13.9 % O2

O2

12 = 22.6 PPM THC
6 = 22.8 PPM THC

14/SEP/91 9: 1:47
8 = 260.4 PPM CO
2 = 265.8 PPM CO
14/SEP/91 9: 1:28

THC

11 = 13.8 % O2
5 = 13.8 % O2

O2

12 = 23.1 PPM THC
6 = 23.0 PPM THC

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

14/SEP/91 8:58:45
8 = 261.5 PPM CO
2 = 268.8 PPM CO
14/SEP/91 8:58:26

CO2

THC

11 = 13.6 % O2
5 = 13.6 % O2

O2

12 = 34.2 PPM THC
6 = 38.6 PPM THC

14/SEP/91 8:55:43
8 = 284.8 PPM CO
2 = 268.9 PPM CO
14/SEP/91 8:55:24

CO2

11 = 13.5 % O2
5 = 13.5 % O2

O2

12 = 8.8 PPM THC
6 = 7.4 PPM THC

14/SEP/91 8:52:47
8 = 268.2 PPM CO
2 = 281.3 PPM CO
14/SEP/91 8:52:28

CO2 THC 11 = 13.4 % O2 O2 CO
5 = 13.3 % O2

12 = 40.8 PPM THC
6 = 44.2 PPM THC

14/SEP/91 8:49:44
8 = 266.5 PPM CO
2 = 266.3 PPM CO
14/SEP/91 8:49:26

THC CO2 11 = 13.4 % O2 O2
5 = 13.4 % O2

12 = 19.1 PPM THC
6 = 19.4 PPM THC

14/SEP/91 8:46:45
8 = 272.6 PPM CO
2 = 260.7 PPM CO
14/SEP/91 8:46:26

CO2 THC 11 = 13.4 % O2 O2
5 = 13.4 % O2

12 = 41.0 PPM THC
6 = 44.3 PPM THC

14/SEP/91 8:43:43
8 = 302.0 PPM CO
2 = 300.3 PPM CO
14/SEP/91 8:43:24

CO2 THC 11 = 13.5 % O2 O2 CO
5 = 13.5 % O2

12 = 32.5 PPM THC
6 = 35.2 PPM THC

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2 = 285.8 PPM CO
14/SEP/91 8:40:24

5 = 13.6 % O2

6 = 20.1 PPM THC

14/SEP/91 8:37:44 THC
8 = 250.0 PPM CO
2 = 244.6 PPM CO
14/SEP/91 8:37:26

CO O2
11 = 13.8 % O2
5 = 13.8 % O2

12 = 22.6 PPM THC
6 = 22.3 PPM THC

14/SEP/91 8:34:46 THC CO2
8 = 275.9 PPM CO
2 = 252.9 PPM CO
14/SEP/91 8:34:27

CO O2
11 = 13.5 % O2
5 = 13.5 % O2

12 = 20.0 PPM THC
6 = 20.0 PPM THC

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

14/SEP/91 8:32:2 CO2
8 = 271.3 PPM CO
2 = 271.3 PPM CO
14/SEP/91 8:31:29
14/SEP/91 8:31:23 CO2

O2 CO
11 = 13.4 % O2
5 = 13.5 % O2

12 = 15.1 PPM THC
6 = 15.3 PPM THC

O2

BEGIN TEST #2 DAYTON PLANT

END CALIBRATIONS

14/SEP/91 8:27:22

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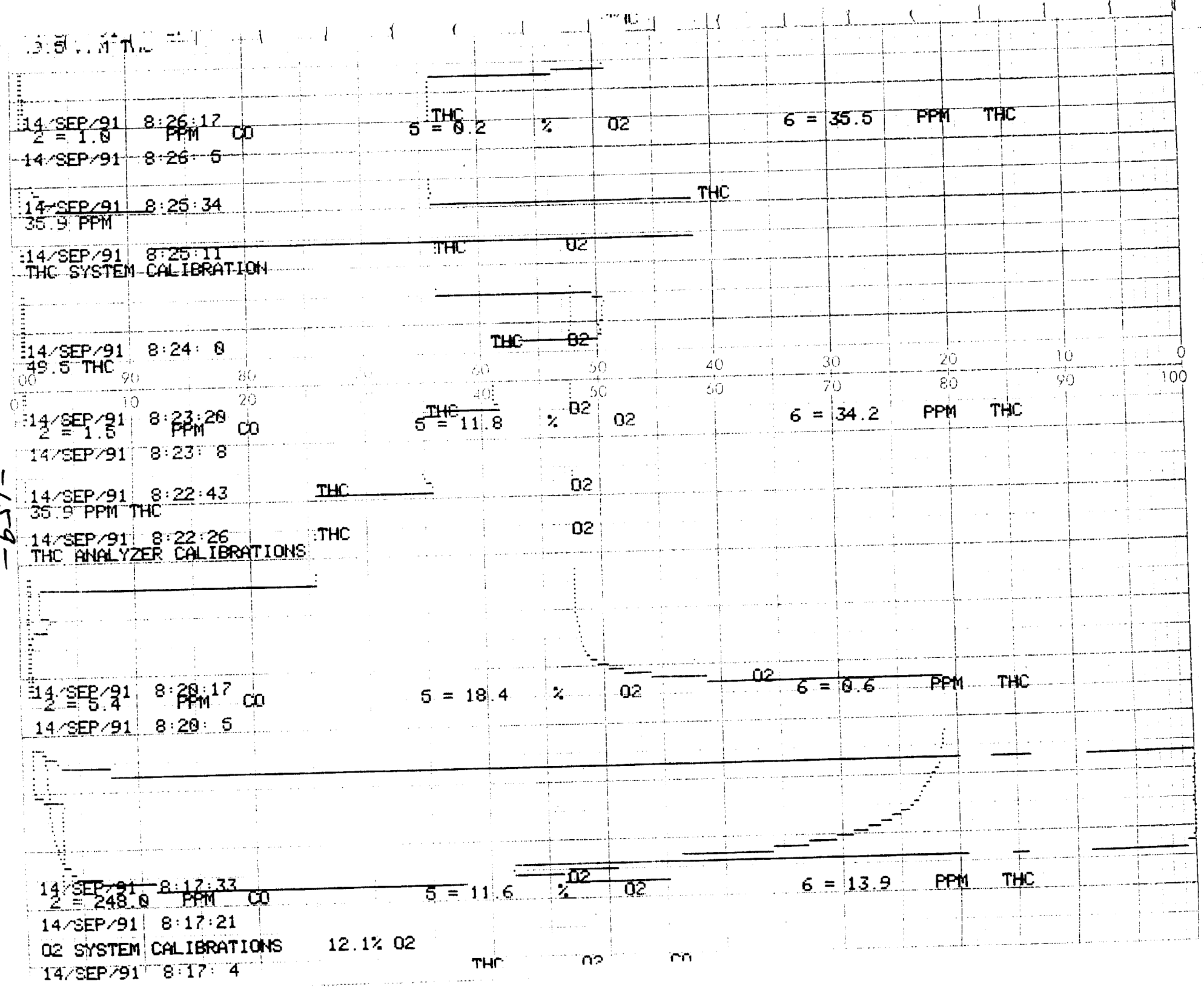
14/SEP/91 8:26:17
2 = 1.0 PPM CO
5 = 0.2 % O2
6 = 35.5 PPM THC
14/SEP/91 8:26: 5
14/SEP/91 8:25:34
35.9 PPM
14/SEP/91 8:25:11
THC SYSTEM CALIBRATION
14/SEP/91 8:24: 0
49.5 THC
14/SEP/91 8:23:20
2 = 1.5 PPM CO
5 = 11.8 % O2
6 = 34.2 PPM THC
14/SEP/91 8:23: 8
14/SEP/91 8:22:43
35.9 PPM THC
14/SEP/91 8:22:26
THC ANALYZER CALIBRATIONS
14/SEP/91 8:20:17
2 = 5.4 PPM CO
5 = 18.4 % O2
6 = 0.6 PPM THC
14/SEP/91 8:20: 5
14/SEP/91 8:17:33
2 = 248.0 PPM CO
5 = 11.6 % O2
6 = 13.9 PPM THC
14/SEP/91 8:17:21
O2 SYSTEM CALIBRATIONS 12.1% O2
14/SEP/91 8:17: 4

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14/SEP/91 8:15:59
O2 ANALYZER CALIBRATION 12.1%

14/SEP/91 8:15:19
2 = 312.0 PPM CO 5 = 1.5 % O2 6 = 0.9 PPM THC

14/SEP/91 8:15: 7

14/SEP/91 8:13: 9
317 PPM CO

14/SEP/91 8:12:20
2 = 149.5 PPM CO 5 = 1.1 % O2 6 = 1.8 PPM THC

14/SEP/91 8:12: 8

14/SEP/91 8:11:33
141 PPM CO

14/SEP/91 8:10:57
CO SYSTEM CALIBRATIONS

14/SEP/91 8: 9:21
2 = 144.1 PPM CO 5 = 14.3 % O2 6 = 43.7 PPM THC

14/SEP/91 8: 9: 9

14/SEP/91 8: 7:45
CO ANALYZER CALIBRATIONS

14/SEP/91 8: 6:57
END TEST #1 BEGIN CALIBRATIONS

14/SEP/91 8: 6:25
8 = 260.0 PPM CO 11 = 14.2 % O2 12 = 40.2 PPM THC

14/SEP/91 8: 3:25 CO2 THC

8 = 283.9 PPM CO 11 = 14.3 % O2 12 = 67.4 PPM THC

2 = 284.0 PPM CO 5 = 14.3 % O2 6 = 73.7 PPM THC

14/SEP/91 8: 3: 6

14/SEP/91 8: 0:28 CO2 THC CO O2

8 = 251.5 PPM CO 11 = 14.6 % O2 12 = 34.9 PPM THC

2 = 251.5 PPM CO 5 = 14.6 % O2 6 = 34.6 PPM THC

14/SEP/91 8: 0: 9

00 90 80 70 60 50 40 30 20 10 0

0 10 20 30 40 50 60 70 80 90 100

14/SEP/91 7:57:25 CO2 THC CO O2

8 = 233.5 PPM CO 11 = 14.6 % O2 12 = 32.7 PPM THC

2 = 233.0 PPM CO 5 = 14.6 % O2 6 = 32.8 PPM THC

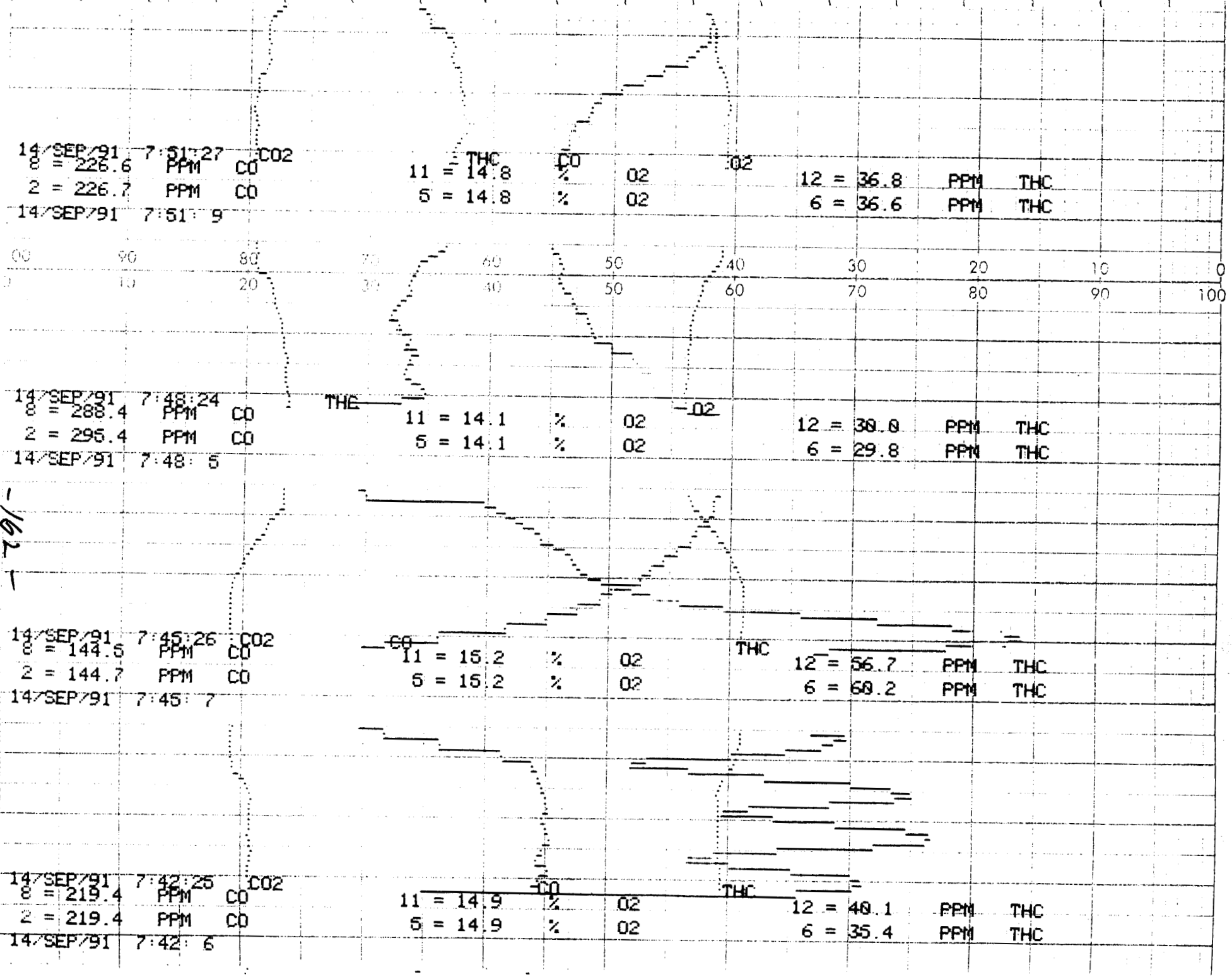
14/SEP/91 7:57: 6

14/SEP/91 7:54:26 CO2 THC O2

8 = 286.5 PPM CO 11 = 14.2 % O2 12 = 32.1 PPM THC

2 = 286.5 PPM CO 5 = 14.3 % O2 6 = 32.6 PPM THC

14/SEP/91 7:54: 7


14/SEP/91 7:51:27
8 = 226.6 PPM CO
2 = 226.7 PPM CO
14/SEP/91 7:51: 9
CO2
THC
CO
11 = 14.8 % O2
5 = 14.8 % O2
O2
12 = 36.8 PPM THC
6 = 36.6 PPM THC
90 80 70 60 50 40 30 20 10 0
10 20 30 40 50 60 70 80 90 100
14/SEP/91 7:48:24
8 = 288.4 PPM CO
2 = 295.4 PPM CO
14/SEP/91 7:48: 5
THC
11 = 14.1 % O2
5 = 14.1 % O2
O2
12 = 30.0 PPM THC
6 = 29.8 PPM THC
14/SEP/91 7:45:26
8 = 144.5 PPM CO
2 = 144.7 PPM CO
14/SEP/91 7:45: 7
CO2
CO
11 = 15.2 % O2
5 = 15.2 % O2
THC
12 = 56.7 PPM THC
6 = 60.2 PPM THC
14/SEP/91 7:42:25
8 = 219.4 PPM CO
2 = 219.4 PPM CO
14/SEP/91 7:42: 6
CO2
CO
11 = 14.9 % O2
5 = 14.9 % O2
THC
12 = 40.1 PPM THC
6 = 35.4 PPM THC

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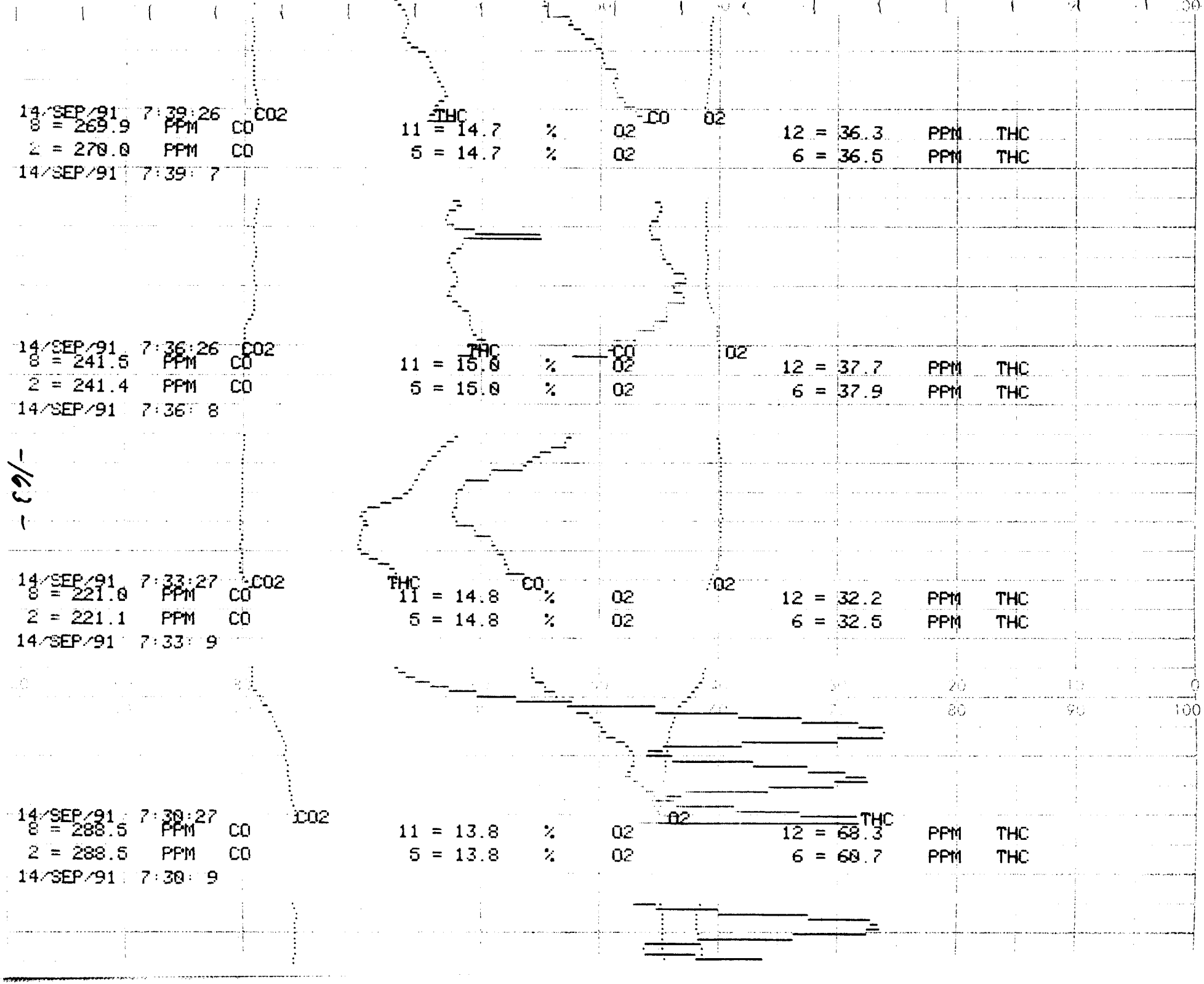
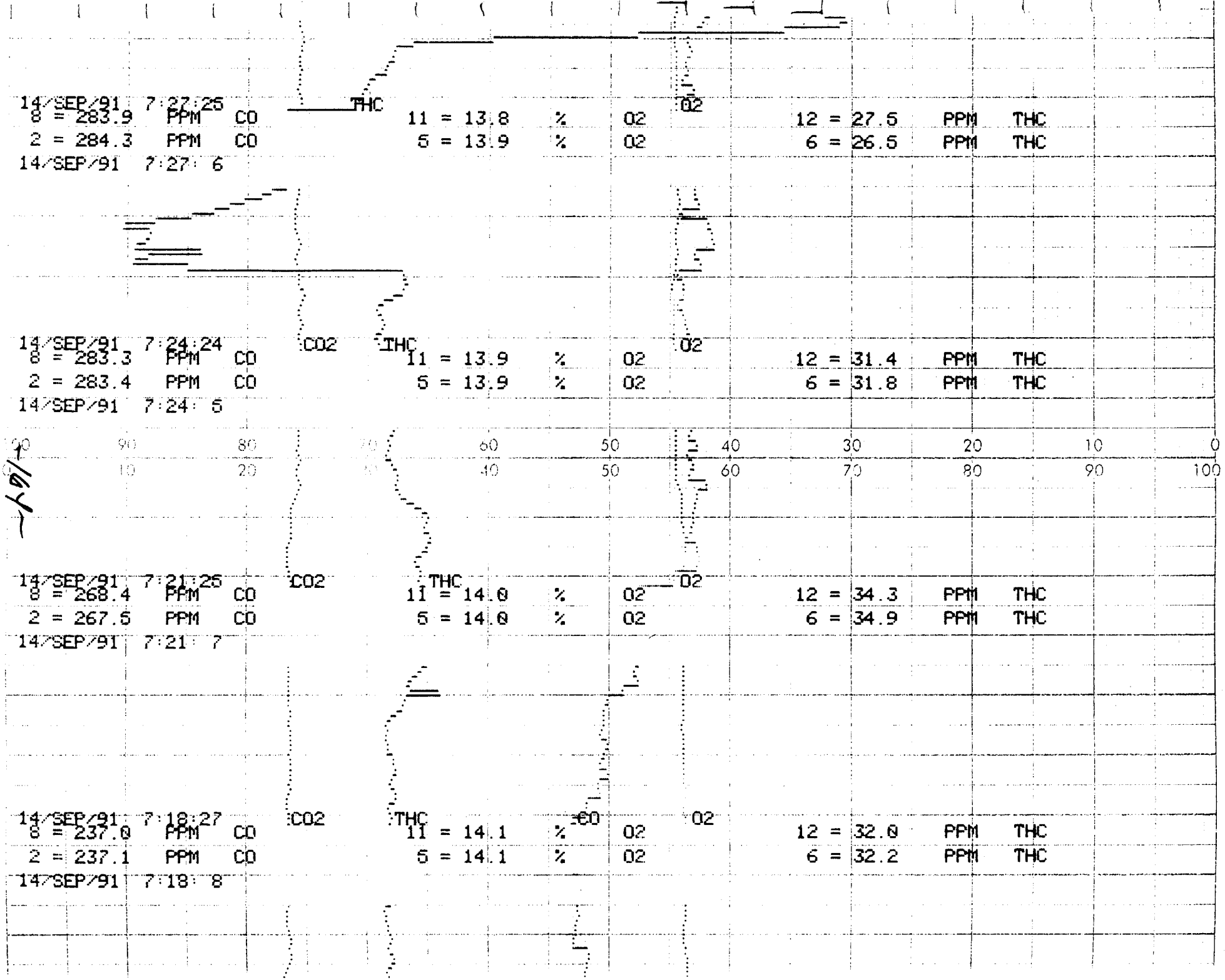

14/SEP/91 7:39:26 CO2 THC CO O2
8 = 269.9 PPM CO 11 = 14.7 % O2 12 = 36.3 PPM THC
2 = 270.0 PPM CO 5 = 14.7 % O2 6 = 36.5 PPM THC
14/SEP/91 7:39: 7
14/SEP/91 7:36:26 CO2 THC CO O2
8 = 241.5 PPM CO 11 = 15.0 % O2 12 = 37.7 PPM THC
2 = 241.4 PPM CO 5 = 15.0 % O2 6 = 37.9 PPM THC
14/SEP/91 7:36: 8
14/SEP/91 7:33:27 CO2 THC CO O2
8 = 221.0 PPM CO 11 = 14.8 % O2 12 = 32.2 PPM THC
2 = 221.1 PPM CO 5 = 14.8 % O2 6 = 32.5 PPM THC
14/SEP/91 7:33: 9
20
0
80
90
100
14/SEP/91 7:30:27 CO2 O2 THC
8 = 288.5 PPM CO 11 = 13.8 % O2 12 = 68.3 PPM THC
2 = 288.5 PPM CO 5 = 13.8 % O2 6 = 60.7 PPM THC
14/SEP/91 7:30: 9


14/SEP/91 7:27:25
8 = 283.9 PPM CO
2 = 284.3 PPM CO
11 = 13.8 % O2
5 = 13.9 % O2
12 = 27.5 PPM THC
6 = 26.5 PPM THC
THC
O2
14/SEP/91 7:27: 6
14/SEP/91 7:24:24
8 = 283.3 PPM CO
2 = 283.4 PPM CO
11 = 13.9 % O2
5 = 13.9 % O2
12 = 31.4 PPM THC
6 = 31.8 PPM THC
CO2
THC
O2
14/SEP/91 7:24: 5
90 80 70 60 50 40 30 20 10 0
10 20 30 40 50 60 70 80 90 100
14/SEP/91 7:21:25
8 = 268.4 PPM CO
2 = 267.5 PPM CO
11 = 14.0 % O2
5 = 14.0 % O2
12 = 34.3 PPM THC
6 = 34.9 PPM THC
CO2
THC
O2
14/SEP/91 7:21: 7
14/SEP/91 7:18:27
8 = 237.0 PPM CO
2 = 237.1 PPM CO
11 = 14.1 % O2
5 = 14.1 % O2
12 = 32.0 PPM THC
6 = 32.2 PPM THC
CO2
THC
CO
O2
14/SEP/91 7:18: 8

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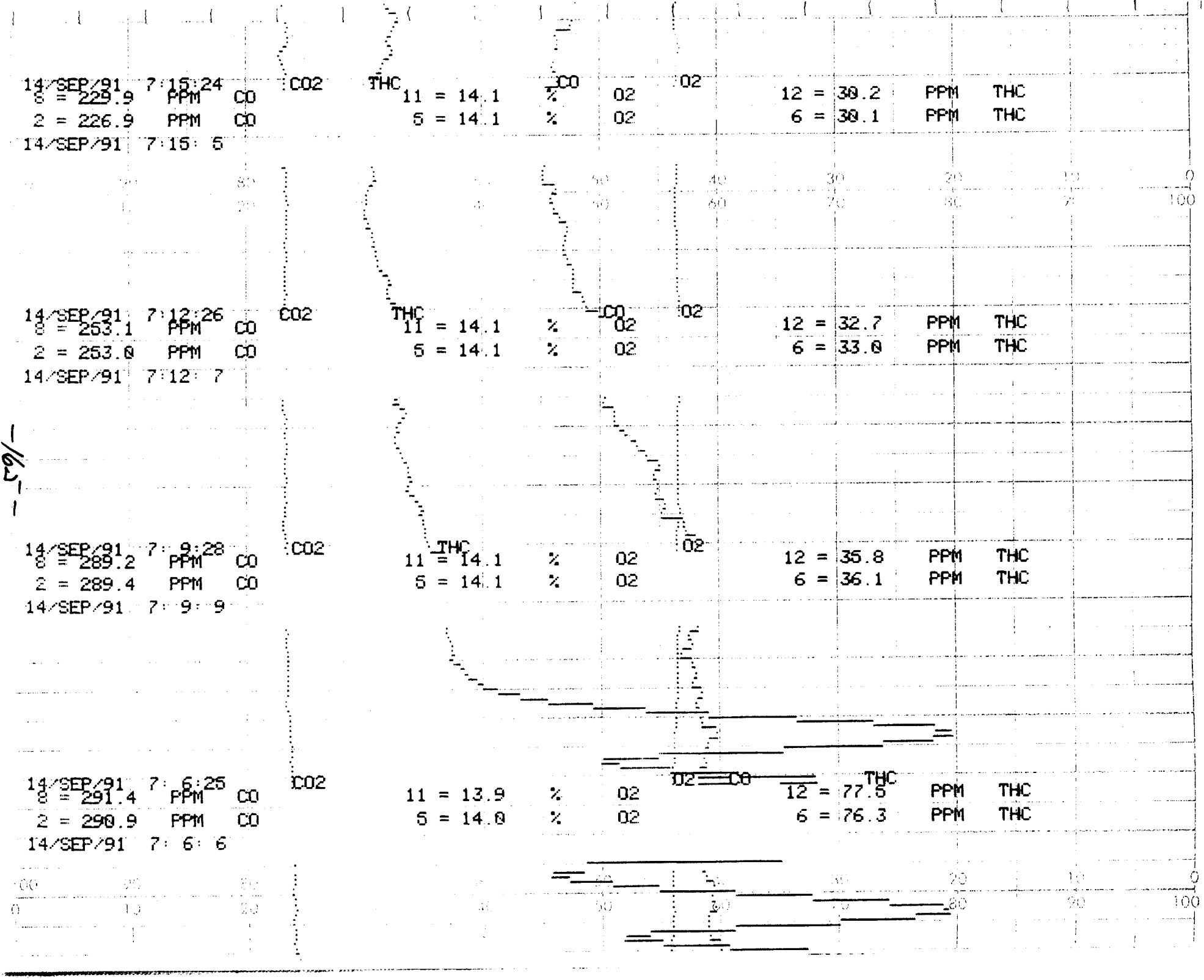

14/SEP/91 7:15:24
8 = 229.9 PPM CO
2 = 226.9 PPM CO
14/SEP/91 7:15: 5
CO2
THC
11 = 14.1 % O2
5 = 14.1 % O2
CO
O2
12 = 30.2 PPM THC
6 = 30.1 PPM THC
14/SEP/91 7:12:26
8 = 253.1 PPM CO
2 = 253.0 PPM CO
14/SEP/91 7:12: 7
CO2
THC
11 = 14.1 % O2
5 = 14.1 % O2
CO
O2
12 = 32.7 PPM THC
6 = 33.0 PPM THC
14/SEP/91 7: 9:28
8 = 289.2 PPM CO
2 = 289.4 PPM CO
14/SEP/91 7: 9: 9
CO2
THC
11 = 14.1 % O2
5 = 14.1 % O2
O2
12 = 35.8 PPM THC
6 = 36.1 PPM THC
14/SEP/91 7: 6:25
8 = 291.4 PPM CO
2 = 290.9 PPM CO
14/SEP/91 7: 6: 6
CO2
11 = 13.9 % O2
5 = 14.0 % O2
O2
CO
THC
12 = 77.5 PPM THC
6 = 76.3 PPM THC

14/SEP/91 7: 3:29 CO2 THC
8 = 297.6 PPM CO 11 = 13.9 % O2 12 = 65.9 PPM THC
2 = 298.9 PPM CO 5 = 13.9 % O2 6 = 73.3 PPM THC
14/SEP/91 7: 3:10
----------BEGIN TEST #1 DAYTON PLANT

14/SEP/91 7: 0:23 CO2 THC
8 = 292.4 PPM CO 11 = 14.0 % O2 12 = 61.6 PPM THC
2 = 292.9 PPM CO 5 = 14.0 % O2 6 = 63.6 PPM THC
14/SEP/91 7: 0: 5

P8
14/SEP/91 6:41:35 THC
END CALIBRATIONS

14/SEP/91 6:40:25 THC
38.9 PPM THC

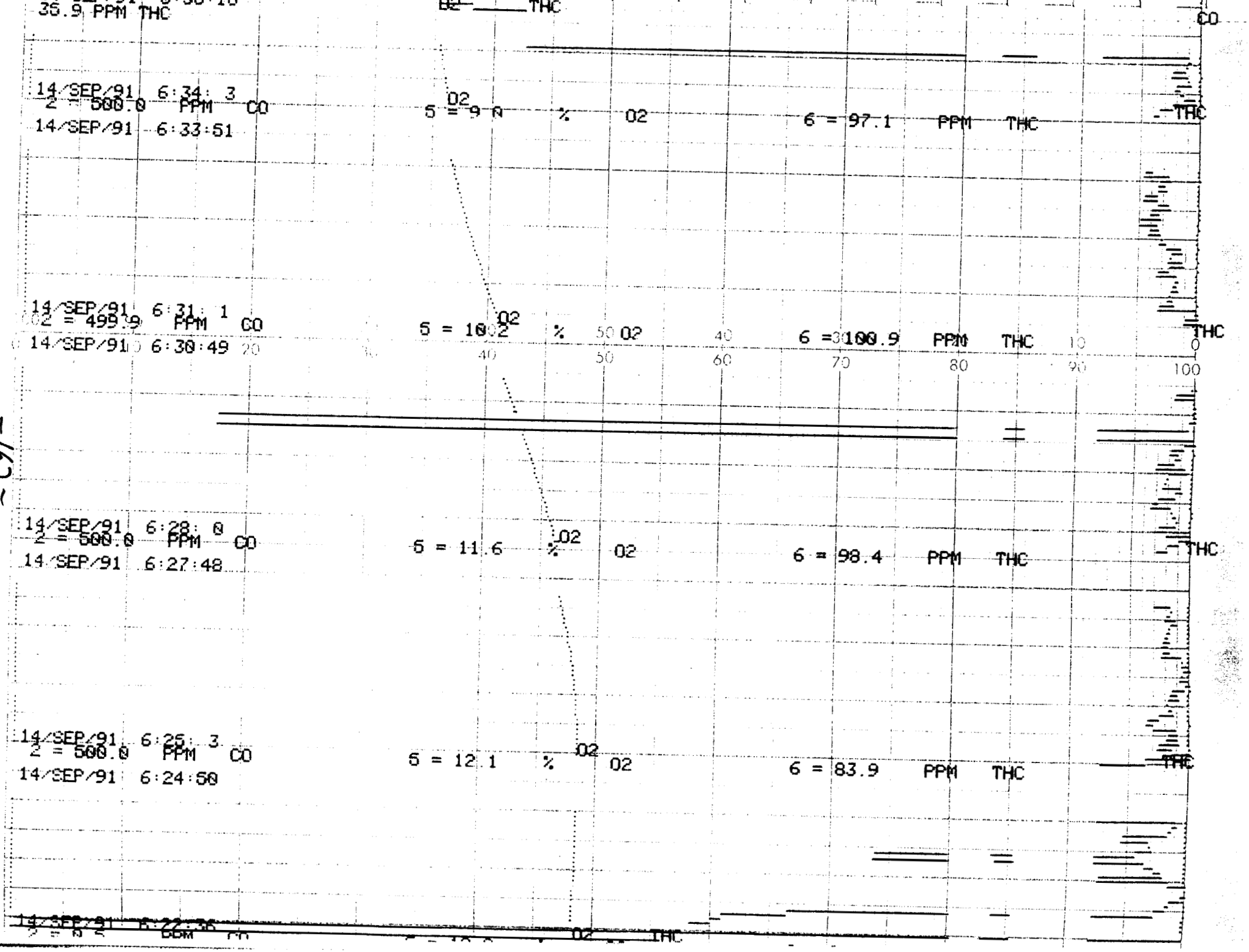
14/SEP/91 6:40: 3 THC
2 = 1.0 PPM CO 5 = 0.1 % O2 6 = 50.3 PPM THC
14/SEP/91 6:39:51

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

14/SEP/91 6:37:48 O2 THC CO
THC SYSTEM CALIBRATIONS

14/SEP/91 6:37: 2 O2 THC CO
2 = 500.0 PPM CO 5 = 8.7 % O2 6 = 43.8 PPM THC
14/SEP/91 6:36:50

14/SEP/91 6:36:34 THC CO
49.5 PPM THC


35.9 PPM THC
THC
CO
14/SEP/91 6:34: 3
2 = 500.0 PPM CO
14/SEP/91 6:33:51
5 = 9.8 % O2
6 = 97.1 PPM THC
THC
14/SEP/91 6:31: 1
2 = 499.9 PPM CO
14/SEP/91 6:30:49
5 = 10.2 % O2
6 = 100.9 PPM THC
THC
14/SEP/91 6:28: 0
2 = 500.0 PPM CO
14/SEP/91 6:27:48
5 = 11.6 % O2
6 = 98.4 PPM THC
THC
14/SEP/91 6:25: 3
2 = 500.0 PPM CO
14/SEP/91 6:24:50
5 = 12.1 % O2
6 = 83.9 PPM THC
THC
14/SEP/91 6:22:36
THC

SEP 91 6:22:24
THC SPAN 99.9 PPM
14/SEP/91 6:22: 9
THC ANALYZER CALIBRATION
2 = 0.5 PPM CO 5 = 12.0 % O2 6 = 0.0 PPM THC
14/SEP/91 6:21:48

14/SEP/91 6:19: 2
2 = 499.9 PPM CO 5 = 19.1 % O2 6 = 0.5 PPM THC
14/SEP/91 6:18:50
14/SEP/91 6:18:43
SYSTEM CALIBRATION O2

14/SEP/91 6:16: 3
2 = 4.9 PPM CO 5 = 12.6 % O2 6 = 3.7 PPM THC
14/SEP/91 6:15:51

14/SEP/91 6:15:29
12.1% O2

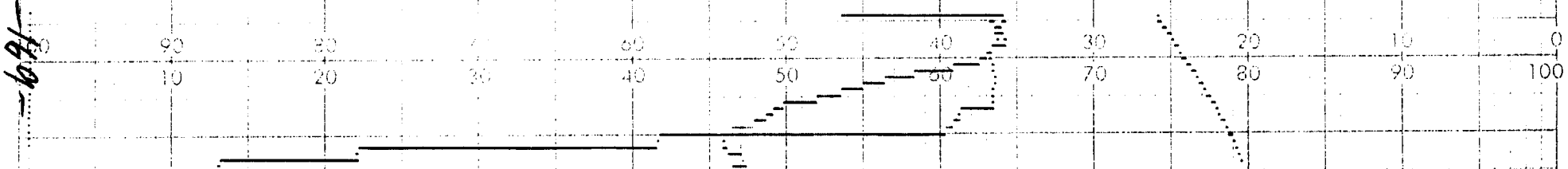
14/SEP/91 6:14:59
O2 ANALYZER CALIBRATION 12% O2

14/SEP/91 6:12:59
2 = 117.3 PPM CO 5 = 20.2 % O2 6 = 18.1 PPM THC
14/SEP/91 6:12:47

O2 SPAN
O2 ANALYZER CALIBRATIONS

14/SEP/91 6: 9:27 CO
317 PPM
14/SEP/91 6: 9:16 CO
2 = 144.5 PPM CO 5 = 1.2 % O2 6 = 0.3 PPM THC
14/SEP/91 6: 9: 4

14/SEP/91 6: 6:31 CO
2 = 140.2 PPM CO 5 = 5.6 % O2 6 = 2.9 PPM THC
14/SEP/91 6: 6:19
141 PPM
14/SEP/91 6: 6: 7
CO SYSTEM CALIBRATIONS



14/SEP/91 6: 3:36 CO THC O2
2 = 162.1 PPM CO 5 = 20.2 % O2 6 = 46.9 PPM THC
14/SEP/91 6: 3:24
317 PPM CO
2 = 145.5 PPM CO 5 = 20.4 % O2 6 = 41.9 PPM THC
14/SEP/91 6: 3: 2

14/SEP/91 6: 0:39 THC CO
141 PPM CO
14/SEP/91 6: 0:17

14/SEP/91 6: 0: 6

14/SEP/91 5:57:16
2 = 425.9 PPM CO 5 = 20.8 % O2 6 = 1.7 PPM THC O2
14/SEP/91 5:57: 4

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

14/SEP/91 5:54:19
2 = 67.5 PPM CO 5 = 21.0 % O2 6 = 1.5 PPM THC O2
14/SEP/91 5:54: 7 O2
14/SEP/91 5:54: 2
SPAN CO ANALYZER 421 PPM
BEGIN CO ANALYZER CALIBRATIONS

14/SEP/91 5:32:49
2 =-0.2 PPM CO 5 = 0.1 % O2 6 = 0.1 PPM THC
14/SEP/91 5:32:37
14/SEP/91 5:32:32
DAYTON PLANT TEST#1 CALIBRATIONS
ZERO GAS ALL ANALYZERS
RECORDER/DATA LOGGER VRS 5H
RECORDER/DATA LOGGER VRS 5H
END CALIBRATIONS

13/SEP/91 16:46:23 O2 THC
2 = 1.0 PPM CO 5 = 4.7 % O2 6 = 50.9 PPM THC
13/SEP/91 16:46:11

Dayton #6 9-~~12~~ 14-91 Temp. Traverse

YSC

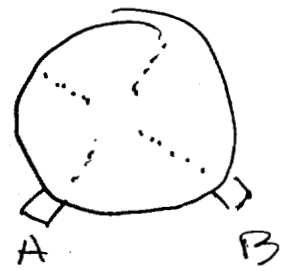
CHECK for ~~CYCLONIC FLOW~~

METHOD 1, Section 2.4

Test No. 1 Start

TRAVERSE POINT	ANGLE where Δ p=0
A 1	210
2	210
3	211
4	210
5	211
6	211
7	211
8	212
9	212
10	212
11	210
12	209
~~13~~	~~206~~
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p=0
B-1	210
2	211
3	211
4	211
5	211
6	211
7	212
8	212
9	212
10	210
11	209
12	205
AVERAGE	211



YSC

PLANT Weldon / Dayton
DATE 9-14-91
SAMPLING LOCATION Baghouse Outlet
SAMPLE TYPE Moisture
RUN NUMBER
OPERATOR JVM
AMBIENT TEMPERATURE 66
BAROMETRIC PRESSURE 29.92
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15 "Hg
Final 0.0 @ 5.5 "Hg

Impinger Volume
Final ml
Initial ml
Net Gain ml

PROBE LENGTH AND TYPE 3ft Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE, % 6
SAMPLE BOX NUMBER
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

READ AND RECORD ALL DATA EVERY ____ MINUTES

TRAVERSE POINT NUMBER	CLOCK TIME (24-hr CLOCK) / SAMPLING TIME, min	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	0703	720.794	—	0.75	0.75	205	74	69	4.0	222	204	61
	0728	732.700		0.75	0.75	190	82	76	5.5	226	230	63
	0803	751.174		0.75	0.75	189	95	86	5.5	228	234	70
		30.380				(194)		50.3				
			Start	Stop	Net							
		1st Temp	632.8	684.7	51.9							
		2nd Temp	621.7	679.6	57.9							
		3rd Temp	477.7	493.8	16.1							
		SG	805.5	817.9	12.4							
				Total	138.3							

Dayton #6 9-~~12~~ 14-91 Temp. Traverse

YSC

CHECK for ~~CYCLONIC FLOW~~

METHOD 1, Section 2.4

End Test No. 1
Start Test No. 2

TRAVERSE POINT	ANGLE where Δ p=0
A-1	197
2	197
3	196
4	196
5	196
6	196
7	196
8	197
9	196
10	196
11	195
12	193
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p=0
B-1	198
2	197
3	196
4	196
5	196
6	196
7	196
8	196
9	196
10	195
11	194
12	192
AVERAGE	196

YSC

PLANT Weirton / Dayton
DATE 9-14-91
SAMPLING LOCATION Baghouse Outlet
SAMPLE TYPE Moisture
RUN NUMBER 2
OPERATOR JVM
AMBIENT TEMPERATURE 69
BAROMETRIC PRESSURE 29.92
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15 "Hg
Final 0.0 @ 5 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 3ft Glass
NOZZLE I.D. 3/8"
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

READ AND RECORD ALL DATA EVERY ____ MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	0855	751.443	—	0.75	0.75	197	84	84	4.0	239	233	62
	0856	762.000	—	0.75	0.75	212	88	88	4.5	232	240	60
	0955	782.030		0.75	0.75	205	102	96	5.0	237	240	60
						~~215~~ (205)		(90.3)				
		30.587										
			Start	Stop	Net							
		1st Imp	567.8	639.0	71.2							
		2nd Imp	580.0	643.2	63.2							
		3rd Imp	476.0	615.1	139							
		4th.	785.8	795.8	10.0							
				Total	157.3							

-174-

Dayton #6
9-~~12~~ 14-91

Temp Traverse

CHECK for ~~CYCLONIC FLOW~~

YSC

METHOD 1, Section 2.4

End Test No. 2
Start Test No. 3

TRAVERSE POINT	ANGLE where Δ p=0
A-1	197
2	196
3	195
4	195
5	195
6	195
7	195
8	195
9	195
10	194
11	194
12	192
AVERAGE	

TRAVERSE POINT	ANGLE where Δ p=0
B-1	198
2	197
3	197
4	195
5	195
6	195
7	195
8	195
9	195
10	193
11	193
12	192
AVERAGE	195

YSC

PLANT Weldon/Dayton
DATE 9-14-91
SAMPLING LOCATION Baghouse Outlet
SAMPLE TYPE Moisture
RUN NUMBER 3
OPERATOR JVM
AMBIENT TEMPERATURE 70
BAROMETRIC PRESSURE 29.92
STATIC PRESSURE, (P_s)
FILTER NUMBER (s) N/A

Leak Check:
Initial 0.0 @ 15 "Hg
Final 0.0 @ 5 "Hg

Impinger Volume
Final ____ ml
Initial ____ ml
Net Gain ____ ml

PROBE LENGTH AND TYPE 3ft Glass
NOZZLE I.D. 3/8
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER 6
METER BOX NUMBER 1944
METER $\Delta H_@$ 0.75
C FACTOR
PROBE HEATER SETTING 250
HEATER BOX SETTING 250
REFERENCE Δp

Silica Gel
Final Weight
Initial Weight
Net Gain

READ AND RECORD ALL DATA EVERY ____ MINUTES

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft³	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O DESIRED	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O ACTUAL	STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE INLET ($T_{m\,in}$), °F	DRY GAS METER TEMPERATURE OUTLET ($T_{m\,out}$), °F	PUMP VACUUM, in. Hg	TEMPERATURE, °F PROBE	TEMPERATURE, °F FILTER	IMPINGER TEMPERATURE, °F
	1000	782.458	—	0.75	0.75	194	96	96	4.5	250	236	60
	1020	792.100	—	0.75	0.75	200	100	96	5.0	247	240	58
	1100	812.759	—	0.75	0.75	194	104	98	5.0	245	242	58
		30.301				(196)		(98.3)				
			Start	Stop	Net							
		1st Imp	684.7	694.6	92.0							
		2nd Imp	679.6	776.7	15.6							
		3rd Imp	493.8	496.3	2.5							
		SG	817.9	823.7	5.8							
				Total	115.3							

Dayton #6 9-~~12~~ 14-91

YSC

Temp Traverse

CHECK for ~~CYCLONIC FLOW~~

METHOD 1, Section 2.4

End Test No. 3

TRAVERSE POINT	ANGLE where $\Delta p = 0$
A-1	196
2	195
3	194
4	194
5	194
6	194
7	194
8	194
9	194
10	194
11	193
12	191
AVERAGE	

TRAVERSE POINT	ANGLE where $\Delta p = 0$
B-1	197
2	196
3	194
4	194
5	194
6	194
7	194
8	194
9	194
10	194
11	193
12	190
AVERAGE	194

APPENDIX D

CALIBRATION DATA SHEETS

POSTTEST CALIBRATION CHECKS

Job No.: 4437-01 Date: 9/16/91

Client: Weldon Asphalt Co. Checked By: [illegible]

- Pitot Tube

  Pretest pitot tube coefficient N/A

  Any damage to pitot tube prior to start of any test run? N/A

  Pitot tube coefficient for calculations N/A

- Stack Thermocouple

  Was a pretest temperature correction used? No

  Average stack temperature during test 200 °F

  Temperature of reference thermometer during recalibration 210 °F

  Temperature of stack thermocouple during recalibration 210 °F

  Do values agree within ± 1.5%? yes

- Impinger Thermometer

  Was a pretest Temperature correction used? No

  Posttest reference thermometer reading 35°; 76° F

  Posttest impinger thermometer reading 35°; 76° F

  Do values agree within ± 4°F? yes

- Dry Gas Meter Thermometers

  Was a pretest temperature correction used? No

  Posttest thermometer reading at ambient temperature 74/74

  Posttest reference thermometer reading 74/74

  Do they agree within ± 10.8°F? yes

- Dry Gas Meter

  Pretest calibration factor, Y 0.984

  Posttest calibration factor, Y 0.977

  Is posttest calibration factor within ± 5% of pretest factor? ____

STACK GAS THERMOCOUPLE CALIBRATION

Identification Number: 6

Calibration Date: 9/15/91

Calibrated By: [illegible]

	Reference Thermometer (^{o}F)	Stack Gas Thermometer (^{o}F)
Ice Water	36	36
Ambient Air	78	78
Hot Water	167	167
Hot Oil	216	216

IMPINGER THERMOMETER CALIBRATION

Identification Number: 6

Calibration Date: 9/5/91

Calibrated By: [illegible]

	Reference Thermometer (°F)	Impinger Thermometer (°F)
Ice Water	35	35
Ambient Air	79	79

DRY GAS METER THERMOMETER CALIBRATION

Identification Number: Box 1944

Calibration Date: 9/5/91

Calibrated By: H Tucker

	Reference Thermometer (°F)	Dry Gas Meter Thermometer (°F)
Ambient Air	78	In 78 / 78 out
Hot Water	166	In 166 / 166 out

DRY GAS METER THERMOMETER CALIBRATION

Identification Number: Box 1944

Calibration Date: 9/5/91

Calibrated By: [illegible] & RLM

	Reference Thermometer (°F)	Dry Gas Meter Thermometer (°F)
Ambient Air	78 / 78	In 78 / 78 out
Hot Water	166	In 166 / 166 out

YSC

METER BOX CALIBRATION DATA AND CALCULATION FORM
(English units)

Date 9/5/91 Meter box number 1944

Barometric pressure, P_b = 30.00 in. Hg. Calibrated by Howard T.

Orifice manometer setting (ΔH), in. H_2O	Wet test meter (v_w), ft^3	Gas volume: Dry gas meter (V_d), ft^3	Temperature[a]: Wet test meter (t_w), °F	Dry gas meter: Inlet (t_{d_i}), °F	Outlet (t_{d_o}), °F	Average[a] (t_d), °F	Time (Θ), min	Y_i	$\Delta H@_i$
0.5	5		74			78.25	14.55		
1.0	5					79.50	9.35		
1.5	10					85	15.55		
2.0	10					90	13.55		
3.0	10					93	6.92		
4.0	10					95	10.12		
						Average		.984	1.983

ΔH	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d (P_b + \frac{\Delta H}{13.6})(t_w + 460)}$	$\Delta H@_i = \frac{0.0317\ \Delta H}{P_b\ (t_d + 460)} \left[\frac{(t_w + 460)\ \Theta}{V_w}\right]^2$
0.5	0.0368	.982	1.959
1.0	0.0737	.978	.953
1.5	0.110	.984	2.006
2.0	0.147	.986	2.013
3.0	0.221	.987	1.948
4.0	0.294	.985	2.016

[a] If there is only one thermometer on the dry gas meter, record the temperature under t_d.

YSC

METER BOX CALIBRATION DATA AND CALCULATION FORM
(English units)

Date 9/16/91 Meter box number S-1944

Barometric pressure, P_b = 30.02 in. Hg. Calibrated by RLM

Orifice manometer setting (ΔH), in. H_2O	Wet test meter (v_w), ft^3	Gas volume: Dry gas meter (V_d), ft^3	Temperature[a]: Wet test meter (t_w), °F	Dry gas meter: Inlet (t_{d_i}), °F	Dry gas meter: Outlet (t_{d_o}), °F	Dry gas meter: Average (t_d)[a], °F	Time (Θ), min	Y_i	$\Delta H@_i$
0.5	6.000	6.306	74			85.50			
1.0	5.000	5.288				90.50			
1.5	10.000	10.590				94.			
2.0	10,000	10.622				97.25			
3.0	10.000	10.624				100.75			
4.0	13.000	13.831				104.75			

Y_i = .977 Average

ΔH = 1.989

ΔH	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d (P_b + \frac{\Delta H}{13.6})(t_w + 460)}$	$\Delta H@_i = \frac{0.0317\ \Delta H}{P_b\ (t_d + 460)} \left[\frac{(t_w + 460)\ \Theta}{V_w}\right]^2$
0.5	0.0368	.971	1.890
1.0	0.0737	.972	1.975
1.5	0.110	.976	1.984
2.0	0.147	.978	2.028
3.0	0.221	.981	2.021
4.0	0.294	.984	2.035

[a] If there is only one thermometer on the dry gas meter, record the temperature under t_d.

MG Industries
Gas Products

1399 NEW FORD MILL RD.
MORRISVILLE, PA 19067
(800)638-6360

ANALYTICAL REPORT – PRODUCT CERTIFICATION

TO:

M.G. Industries
PO BOX 374
72 NICKERSON ROAD
ASHLAND , MA 01721

DATE: 08/01/91
P.O. NO.
ORDER NO. 683894-001
REF. # WCP-561

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
	CERTIFIED MIXTURE		
CC-55025	Propane	50 ppm	49.5 ppm
	Nitrogen	Balance	Balance

Walter C. Preller
ANALYST

MG 23301/A 3/89

MG Industries
Gas Products

1399 NEW FORD MILL RD.
MORRISVILLE, PA 19067
(800)638-6360

ANALYTICAL REPORT – PRODUCT CERTIFICATION

TO:

M.G. Industries
PO BOX 334
72 NICKERSON ROAD
ASHLAND , MA 01721

DATE: 07/19/91
P.O. NO.
ORDER NO. 91761-002
REF. # WCP-515

CYLINDER NO. CONSTITUENTS CONCENTRATION: NOMINAL ACTUAL

The following cylinder has been analyzed according to EPA Protocol No. 1, Section 3.0.4 procedure G1.

Cylinder No.	Constituent	1st Anal (/ /)	2nd Anal (07/19/91)	Actual
CC-63156	Propane	Not ppm	35.9 ppm	35.9 ppm
		Req. ppm	35.9 ppm	
		ppm	35.9 ppm	
	Nitrogen	Balance		

Last Analysis Date: 07/19/91 Expiration Date: 01/19/93
Pressure of Contents: 2000 psig

Walter C. Preller
ANALYST

MG 23301/A 3/89

MG Industries
®Gas Products

1399 NEW FORD MILL RD.
MORRISVILLE, PA 19067
(800)638-6360

ANALYTICAL REPORT – PRODUCT CERTIFICATION

TO:

M.G. Industries
PO BOX 374
72 NICKERSON ROAD
ASHLAND , MA 01721

DATE: 07/19/91

P.O. NO.

ORDER NO. 683894-001

REF. # WCP-516

CYLINDER NO. CONSTITUENTS CONCENTRATION: NOMINAL ACTUAL

The following cylinder has been analyzed according to EPA Protocol No. 1, Section 3.0.4 procedure G1.

Cylinder No.	Constituent	1st Anal (/ /)	2nd Anal (07/19/91)	Actual
CC-38738	Propane	Not ppm	98.9 ppm	98.9 ppm
		Req. ppm	98.9 ppm	
		ppm	98.9 ppm	
	Nitrogen	Balance		

Last Analysis Date: 07/19/91 Expiration Date: 01/19/93
Pressure of Contents: 2000 psig

ANALYST

Walter C. Preller

MG 23301/A 3/89

Scott Specialty Gases

Electronics Group

2330 Hamilton Blvd., South Plainfield, N.J. 07080 Phone: (201) 754-7700 FAX: (201) 754-7303

Date Shipped: 3/26/91
Our Project No: 0709862
Your P.O. No: 258
Page 1 of 1
Expiration Date: 9/26/92

CERTIFICATE OF ANALYSIS—EPA PROTOCOL GASES*

Certified Per Traceability Protocol No. 1 Procedure No. G1 Cylinder No. ALM005127 Cylinder Pressure 2000 psig Certified Accuracy ±1 % NBS Traceable

REFERENCE STD					GAS ANALYZER		
COMPONENTS	CERTIFIED CONC	SRM/CRM NO.	CYL. NO.	CONC.	MAKE/MODEL/SERIAL NO.	LAST CAL. DATE	ANALYTICAL PRINCIPLE
Carbon Monoxide	141 ppm	1680	ALM13324	475 ppm	PE 2000/094331001115	1/11/91	GC - FID

BALANCE GAS Nitrogen

ANALYZER READINGS: Z = Zero Gas T = Test Gas R = Reference Gas

Component Carbon Monoxide
First Analysis Date 3/19/91 Units ppm

Z	0	R	475	T	141
R	475	Z	0	T	141
Z	0	T	141	R	475

Mean Test Assay 141

Second Analysis Date 3/26/91 Units ppm

Z	0	R	475	T	141
R	475	Z	0	T	141
Z	0	T	140	R	475

Mean Test Assay 141

Component _____ Date _____ Units _____

Z		R		T	
R		Z		T	
Z		T		R	

Mean Test Assay _____

Date _____ Units _____

Z		R		T	
R		Z		T	
Z		T		R	

Mean Test Assay _____

Component _____ Date _____ Units _____

Z		R		T	
R		Z		T	
Z		T		R	

Mean Test Assay _____

Date _____ Units _____

Z		R		T	
R		Z		T	
Z		T		R	

Mean Test Assay _____

Analyst [signature] John O'Shea

Approved By: [signature] Adela Sy

-189-

MG Industries
®Gas Products

1399 NEW FORD MILL RD.
MORRISVILLE, PA 19067
(800)638-6360

ANALYTICAL REPORT – PRODUCT CERTIFICATION

TO:

M.G. Industries
PO BOX 374
72 NICKERSON ROAD
ASHLAND , MA 01721

DATE: 07/26/91

P.O. NO.

ORDER NO. 683894-~~001~~ 010

REF. # PMF-073

CYLINDER NO. CONSTITUENTS CONCENTRATION: NOMINAL ACTUAL

The following cylinder has been analyzed according to EPA Protocol No. 1, Section 3.0.4 procedure G1.

Cylinder No.	Constituent	1st Anal (07/19/91)	2nd Anal (07/26/91)	Actual
CC27049	CARBON MONOXIDE	317 ppm	317 ppm	317 ppm
		317 ppm	317 ppm	
		317 ppm	317 ppm	
	Nitrogen	Balance		

Last Analysis Date: 07/26/91 Expiration Date: 01/26/93
Pressure of Contents: 1650 psig

ANALYST
Peter Michael Fazio

MG Industries
®Gas Products

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MORRISVILLE, PA 19067
(800)638-6360

ANALYTICAL REPORT – PRODUCT CERTIFICATION

TO:

M.G. Industries
PO BOX 374
72 NICKERSON ROAD
ASHLAND , MA 01721

DATE: 07/19/91

P.O. NO.

ORDER NO. 683894-001

REF. # PMF-075

CYLINDER NO. CONSTITUENTS CONCENTRATION: NOMINAL ACTUAL

The following cylinder has been analyzed according to EPA Protocol No. 1, Section 3.0.4 procedure G1.

Cylinder No.	Constituent	1st Anal (/ /)	2nd Anal (07/19/91)	Actual
CC55344	Oxygen	NOT %	12.1 %	12.1 %
		REQUIRED %	12.1 %	
		%	12.1 %	
	Nitrogen	Balance		

Last Analysis Date: 07/19/91 Expiration Date: 01/19/93
Pressure of Contents: 2000 psig

ANALYST
Peter Michael Fazio

MG 23301/A 3/89

APPENDIX E

Operational Data

- Aztec
- Madsen
- Dayton

AZTEC

DATA ON FACILITY BEING STACK TESTED

COMPANY NAME Weldon COMPANY REP. York Services Corp Joseph V. Miceli PHONE (203)

LOCATION OF FACILITY Aztec ORIGINAL START-UP DATE DESIGNED CAPACITY

OEM MODEL NO. TYPE AC TYPE

1 Time (24 HR) NOTE: check small box in column when moisture sample is taken	2 Fuel Use ☑ #Fuel Oil ☐ Nat. Gas ☐ Propane ☐ Coal ☐ other GPM / GPH	3 Burner Setting	4 Blower Pressure	5 Production Rate ☐ Mix ☐ Aggregate TPH	5 ☐ RAP TPH	6 Asphalt Cement %	7 Mix Temp. °F	8 Exhaust Gas Temp. °F Stack?	9 ☐ Venturi Scrubber ☐ Baghouse Pressure Drop in w.g.	9 Water Pressure psi	10 Ambient Temp. °F	11 Relative Humidity %	12 Exhaust Damper Position
0700	6.3 / 377				20	4		205	4.0		70		
0736	6.3 / 377				20	4			3.5		70		
0748	6.3 / 377				20	4			4.0		70		
	(RAP)												
0827	6.3 / 377				20	4			4.5		72		
0849	6.3 / 377				20	4			4.0		72		
0920	6.3 / 377				20	4			3.5		72		
	(RAP)												
1010	6.3 / 377				20	4			3.5		75		
1037	6.3 / 377				20	4			3.5		75		
1058	6.3 / 377				20	4			3.5		75		
	(RAP)												

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MADSEN

DATA ON FACILITY BEING STACK TESTED

COMPANY NAME Weldon COMPANY REP. _____ PHONE (___) _____

LOCATION OF FACILITY Madsen Plant 2 ORIGINAL START-UP DATE _____ DESIGNED CAPACITY _____

OEM _____ MODEL NO. _____ TYPE _____ AC TYPE _____

1 ✓ Time (24 HR) NOTE: check small box in column when moisture sample is taken	2 ✓ Fuel Use #Fuel Oil / Nat. Gas ✓ / Propane / Coal / other	3 ✓ Burner Setting	✗ Blower Pressure	5 ✓ Production Rate: Mix Aggregate TPH	Production Rate: RAP TPH	6 ✓ Asphalt Cement % Batch?	7 ✓ Mix Temp. °F	8 ✓ Exhaust Gas Temp. °F	9 ✓ Venturi Scrubber / Baghouse: Pressure Drop in w.g.	Venturi Scrubber / Baghouse: Water Pressure psi	~~10~~ Ambient Temp. °F	~~11~~ Relative Humidity %	~~12~~ Exhaust Damper Position
1239		40%				?	300	190	4.5				
1410		40%					300	180	4.5				
1504		40%					300	175	4.5				

Weldon

Madsen Plant

Time	TPH (Tons Produced)
12:04	780.20
237	883.58
104	907.46
134	1059.82
204	1152.10
234	1240.63
3:07	1320.52
3:38	1416.92
404	1477.87

Nat Gas	Bottom Read	Top Read
1242	201377	152085
1559	201313	152117
	33	32

DAYTON

Dayton Plant # Weldon 4937-01

Process Data

Time	Tons	Burner opening %	Baghouse ΔP "H2O	Fuel Gal/min	Mix Temp
START 7:00 AM	83.89 START - 135.73 STOP - 219.63	38%	6.4	4.0	285°
8:00 AM		39%	3.4	4.0	285
START 8:35	START - 259.54 STOP - 379.23	37%	3.4	4.1	285
9:35		41%		4.4	285
START 10:00	START: 399.20 STOP: 577.23	36%		4.1	285
	(3RD RUN COMPLETE CHANGE OF MATERIAL)	35%		3.5	285

Damper % std 50-60%

1st Test

18/.08 Ton per hr

Buckets	Dump	
1	6,000	3/8
1	6,080	
1	6,290	
1	6,260	
1	6,020	3/8
1	6,130	
1	7,070	
1	6,160	~~STAN~~ SAND
1	6,160	
1	7,040	SAND
1	6,280	
1	7,290	→ 76,780

MIX TEMP @ 300° S.P = 285° ACTUAL

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1 - 3,010 } 5/8
1 - 6,160
1 - 6,060 } 3/8
1 - 3,020
1 - 6,190 SAND
1 6,280
1 3,120
1 6,240 - 3/8
1 - 6,650 - 3/8
1 - 6360 - 3/8

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1- 6940 - 3/8
1- 6710 - 3/8

219.62
135.73

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1- 6770 - 5

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- 2420 3/8
- 7180 3/8
- 7430 3/8
- 7070 3/4
- 7100 3/4
- 7070 3/4
- 7120 3/8
- 7460 3/8
- 7520 3/8
- 6860 3/8

72180, 36.09 (T)

88.07 T
119.69 T

207.72
TPH
TEST 2

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SAW BLADES — COIL OR WELDED TO LENGTH

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2 ND TEST

1-7240 3/8
1-7130 3/8
1-7210 3/8
1-5980 3/4
1-6680 3/4
1-6730 3/4
1-6800 3/4
1-7320 3/8
1-7110 3/8
1-7190 3/8
1-6960 3/8
6880 3/4
6940 3/4
6916 3/4
6816 3/4

51.94 tons

103,890

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Test 3

207.10 TPH

7010 3/8
7120 3/8
7100 3/8
7340 3/8

28.570 DRY AGG

178.53 ASPHALT

207.10 TPH

~~577.73~~

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APPENDIX F

New Jersey Department of Environmental Protection

Emission Test Production Report

AZTEC

EMISSION TEST PRODUCTION
REPORT FORM

I. Company Name Weldon Asphalt Company APC Plant ID# _____
Plant Location Watchung, NJ (Aztec)
Certificate Number 042141
Designation of Equipment U/A5 1 Sand and Stone Dryer

II. Emission Test Date(s) 9/10/91 (RAP) 9/11/91 (Virgin)
Tests Conducted By:
Name of Firm York Services Corporation
Business Address One Research Drive, Stamford, CT, 06906
Phone Number 203-325-1371
Test Team Representatives Joseph V Miceli
Vincent DeVita (9/10)
Howard Tucker (9/11)

Length of Test 1 hour each

	Run #1	Run #2	Run #3
Test Time (Start/Finish)	0658/0759	0827/0928	1000/1100 (RAP)
III. Certificate Operating Conditions	0655/0755	0952/1052	1134/1234 (Virgin)

A. List Conditions — Achieved (Yes or No)

See Table II

B. Log of Certificate Conditions During Stack Test
(Record at least every 15 minutes)

Condition	Run #	Readout	Time of Recording

IV. Equipment Operation/Process Parameters

Number of Sources Connected _____

Number of Sources Operating _____

Production Rate: Normal _____

Maximum _____

A. Raw Materials: See Table II

	Test Run #1	Test Run #2	Test Run #3
Usage Rate (lbs/hr)			
Breakdown (% by weight)			

B. Surface Coating:

Material Being Coated _____

Type of Coating _____

Coating Rate (Gals/Hr) _____

Is Coating Altered (Yes or No) _____

With _____

Distance From Coating Head to Exhaust Duct _____

C. Fuel Burning - Incineration:

Type of Fuel _____

Fuel Burning Rate _____ (lbs/hr), (gals/hr), (ft/hr)

Fuel Additives _____, % _____

Meter Reading (if available)	Time

Type of Waste Constituents _____

Auxiliary Fuel _____

Burning Rate _____

D. Other:

Description of Operation and Process Rate

_____

_____

_____

_____

_____

V. Control Equipment Parameters

CEMs Required (Yes/No) _____

Contaminant? _____

_____

_____

STACK TEST CEM READING

Parameter Cont/Read	Parameter Cont/Read	Parameter Cont/Read	Time	Test Run #

A. Control Equipment performance Parameter

Parameter	Reading	Time	Run #

B. Additional Observations

Fugitive Emissions (Yes/No) _____

Equipment Location _____

Visible Emissions From Stack (Yes/No) No

Odors Noticeable

Vicinity of Equipment (Yes/No) No
Near Exhaust Stack (Yes/No) No
Off Property (Yes/No) No

VI. Samples

Type of Sample _____

Time of Sampling _____

Sampled By _____

Sample Taken From _____

To Be Analyzed For _____

Analyzed By _____

Form Information Supplied by: Name/Title (Please Print)

Joseph V. Miceli / Project Manager

Signature(s)/Date [signature] 9/11/91

DEP Usage Only
Rec'd By Sample Rec'd Date/Time Rev'd By

MADSEN

EMISSION TEST PRODUCTION
REPORT FORM

I. Company Name Weldon Asphalt Company APC Plant ID# 35602
Plant Location Westfield, NJ (Madsen)
Certificate Number 0013476
Designation of Equipment 001

II. Emission Test Date(s) 9/13/91
Tests Conducted By:
Name of Firm York Services Corporation
Business Address One Research Drive, Stamford, CT, 06906
Phone Number 203-325-1371
Test Team Representatives Joseph V. Miceli
Howard Tucker

Length of Test 1 hour each

	Run #1	Run #2	Run #3
Test Time (Start/Finish)	1155/1255	1336/1436	1517/1618

III. Certificate Operating Conditions

A. List Conditions — Achieved (Yes or No)

B. Log of Certificate Conditions During Stack Test
(Record at least every 15 minutes)

Condition	Run #	Readout	Time of Recording

IV. Equipment Operation/Process Parameters

Number of Sources Connected _____

Number of Sources Operating _____

Production Rate: Normal ✓

Maximum _____

A. Raw Materials:

See Table II

	Test Run #1	Test Run #2	Test Run #3
Usage Rate (lbs/hr)			
Breakdown (% by weight)			

B. Surface Coating:

Material Being Coated _____

Type of Coating _____

Coating Rate (Gals/Hr) _____

Is Coating Altered (Yes or No) _____

With _____

Distance From Coating Head to Exhaust Duct _____

C. Fuel Burning - Incineration:

Type of Fuel _____

Fuel Burning Rate _____ (lbs/hr), (gals/hr), (ft/hr)

Fuel Additives _____, % _____

Meter Reading (if available)	Time

Type of Waste Constituents _____

Auxiliary Fuel _____

Burning Rate _____

D. Other:

Description of Operation and Process Rate

Normal

V. Control Equipment Parameters

CEMs Required (Yes/No) _____

Contaminant? _____

STACK TEST CEM READING

Parameter Cont/Read	Parameter Cont/Read	Parameter Cont/Read	Time	Test Run #

A. Control Equipment performance Parameter

Parameter	Reading	Time	Run #

B. Additional Observations

Fugitive Emissions (Yes/No) No

Equipment Location

Visible Emissions From Stack (Yes/No) No

Odors Noticeable

Vicinity of Equipment (Yes/No) No
Near Exhaust Stack (Yes/No) No
Off Property (Yes/No) No

VI. Samples None

Type of Sample

Time of Sampling

Sampled By

Sample Taken From

To Be Analyzed For

Analyzed By

Form Information Supplied by: Name/Title (Please Print)

Joseph V. Miceli / Project Manager

Signature(s)/Date 9/13/91

DEP Usage Only

Rec'd By	Sample Rec'd Date/Time	Rev'd By

DAYTON

EMISSION TEST PRODUCTION
REPORT FORM

I. Company Name Weldon Asphalt Company APC Plant ID# _____
Plant Location Dayton, NJ
Certificate Number 042380
Designation of Equipment 001

II. Emission Test Date(s) 9/14/91
Tests Conducted By:
Name of Firm York Services Corp
Business Address One Research Drive, Stamford, CT, 06906
Phone Number 203-325-1371
Test Team Representatives Joseph J Miceli
Howard Tucker

Length of Test _____

	Run #1	Run #2	Run #3
Test Time (Start/Finish)	0703/0803	0835/0935	1000/1100

III. Certificate Operating Conditions

A. List Conditions See Table II Achieved (Yes or No)

B. Log of Certificate Conditions During Stack Test
(Record at least every 15 minutes)

Condition	Run #	Readout	Time of Recording

IV. Equipment Operation/Process Parameters

Number of Sources Connected _____

Number of Sources Operating _____

Production Rate: Normal _____

Maximum _____

A. Raw Materials: See Table II

	Test Run #1	Test Run #2	Test Run #3
Usage Rate (lbs/hr)			
Breakdown (% by weight)			

B. Surface Coating:

Material Being Coated _____

Type of Coating _____

Coating Rate (Gals/Hr) _____

Is Coating Altered (Yes or No) _____

With _____

Distance From Coating Head to Exhaust Duct _____

C. Fuel Burning - Incineration:

Type of Fuel _____

Fuel Burning Rate _____ (lbs/hr), (gals/hr), (ft/hr)

Fuel Additives _____, % _____

Meter Reading (if available)	Time

Type of Waste Constituents _____

Auxiliary Fuel _____

Burning Rate _____

D. Other:

Description of Operation and Process Rate

_____

_____

_____

_____

_____

V. Control Equipment Parameters

CEMs Required (Yes/No) _____

Contaminant? _____

_____

_____

STACK TEST CEM READING

Parameter Cont/Read	Parameter Cont/Read	Parameter Cont/Read	Time	Test Run #

A. Control Equipment performance Parameter

Parameter	Reading	Time	Run #

B. Additional Observations

Fugitive Emissions (Yes/No) No

Equipment Location

Visible Emissions From Stack (Yes/No) No

Odors Noticeable

Vicinity of Equipment (Yes/No) No
Near Exhaust Stack (Yes/No) No
Off Property (Yes/No) No

VI. Samples

Type of Sample

Time of Sampling

Sampled By

Sample Taken From

To Be Analyzed For

Analyzed By

Form Information Supplied by: Name/Title (Please Print)

Joseph V. Miceli / Project Manager

Signature(s)/Date Joseph V. Miceli 9/14/91

DEP Usage Only
Rec'd By Sample Rec'd Date/Time Rev'd By