

AD-A260 220



WL-TR-92-2113



**COMBUSTION AND HEAT TRANSFER STUDIES UTILIZING ADVANCED
DIAGNOSTICS: FUELS DATA SETS**

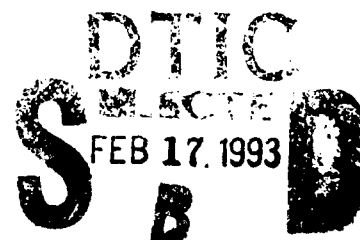
D. R. Ballal, S. P. Heneghan, H. L. Imwalle, C. R. Martel, and T. F. Williams
University of Dayton
Dayton, OH 45469-0001

November 1992

FINAL REPORT FOR THE PERIOD FEBRUARY 27, 1991 TO SEPTEMBER 30, 1992

Approved for Public Release; Distribution is Unlimited

AERO PROPULSION AND POWER DIRECTORATE
WRIGHT LABORATORY
AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-6563



93-02952



93 2 16 088

NOTICE

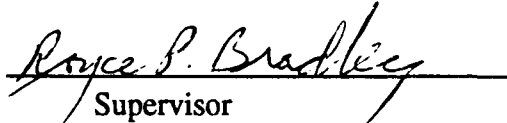
When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely Government-related procurement operation, the United States Government incurs no responsibility nor any obligation whatsoever. The fact that the Government may have formulated, furnished, or in any other way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise in any manner construed, as licensing the holder or any other person or corporation, or as conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

This report is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.


Government Monitor

W. MELVYN ROQUEMORE
Fuels Branch
Fuels & Lubrication Division


Supervisor

ROYCE P. BRADLEY
Section Chief, Fuels Branch
Fuels & Lubrication Division
Aero Propulsion & Power Directorate


Division Chief

LEO S. HAROOTYAN, JR.
Chief, Fuels & Lubrication Division
Aero Propulsion & Power Directorate

If your address has changed, if you wish to be removed from our mailing list, or if the addressee is no longer employed by your organization, please notify WL/POSF, Wright-Patterson AFB, OH 45433-7103 to help us maintain a current mailing list.

Copies of this report should not be returned unless return is required by security considerations, contractual obligations, or notice of a specific document.

REPORT DOCUMENTATION PAGE

OMB No. 0704-0186

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0186), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE November 1992		3. REPORT TYPE AND DATES COVERED Final 2/27/91 - 9/30/92	
4. TITLE AND SUBTITLE Combustion & Heat Transfer Studies Utilizing Advanced Diagnostics: Fuels Data Sets				5. FUNDING NUMBERS C-F33615-87-C-2767 PE-62203 PR-3048 TA-05 WU-60	
6. AUTHOR(S) D. R. Ballal, S. P. Heneghan, T. F. Williams, C. R. Martel, and H. L. Imwalle					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Dayton 300 College Park Dayton, OH 45469-0001				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Aero Propulsion & Power Directorate Wright Laboratory (WL/POSF) Air Force Materiel Command Wright-Patterson Air Force Base, OH 45433-6563 W. M. Roquemore, 513-255-6813				10. SPONSORING / MONITORING AGENCY REPORT NUMBER WL-TR-92-2113	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) As the Air Force continues to advance engine technology, aviation fuel heat loading has steadily increased. Therefore, a thermally stable JP-8 fuel is required that can operate at higher temperatures than current fuels. This research program had two objectives: (1) to identify fundamental conditions of fuel thermal decomposition, and (2) to provide the data needed to develop and evaluate global chemistry and heat transfer models for predicting jet fuel thermal decomposition and deposition rate. In this final report, we present the Fuels Data Sets that may be used by modelers in the industry and other laboratories for the evaluation and refinement of global chemistry and heat transfer models for predicting jet fuel deposition rates. These data were obtained using a single-pass, single-tube heat exchanger called the Phoenix rig. More exhaustive information is available in the individual papers listed in this report. All the data sets were prepared using Microsoft Excel V.4.0 for IBM PC-Compatible computers and are available on computer diskettes.					
14. SUBJECT TERMS Aviation Fuels Data, Fuels Deposition, Jet Fuel Decomposition, Fuels Thermal Stability				15. NUMBER OF PAGES 131	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified		20. LIMITATION OF ABSTRACT UI.	

NSN 7540-01-280-5530

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

TABLE OF CONTENTS

SECTION	PAGE
1 INTRODUCTION	1
2 LIST OF RELEVANT PUBLICATIONS	2
3 DESCRIPTION OF TEST FACILITY	3
3.1 Phoenix Rig	3
3.2 Test Section Configuration 1	5
3.3 Test Section Configuration 2	5
3.4 Error Analyses	7
3.5 Fuels Tested	7
4 FUELS DATA SETS	9

DTIC QUALITY INSPECTED 3

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification _____	
By _____	
Distribution/ _____	
Availability Codes	
* Dist	Avail and/or Special
A-1	2

TABLES

- Table 1. Test Fuels
- Table 2. Properties of Baseline Fuels
- Table 3. Deposition Test Listing
- Table 4. Oxygen Depletion Tests Listing
- Table 5. File Code

FIGURES

- Figure 1. Schematic diagram of the Phoenix rig; (FC-flow controller, TC-thermocouple, DP-differential pressure transducer, P1-pump, GC-gas chromatograph, PICI-pressure indicator controller, PR-pressure regulator, VM-metering valve, VR-relief valve, VC-check valve, G-pressure gauge, FE-flowmeter, VH-hand operated valve, PT-pressure transducer, I/P-electrical to pneumatic converter for PICI.)
- Figure 2. Flow diagram of the test section configuration 1 of the Phoenix rig showing the relative location of thermocouples (TC), differential pressure gauges (DP), filters (F), and gas chromatograph sampler (GC). Listed temperatures are typical for 16 ml/min flow and 300C (573K) block temperature.
- Figure 3. Flow diagram of the test section configuration 2 of the Phoenix rig showing the relative location of thermocouples (TC), differential pressure gauges (DP), filters (F), and gas chromatograph sampler (GC). Listed temperatures are typical for 16 ml/min flow and 300C (573K) block temperature.

PREFACE

This final report was submitted by the University of Dayton Research Institute (UDRI) under Contract No. F33615-87-C-2767, sponsored by the U.S. Air Force Wright Laboratory, Aero Propulsion and Power Directorate, Wright-Patterson Air Force Base OH. Dr. W. M. Roquemore of WL/POSF was the Air Force Technical Monitor; Dr. D. R. Ballal of the Applied Physics Division, UDRI, was the Principal Investigator; and Dr. E. H. Gerber, Head of the Applied Physics Division, UDRI, was the Project Supervisor. This report covers work performed during the period February 27, 1991 through September 30, 1992.

The Principal Investigator wishes to express his gratitude and appreciation to Dr. W. M. Roquemore for his encouragement and support; to Ms. Ruth Rodak, UDRI, for technical editing; and to Ms. W. Barnes, UDRI, for report preparation.

1. INTRODUCTION

As the Air Force continues to advance engine technology, aviation fuel heat loading has steadily increased. Therefore, a thermally stable JP-8 fuel is required that can operate at higher temperatures than current fuels. This research program had two objectives: (1) to identify fundamental conditions of fuel thermal decomposition, and (2) to provide the data needed to develop and evaluate global chemistry and heat transfer models for predicting jet fuel thermal decomposition and deposition rate.

In this final report, we present the Fuels Data Sets that may be used by modelers in the industry and other laboratories for the evaluation and refinement of global chemistry and heat transfer models for predicting jet fuel deposition rates. These data were obtained using a single-pass, single-tube heat exchanger called the Phoenix rig. More exhaustive information is available in the individual papers listed in this report. All the data sets were prepared using Microsoft Excel V.4.0 for IBM PC-Compatible computers and are available on computer diskettes.

These data were obtained using a single-pass, single-tube heat exchanger called the Phoenix rig described in Section 3. Principally, two different types of tests were conducted: (1) Deposition tests to measure carbon and gum deposition when the jet fuel flowing through the tube is thermally stressed, and (2) Oxygen consumption tests to determine the threshold temperature at which the dissolved oxygen reacts with the fuel. We tested three baseline fuels, three antioxidant (AO) additives, one metal deactivator (MDA) additive, an improver additive, and conventional JP-8 additives.

2. LIST OF RELEVANT PUBLICATIONS

1. D. R. Ballal, R. J. Byrd, S. P. Heneghan, C. R. Martel, T. F. Williams, and S. Zabarnick, "Combustion and Heat Transfer Studies Utilizing Advanced Diagnostics: Fuels Research," Report WL-TR-92-2112, Wright Laboratory, Wright-Patterson Air Force Base OH, November 1992.
2. S. P. Heneghan, C. R. Martel, T. F. Williams, and D. R. Ballal, "Studies of Jet Fuel Thermal Stability in Flowing Systems," *ASME, Journal of Engineering for Gas Turbines and Power*, 1992.
3. S. D. Anderson, J. T. Edwards, R. J. Byrd, T. B. Biddle, W. H. Edwards, S. P. Heneghan, C. R. Martel, T. F. Williams, J. A. Pearce, and W. E. Harrison, "Advanced Thermally Stable Jet Fuel Development," *Aviation Fuels: Thermal Stability Requirements*, ASTM STP 1138, P. W. Kirklin and P. David, Eds. ASTM Philadelphia, 1992.
4. S. P. Heneghan, C. R. Martel, T. F. Williams, and D. R. Ballal, "Effects of Oxygen and Additives on the Thermal Stability of jet Fuels," Submitted to 38th ASME (Int.) Gas Turbine and Aeroengine Conference, Cincinnati OH, May, 1993.
5. C. R. Martel, T. F. Williams, and H. L. Imwalle, "Studies of Jet Fuel Thermal Stability in a Flowing System--Vol.I: Experimental Work," Report No. UDR-TR-92-98, University of Dayton, Dayton OH, November 1992.
6. C. R. Martel, T. F. Williams, and H. L. Imwalle, "Studies of Jet Fuel Thermal Stability in a Flowing System--Vol. II: Data Sets," Report No. UDR-TR-92-99, University of Dayton, Dayton OH, November 1992.

3. DESCRIPTION OF THE TEST FACILITY

3.1 Phoenix Rig

Figure 1 is a flow schematic of the Phoenix rig. Filtered test fuel is added to the 189-liter preconditioning tank (T1), which is sparged with gaseous oxygen/nitrogen blends to control its dissolved oxygen content. The sparger consists of an eight-armed spider assembly at the bottom of the preconditioning tank. From tank T1, the fuel passes through a 2-micron filter, FP, into a positive displacement pump P1. Immediately downstream of pump P1 is a surge dampener ACC1 and the fuel flowmeter FE1. Leaving FE1, the fuel passes through metering valve VM1. VM1 and ACC1 dampen pressure and flow pulsations from P1, allowing stable flow of pressure through the system. After VM1, the fuel enters the preheater and a separate, copper-block heater.

Filter F1 is installed immediately downstream of the preheater to detect if filter-plugging precipitates are formed within it. The pressure differential across F1 is measured by the pressure transducer DP1. From filter F1, the fuel passes through the high-temperature test section. The heated section consists of a 76.2 mm diameter copper block heater. The pressure differential across the test section is monitored using differential pressure transducer DP2. The copper block test section consists of a straight length of 3.18 mm (1/8 in.) o.d. tubing sandwiched between 2 heated copper blocks with a provision for 10 thermocouples whose exposed junctions touch or are welded to the 3.18-mm tubular test section. An upper temperature limit for the copper block is well above 610K. Following the heated test section, the fuel passes through filter F2, which is also equipped with a differential pressure transducer (DP3). An air-cooled copper block is clamped about a second tubular test section to cool the heated fuel to near ambient temperature before the fuel passes through filter F3. Filter F3 is also equipped with a differential pressure transducer. Finally, the fuel passes through a back-pressure control valve, VA1, which maintains the system pressure at about 2.48 MPa.

The data acquisition system (DA1) on the Phoenix rig records the oxygen and nitrogen sparging gas flow rates, the fuel flow rate, system pressure before the preheater and after filter F2, differential pressures across filters F1, F2, and F3, the heated test section, and temperatures at 15 locations. The gas chromatograph (GC) attached to the Phoenix rig measures the dissolved oxygen, nitrogen, and methane content of the test fuel at three different locations.

Safety features built into the Phoenix rig include: (1) power controlled by switch S1 through power relays for emergency shutdown, (2) preheater oil bath (Tank T2) with a manually controlled immersion heater/circulator (TCU1) and built-in over-temperature (448K) switch, (3) the overpressure switch, PS1, immediately downstream of pump P1, with warning (set at 3.79MPa) and shutdown levels (set at 4.14MPa) and a safety relief valve (VR3) set to open at 5.52 MPa, and (4) the hazardous vapor detector (HVD) turned on whenever electrical power is supplied to the Phoenix rig.

The Phoenix rig has a wide range of test variables: (1) Copper Block Heater Test Section--can be heated to 608K because the nickel plating on the heated copper blocks is effective for preventing oxidation problems, (2) Filter Porosity--filters F1, F2 and F3 are available with

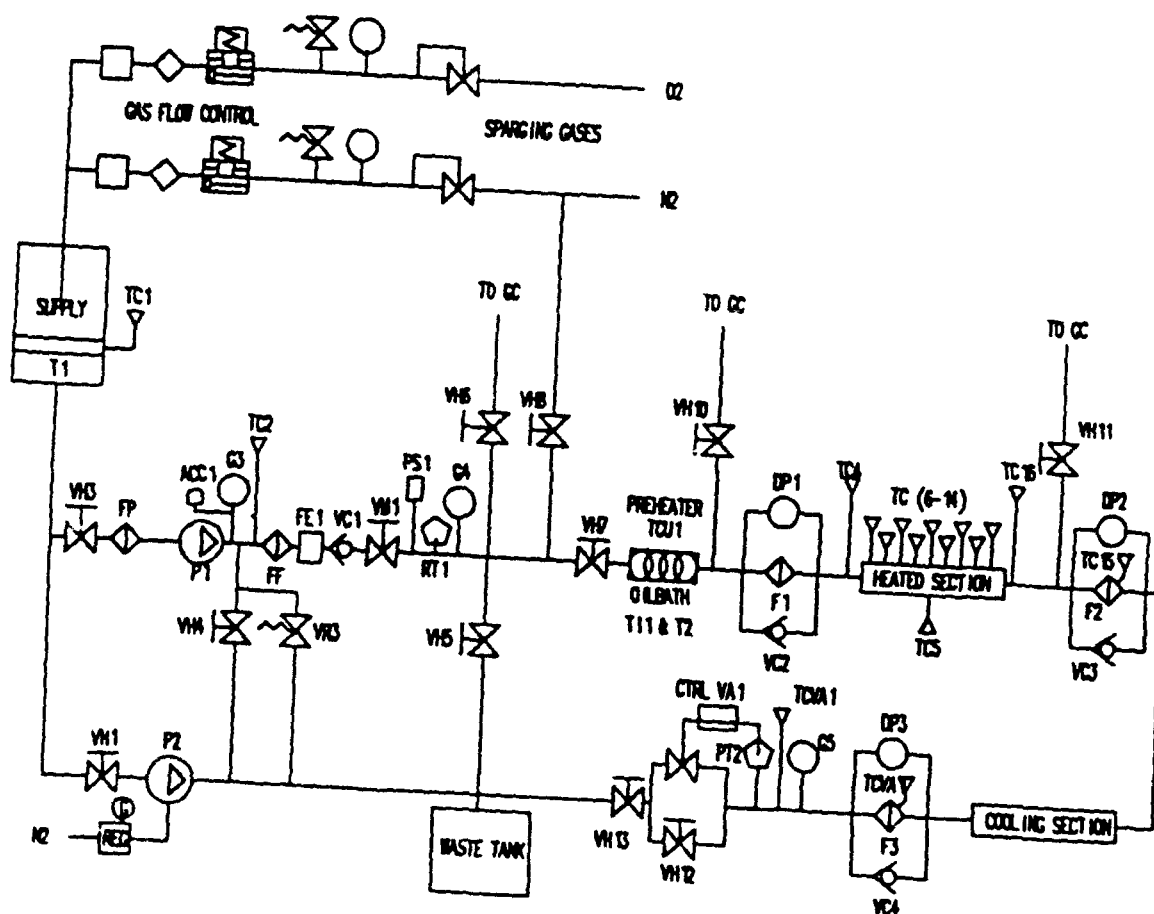


Figure 1. Schematic diagram of the Phoenix rig. (FC-flow controller, TC-thermocouple, DP-differential pressure transducer, P1-pump, GC-gas chromatograph, PIC1-pressure indicator controller, PR-pressure regulator, VM-metering valve, VR-relief valve, VC-check valve, G-pressure gauge, FE-flowmeter, VH-hand operated valve, PT-pressure transducer, LP-electrical to pneumatic converter for PIC1.

nominal porosities of 0.5, 2, 7, 15, 60, and 90 microns; current tests are performed using 0.5-micron elements for F1 and 2 micron elements for F2 and F3, (3) Preheater Residence Time--with flow rates ranging from 1 to 6 liters/hour, residence times from seconds to hours are possible, (4) Preheater Temperature--temperatures may be varied from ambient to 610K, (5) Flow Rate--pump flow rate is adjustable from less than 1 to 100 ml/min., (6) Operating Pressure--pressure can be adjusted from ambient to over 7 MPa., (7) Test Duration--durations of 6, 8, 12, and 24 hours have been used, (8) Fuel Preconditioning--a wide range of air, nitrogen/oxygen blends, or other gas mixtures can be bubbled through the fuel to control its dissolved gas content.

3.2 Test Section Configuration 1

Earlier tests employed the test section configuration 1 illustrated in Figure 2. In this configuration, filter F1 (0.5 micron) was located immediately upstream of the test section. Following filter F1 is a 3.18-mm tubing cross containing a thermocouple for measuring the inlet bulk fuel temperature and a side stream sample to the gas chromatograph. The heated tubular test section connects directly to the tubing cross. The copper block heater is 45.7 cm in length and 7.6 cm in diameter. The copper cylinder is split lengthwise, with each cylinder half containing a full-length, 400-watt cartridge heater. The flat faces of the cylinder halves are machined to fit the 3.18-mm diameter tubular test section. A thermocouple in one of the two copper blocks provides the temperature signal to the controller for the cartridge heaters.

The last 5.1 cm of the tubular test section is connected to another tubing cross. The downstream tubing cross contains a thermocouple to measure the bulk fuel temperature and sends a sidestream sample to the gas chromatograph. About 100 cm further downstream is a 2-micron filter F2. Uncontrolled cooling of the test fuel occurs between the exit of the heated test section and filter F2. In initial tests, deposits formed in the line connecting the test section to filter F2, and the filter was plugged with some fuel-additive combinations. Furthermore, oxidation of the copper block heater face affected the heat transfer from the copper block to the tubular test section. These and other problems led us to the test section configuration 2 described below.

3.3 Test Section Configuration 2

Figure 3 shows the schematic of test section configuration 2. Here, the copper heater blocks are nickel-plated to prevent surface oxidation. Immediately following the tubing cross is filter F2, containing a 2-micron stainless steel filter element. The close proximity of F2 to the tubular test section and the insulation ensure that the test fuel is still hot when it reaches F2. A second tubular test section follows F2 and is clamped between two unheated copper blocks. These copper blocks are exposed to the ambient air and cool the heated fuel to about 335K (for an inlet fuel temperature of about 540K). Finally, filter F3 (2-microns) is located. This test configuration causes the thermally stressed test fuel to flow through filter F2 while hot, through the cooled test section, and then through filter F3 after it has cooled.

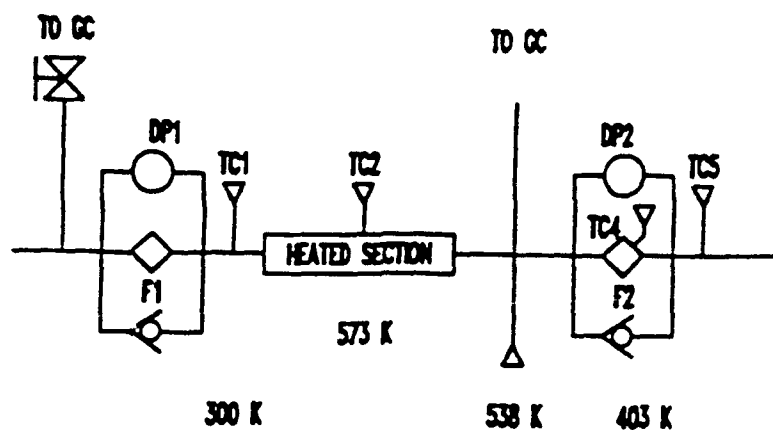


Figure 2. Flow diagram of the test section configuration 1 of the Phoenix rig showing relative location of thermocouples (TC), differential pressure gauges (DP), filters (F), and gas chromatograph sampler (GC). Listed temperatures are typical for 16 ml/min flow and 300C (573K) block temperature.

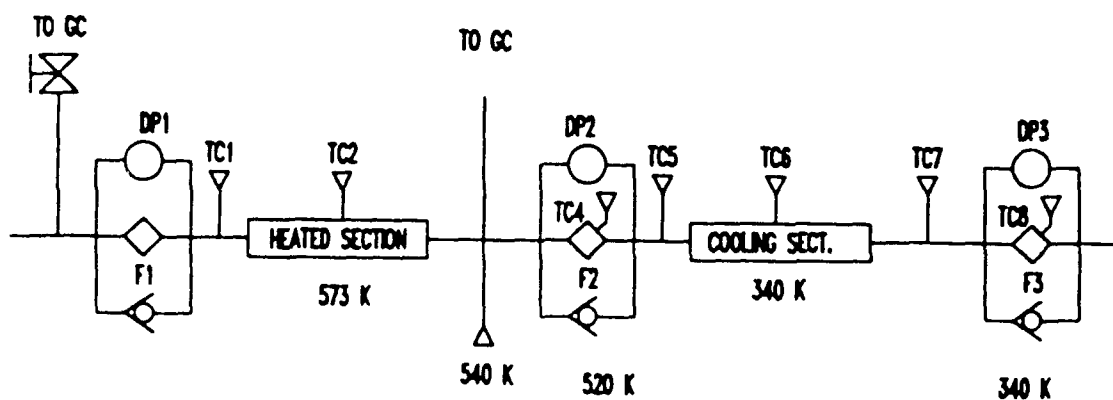


Figure 3. Flow diagram of the test section configuration 2 of the Phoenix rig showing relative location of thermocouples (TC), differential pressure gauges (DP), filters (F), and gas chromatograph sampler (GC). Listed temperatures are typical for 16 ml/min flow and 300C (573K) block temperature.

3.4 Error Analysis

The positive displacement fuel pump showed a drift of approximately 0.6 ml/min per hr. until stabilization. Manual compensation resulted in a flow range of ± 0.3 ml/min. corresponding to a velocity variation of ± 0.14 cm/s. The flowmeter accuracy was within 0.1 ml/min.

Temperature measurement accuracy for a 30AWG-K type thermocouple is ± 2.2 K. The temperature of the copper block was maintained to within ± 2 K as measured by the data acquisition thermocouple (± 0.4 % of the standard block temperature of 573K). During the configuration 1 tests, the measured bulk fuel exit temperatures varied as much as 30K from test to test. However, configuration 2 changes eliminated most of the test-to-test variations in the exit bulk fuel temperatures.

We developed the hexadecane test and an enthalpy balance calculation procedure to estimate the true bulk fuel temperature at the exit of the copper block heater. The exit bulk fuel temperature within the tubing cross 5 cm from the outlet end of the copper block heater was measured and calculated. This showed a maximum discrepancy of 4K at a fuel flowrate of 16 ml/min., so the correction factor only becomes important for flow rates below 32 ml/min. Repeatability from test to test as measured by bulk temperature thermocouple was ± 9 K for test section configuration 2.

The LECO carbon analyzer used for measurement of surface carbon has an accuracy within ± 0.05 % by weight. Several tests were completed to determine the best cleaning procedure and baseline for blank tubes. These tests yielded an average baseline of 3 μ grams of carbon per cm². Entrained oxygen concentrations measured in the fuel exiting the Phoenix Rig ranged from air-saturated, assumed to be 50 ppm, down to less than 0.2 ppm. The average relative standard deviation (while using the valve injections) was found to be 0.98% at the 50 ppm level.

3.5 Fuels Tested

Table 1 lists the baseline fuels and fuel/additive combinations tested, and Table 2 lists selected properties of the three baseline fuels. Fuel POSF-2747, a typical commercial Jet A fuel, was a hydrotreated product and contained an antioxidant when delivered. POSF-2827 is a commercial Jet A fuel that was not hydrotreated. To provide a reference baseline, a military Jet Propellant Thermally Stable (JPTS) fuel meeting specification MIL-T-25524 was obtained. JPTS is a hydrotreated fuel that contains JFA-5, a thermal stability improver additive manufactured by DuPont. Although JPTS fuel meets the JP-8 + 100 thermal stability goal, its high cost and poor availability would prevent its widespread use.

Three antioxidants listed in Table 1 were tested in the Phoenix rig. The metal deactivator tested is widely used in aviation turbine fuels, and finally, additive JFA-5, used in military JPTS jet fuel, represents the current "state-of-the-art" for thermal stability improving additives. Although its composition is proprietary, it is believed to contain an antioxidant, a metal deactivator, and a dispersant/detergent.

Table 1. Test Fuels

POSF-2747	Jet A-1/Super K kerosene (hydrotreated)
POSF-2814	Fuel POSF-2747 plus JP-8 Additives*
POSF-2799	MIL-T-25524 JPTS jet fuel (hydrotreated)
POSF-2827	Jet A Commercial Jet Kerosene
POSF-2827	plus 12 mg/l JFA-5**
POSF-2827	plus 50 mg/l JFA-5**
POSF-2827	plus 100 mg/l Antioxidant A***
POSF-2827	plus 25 mg/l Antioxidant B****
POSF-2827	plus 25 mg/l Antioxidant C*****
POSF-2827	plus 6 mg/l MDA-2*****

* The JP-8 additives were 22.5 mg/l DuPont DCI-4A corrosion inhibitor, 1 mg/l of ASA-3 static dissipater additive, and 0.15 volume percent of diethylene glycol monomethyl ether fuel system icing inhibitor.

** JFA-5 is a thermal oxidative stability improver additive manufactured by DuPont and specified for use in MIL-T-25524.

*** Antioxidant A is tertiary butylhydroquinone (TBHQ).

**** Antioxidant B is a proprietary sulfur/oxygen type antioxidant.

***** Antioxidant C is a proprietary phenol type antioxidant.

***** MDA-2 is N,N'-disalicylidene-1,2,-propanediamine, a metal deactivator additive approved for use in aviation turbine fuels.

Table 2. Properties of Baseline Fuels

Property	ASTM Method	POSF2747	POSF2799	POSF2827
JFTOT Break Point, K	D3241	605	672	539
Sulfur, wt. percent	D3227	0	0	0.1
Aromatics, vol. percent	D1319	19	9	19
Existent gum, mg/ml	D381	0	0.4	0
Flash point, K	D93	395	393	413

4. FUELS DATA SETS

Table 3. Deposition Test Listing

DATA SHEET FILENAME	DATE	TEST FUEL POSF	FLOW RATE ml/min	BLOCK TEMP. K	TEST LENGTH hours	SPARGE GAS	FUEL AND ADDITIVE INFORMATION
D1N542A1	1-Jan-91	2747	16	544	6	AIR	JET A-1/SUPER K
D1N542A2	24-Jan-91	2747	16	544	6	AIR	HYDROTREATED
D1N542A3	23-Jan-91	2747	16	544	6	AIR	KEROSENE
D1N543A1	12-Feb-91	2747	16	544	8	AIR	
D1N544A1	4-Feb-91	2747	16	544	12	AIR	
D1N544A2	25-Feb-91	2747	16	544	12	AIR	
D1N544A3	4-Mar-91	2747	16	544	12	AIR	
D1N548A1	11-Mar-91	2747	16	544	24	AIR	
D1N572A1	20-Mar-91	2747	16	573	6	AIR	
D1N574A1	26-Mar-91	2747	16	573	12	AIR	
D1N574A2	24-Oct-91	2747	16	573	12	AIR	
D1N572N1	30-Mar-91	2747	16	573	6	N2	
D1P542A1		2747	16	544	6	AIR	JP-8 ADDITIVES=
D1P544A1		2747	16	544	12	AIR	22.5 mg/l DCI-4A +
D1P572A1		2747	16	573	6	AIR	0.15% (VOL) DIEGME
D1P574A1		2747	16	573	12	AIR	+ 1 mg/l ASA-3
D1P578A1		2747	16	573	24	AIR	
D1P612A1		2747	16	608	6	AIR	
D1P614A1		2747	16	608	12	AIR	
D2N572A1	9-Aug-91	2799	16	573	6	AIR	MIL-T-25524
D2N574A1	13-Aug-91	2799	16	573	12	AIR	JPTS FUEL
D2N572N1	14-Aug-91	2799	16	573	6	N2	
D3E571A1	4-Dec-91	2827	16	573	2.5	AIR	25 mg/l AO "C"
D3J572A1	20-Aug-91	2827	16	573	6	AIR	12 mg/l JFA-5
D3J572A2	28-Aug-91	2827	16	573	6	AIR	50 mg/l JFA-5
D3J574A1	22-Aug-91	2827	16	573	12	AIR	12 mg/l JFA-5
D3J574A2	29-Aug-91	2827	16	573	12	AIR	50 mg/l JFA-5
D3M572A1	7-Jan-92	2827	16	573	6	AIR	6 mg/l MDA-2
D3M574A1	10-Jan-92	2827	16	573	12	AIR	6 mg/l MDA-2
D3M578A1	7-Jan-92	2827	16	573	24	AIR	6 mg/l MDA-2
D3N542A1	20-May-92	2827	16	543	6	AIR	
D3N542A2	12-May-92	2827	8	543	6	AIR	FLOW TEST
D3N542A3	22-May-92	2827	4	543	6	AIR	SERIES
D3N572A1	19-Jul-91	2827	16	573	6	AIR	
D3N572A2	14-Nov-91	2827	16	573	6	AIR	
D3N572A3	26-Feb-92	2827	4	573	6	AIR	FLOW TEST
D3N572A4	24-Feb-92	2827	8	573	6	AIR	SERIES
D3N572N1	30-Jul-91	2827	16	573	6	N2	
D3N572P1	6-May-92	2827	16	573	6	21% O2	PARTIAL OXYGEN
D3N572P2	8-May-92	2827	16	573	6	12% O2	TEST SERIES
D3N572P3	12-May-92	2827	16	573	6	6% O2	" "
D3N572P4	9-Jun-92	2827	16	573	6	3% O2	" "
D3N574A1	24-Jul-91	2827	16	573	12	AIR	
D3N574A2	24-Oct-91	2827	16	573	12	AIR	
D3N574A3	4-Nov-91	2827	16	573	12	AIR	

Table 3. Deposition Test Listing

D3N574N1	10-Dec-91	2827	16	573	12	N2	
D3N578A1	7-Feb-92	2827	16	573	24	AIR	
D3N612A1	1-Aug-91	2827	16	608	6	AIR	
D3N612A2	27-May-92	2827	16	608	6	AIR	
D3N612A3	28-May-92	2827	8	608	6	AIR	
D3N612A4	29-May-92	2827	4	608	6	AIR	
D3O574A1	23-Nov-91	2827	16	573	12	AIR	25 mg/l AO "B"
D3T572A1	16-Sep-91	2827	16	573	6	AIR	100 mg/l AO "A"
D3T574A1	17-Sep-91	2827	16	573	12	AIR	100 mg/l AO "A"

Table 4. Oxygen Depletion Tests Listing

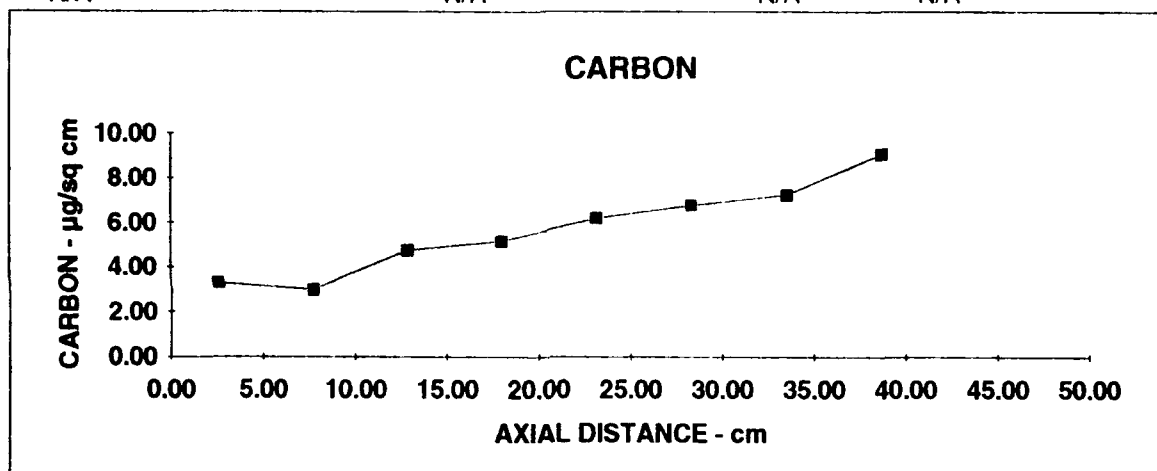
TEST IDENT.	TEST DATE	FUEL POSF	FLOW ml/min	SPARGE GAS			
O1NVA1	18-Oct-91	2747	16	AIR	BASELINE		
O2NVA1	8-Aug-91	2799	16	AIR	BASELINE		
O3EVA1	4-Dec-91	2827	16	AIR	25 mg/l AO "C"		
O3JVA1	18-Aug-91	2827	16	AIR	12 mg/l JFA-5		
O3JVA2	27-Aug-91	2827	16	AIR	50 mg/l JFA-5		
O3MVA1	23-Jan-92	2827	16	AIR	6 mg/l MDA		
O3N57P1	5-May-92	2827	16	20.8% O2	PARTIAL OXYGEN BASELINE		
O3N57P2	7-May-92	2827	16	11.6% O2	PARTIAL OXYGEN TEST		
O3N57P3	11-May-92	2827	16	6.2% O2	PARTIAL OXYGEN TEST		
O3N57P4	10-Jun-92	2827	16	3.2% O2	PARTIAL OXYGEN TEST		
O3NVA1	17-Jul-91	2827	16	AIR	BASELINE		
O3NVA2	18-Jul-91	2827	16	AIR	BASELINE REPEAT		
O3NVA3	13-Nov-91	2827	16	AIR	BASELINE REPEAT		
O3NVA4	13-Dec-91	2827	16	AIR	BASELINE REPEAT		
O3NVAV	8-Jun-92	2827	4 - 100	AIR	VARIED FLOW RATES		
O3OVA1	27-Nov-91	2827	16	AIR	25 mg/l AO "B"		
O3TVA1	13-Sep-91	2827	16	AIR	100 mg/l AO "A"		

Table 5. File Code

TEST TYPE:	D = DEPOSITION TEST O = OXYGEN DEPLETION TEST	
FUEL IDENTIFICATION:	1 = POSF-2747 2 = POSF-2799 3 = POSF-2827	
ADDITIVE IDENTIFICATION:	N = NONE E = ANTIOXIDANT "C" O = ANTIOXIDANT "B" M = METAL DEACTIVATOR J = JFA-5 P = JP-8 ADDITIVES (DCI-4A, ASA-3, DIEGME) T = ANTIOXIDANT "A"	
TEST TEMPERATURE (K):	54 = 543 K 57 = 573 K 61 = 608 K V = VARIABLE (AS IN OXYGEN DEPLETION TESTS)	(DIVIDE TEMPERATURE BY 10 AND ROUND OFF)
TEST DURATION (HRS):	2 = 6 HOURS 3 = 8 HOURS 4 = 12 HOURS 8 = 24 HOURS OMIT FOR OXYGEN DEPLETION TEST	(DIVIDE HOURS BY 3 AND ROUND OFF)
SPARGE GAS:	A = AIR OR NITROGEN/OXYGEN EQUIVALENT N = NITROGEN P = PARTIAL OXYGEN	
REPEAT TESTS:	1 = FIRST 2 = SECOND 3 = THIRD ETC	
EXAMPLES:		
D1N574A3	D = DEPOSITION TEST 1 = FUEL POSF-2747 N = NO ADDITIVE 57 = 573 K TEST TEMPERATURE 4 = 12 HOUR DURATION A = AIR SPARGED 3 = THIRD TEST OF THIS TYPE	O3JVA1 O = OXY. DEPLETION TEST 3 = FUEL POSF 2827 J = ADDITIVE JFA-5 V = VARIABLE TEST TEMPERATURE A = AIR SPARGE 1 = FIRST TEST

DATE: 23-Jan-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 505 AT 6 HR = 505
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

**HEATED SECTION**

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.025	2.57	3.49	11.4	3.27	0.54
2	2.03	7.72	3.50	10.4	2.97	0.50
3	2.01	12.85	3.46	16.4	4.74	0.79
4	2.04	18.00	3.51	18.1	5.15	0.86
5	2.038	23.17	3.51	21.7	6.18	1.03
6	2.042	28.36	3.52	23.8	6.77	1.13
7	2.04	33.54	3.51	25.4	7.23	1.20
8	2.01	38.68	3.46	31.3	9.04	1.51
9	(LOST)					
Total	16.24		27.97	158.50		

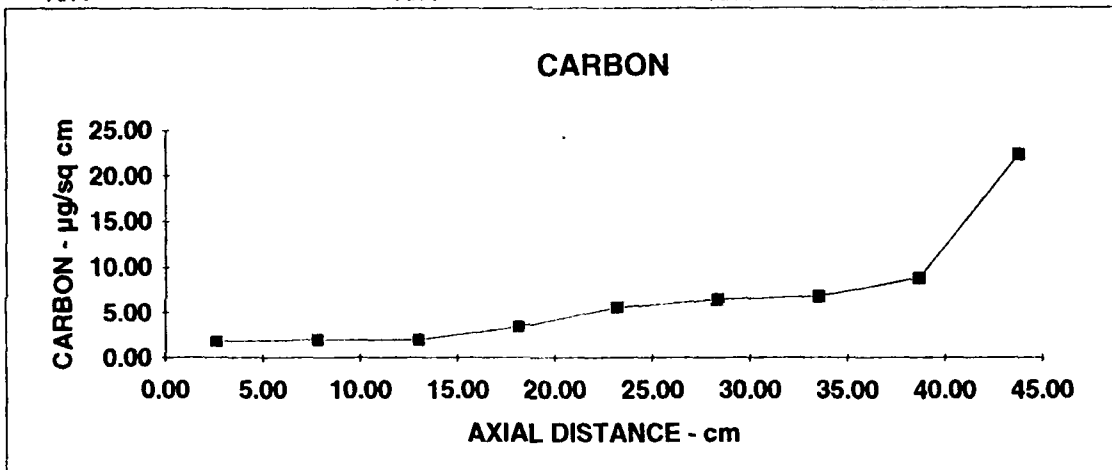
NOTES:

NO INSULATION ON OUTLET FOR BULK TEMPERATURE.
 DATA LOST FOR LAST SEGMENT OF TEST SECTION.

DATE: Jan 24, 1991 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 499 AT 6 HR = 499
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.045	2.60	3.52	6.41	1.82	0.30
2	2.065	7.82	3.56	7.11	2.00	0.33
3	2.018	13.00	3.48	7	2.01	0.34
4	2.03	18.14	3.50	12	3.43	0.57
5	1.99	23.25	3.43	19	5.54	0.92
6	2.013	28.33	3.47	22.4	6.46	1.08
7	2.057	33.50	3.54	24	6.77	1.13
8	2.025	38.69	3.49	30.7	8.80	1.47
9	2.019	43.82	3.48	77.4	22.25	3.71
Total	18.26			206.02		

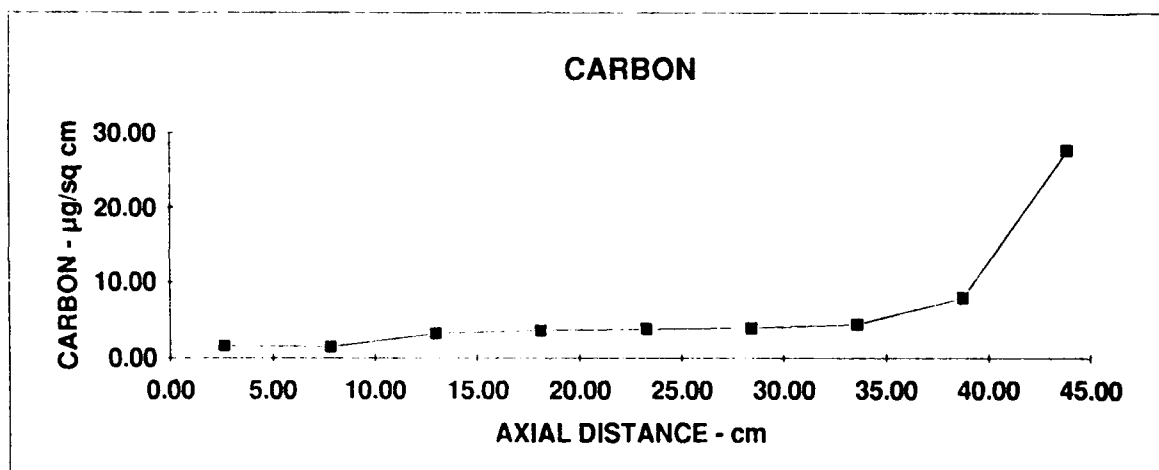
NOTES:

NO INSULATION ON OUTLET FOR BULK TEMPERATURE MEASUREMENT.

DATE: 23-Jan-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 505 AT 6 HR = 505
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.07	2.63	3.57	5.56	1.56	0.26
2	2.03	7.84	3.50	5.16	1.48	0.25
3	2.02	12.98	3.48	11.2	3.22	0.54
4	2.03	18.12	3.50	12.4	3.55	0.59
5	2.04	23.29	3.51	13.1	3.73	0.62
6	2	28.42	3.45	13.6	3.95	0.66
7	2.07	33.59	3.57	15.8	4.43	0.74
8	2	38.76	3.45	27.2	7.89	1.32
9	2.03	43.88	3.50	96.6	27.62	4.60
Total	18.29		31.51	200.62		

NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET FOR BULK TEMPERATURE.

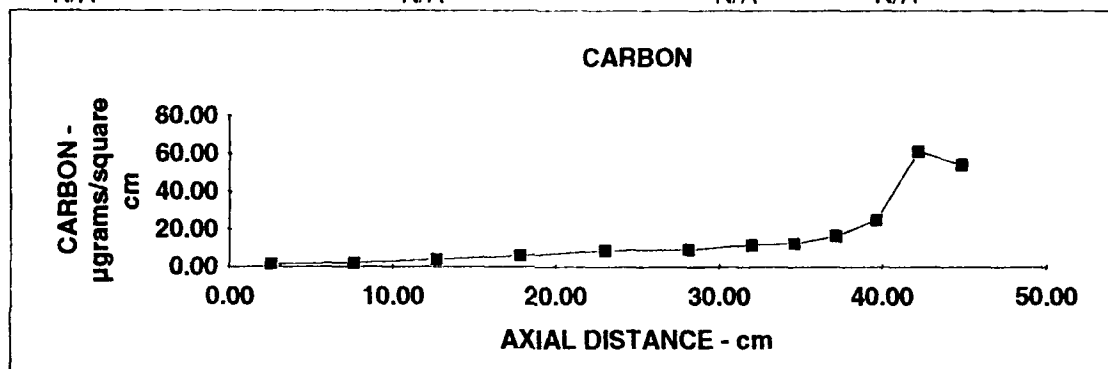
DATE: Feb 12, 1991 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 8 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 518 AT 6 HR = 518

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	N/A	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)	
N/A	N/A	N/A	N/A	

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	N/A	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)	
N/A	N/A	N/A	N/A	



HEATED SECTION

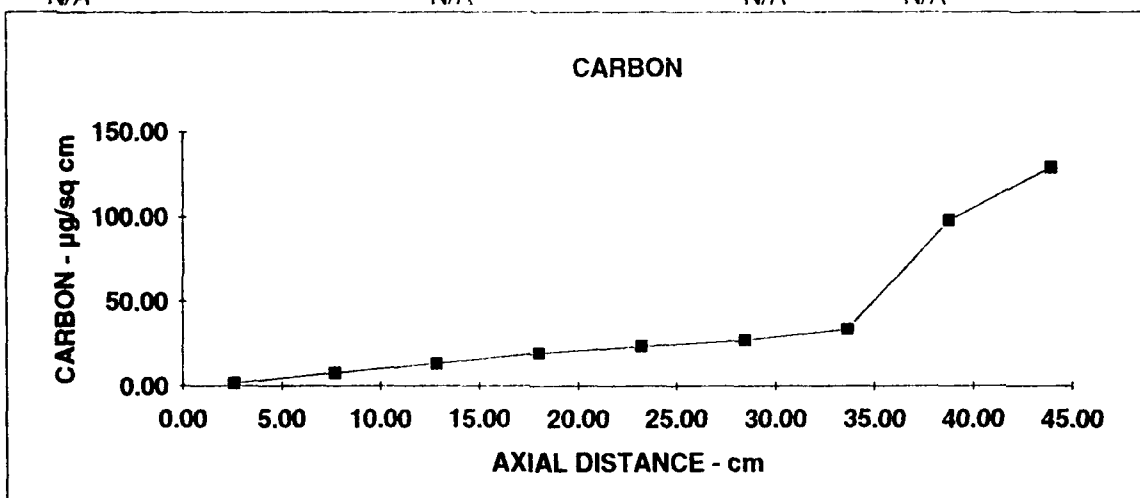
Section	Legth inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.013	2.56	3.47	4	1.15	0.14
2	1.975	7.62	3.40	6.7	1.97	0.25
3	2.018	12.69	3.48	13.85	3.98	0.50
4	2.025	17.83	3.49	20.36	5.84	0.73
5	2.05	23.00	3.53	31.55	8.93	1.12
6	2	28.15	3.45	31.27	9.08	1.13
7	1.06	32.03	1.83	21.46	11.75	1.47
8	1	34.65	1.72	21.19	12.30	1.54
9	0.995	37.18	1.71	28.06	16.37	2.05
10	0.946	39.65	1.63	41.18	25.27	3.16
11	1.075	42.21	1.85	113.7	61.39	7.67
12	1.023	44.88	1.76	95.38	54.12	6.76
Total	18.18		31.32	428.70		

NOTES: TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET FOR BULK TEMPERATURE MEASUREMENT.

DATE: 4-Feb-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 12 HRS
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 499 AT 6 HR = 499
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.57	3.48	6.02	1.73	0.14
2	2.01	7.68	3.46	26.6	7.68	0.64
3	2.06	12.85	3.55	47	13.24	1.10
4	2.04	18.06	3.51	67.6	19.23	1.60
5	2.04	23.24	3.51	82.5	23.47	1.96
6	2.05	28.44	3.53	95	26.90	2.24
7	2.04	33.63	3.51	118	33.57	2.80
8	2.04	38.81	3.51	344	97.88	8.16
9	2	43.94	3.45	445	129.15	10.76
Total	18.30		31.53	1231.72		

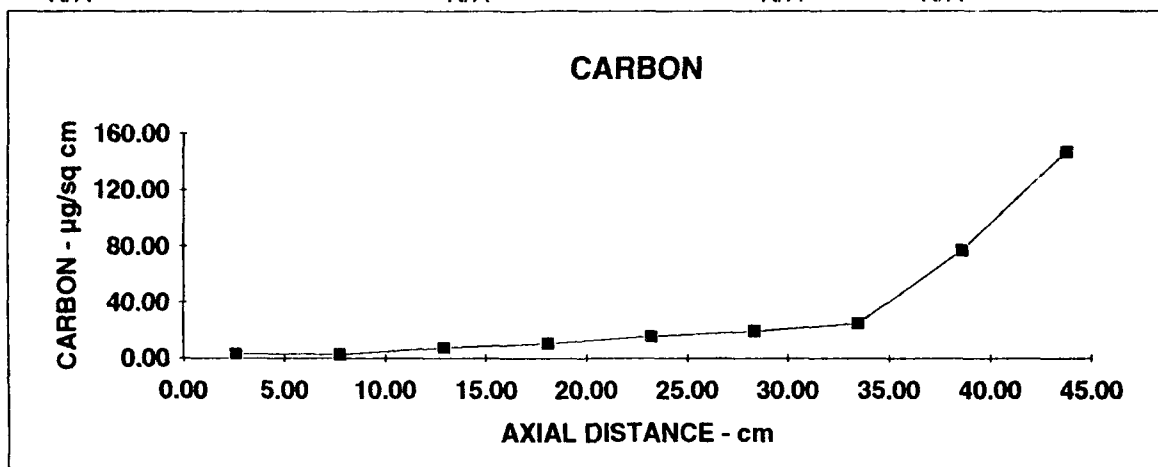
NOTES:

TEST RUN BEFORE GAS CHROMATORAPH AVAILABLE.
 NO INSULATION ON OUTLET FOR BULK TEMPERATURE.

DATE: 25-Feb-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 12 HRS
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 518 AT 12 HR = 518
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.045	2.60	3.52	10.73	3.05	0.25
2	2.012	7.75	3.47	8.43	2.43	0.20
3	2.05	12.91	3.53	25.58	7.24	0.60
4	2.033	18.09	3.50	35.86	10.24	0.85
5	2	23.22	3.45	54.29	15.76	1.31
6	2.025	28.33	3.49	67.23	19.27	1.61
7	2.03	33.48	3.50	87.31	24.96	2.08
8	2.045	38.65	3.52	271.47	77.05	6.42
9	2.038	43.84	3.51	515.43	146.80	12.23
Total	18.28		31.49	1076.33		

NOTES:

TEST RUN BEFORE GAS CHROATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET BULK TEMPERATURE.

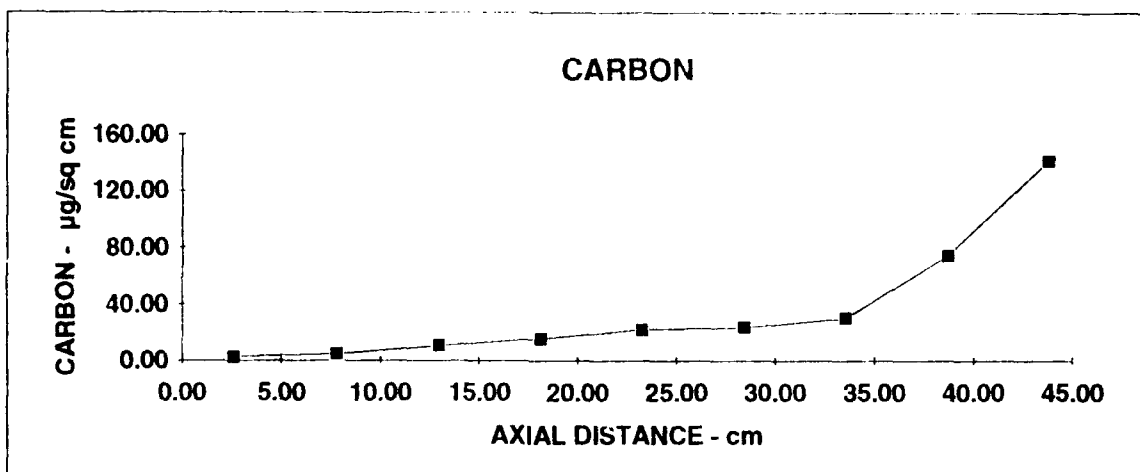
DATE: 4-Mar-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 12 HRS
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 518 AT 12 HR = 518

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	N/A	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	N/A	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.054	2.61	3.54	9.26	2.62	0.22
2	2.025	7.79	3.49	16.05	4.60	0.38
3	2.061	12.98	3.55	36.32	10.23	0.85
4	2.014	18.15	3.47	54.11	15.59	1.30
5	2.013	23.27	3.47	76.4	22.03	1.84
6	2.035	28.41	3.51	82.54	23.54	1.96
7	2.022	33.56	3.48	105.47	30.28	2.52
8	2.005	38.68	3.45	256.8	74.34	6.20
9	2.012	43.78	3.47	489.75	141.29	11.77
Total	18.24		31.43	1126.70		

NOTES:

TEST RUN BEFORE GAS CHROATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET BULK TEMPERATURE.

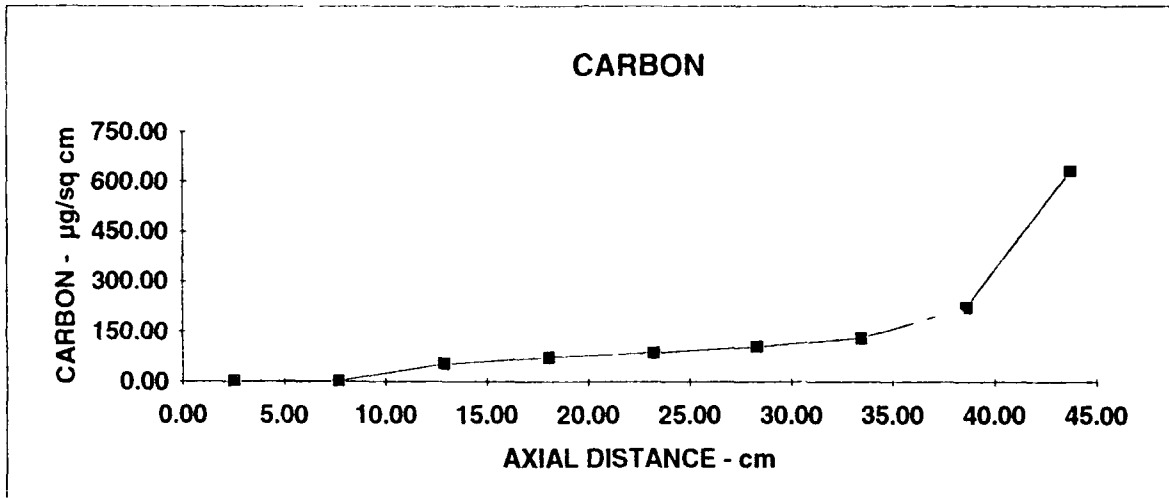
DATE: 11-Mar-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 544
 DURATION: 24HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 518 AT 24 HR = 518

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2	2.54	3.45	6.99	2.03	0.08
2	2.045	7.68	3.52	8.28	2.35	0.10
3	2.045	12.87	3.52	185	52.51	2.19
4	2.04	18.06	3.51	255	72.56	3.02
5	2.03	23.23	3.50	302	86.35	3.60
6	2	28.35	3.45	360	104.48	4.35
7	2.025	33.46	3.49	450	128.99	5.37
8	2.04	38.62	3.51	779	221.65	9.24
9	2.03	43.79	3.50	2210	631.92	26.33
Total	18.26		31.45	4556.27		

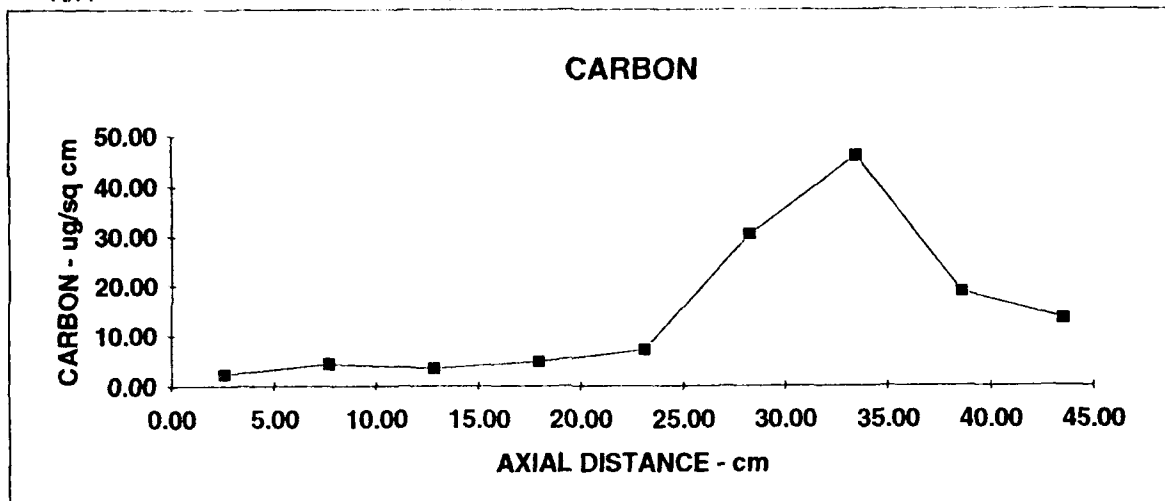
NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET FOR BULK TEMPERATURE.

DIN572A1.XLS

DATE: 20-Mar-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 548 AT 6 HR = 548

F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



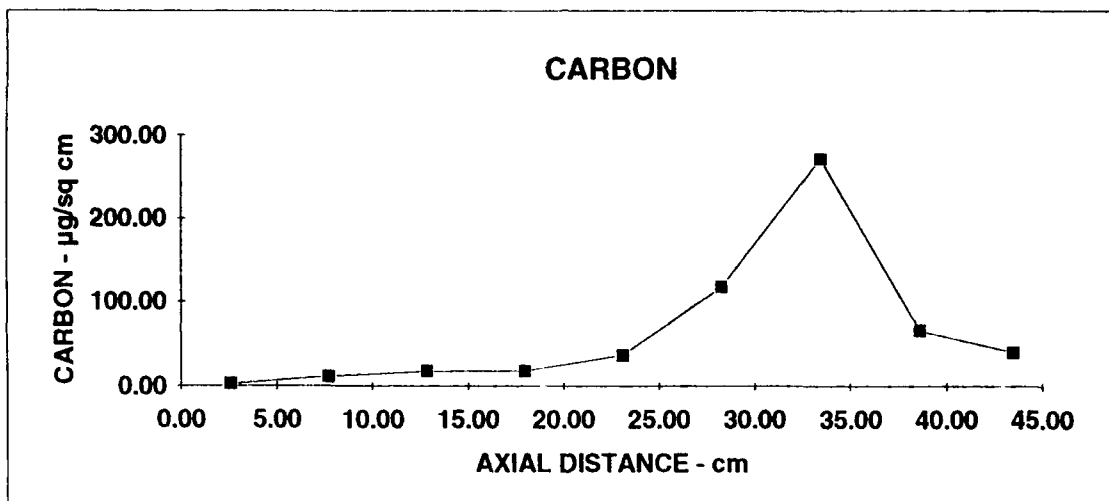
HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.029	2.58	3.50	7.66	2.19	0.37
2	2	7.69	3.45	14.7	4.27	0.71
3	2.02	12.80	3.48	12.2	3.51	0.58
4	2.035	17.95	3.51	16.8	4.79	0.80
5	2.025	23.11	3.49	24.8	7.11	1.18
6	2.04	28.27	3.51	107	30.45	5.07
7	2.03	33.44	3.50	161	46.04	7.67
8	2.025	38.59	3.49	65.3	18.72	3.12
9	1.9	43.57	3.27	43.7	13.35	2.23
Total	18.10		31.19	453.16		

NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET FOR BULK TEMPERATURE.

DATE: Mar 26, 1991 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 548 AT 12 HR = 548
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

**HEATED SECTION**

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.04	2.59	3.51	8.06	2.29	0.19
2	2.01	7.73	3.46	40.5	11.70	0.97
3	2.02	12.85	3.48	60	17.24	1.44
4	2	17.96	3.45	61.4	17.82	1.48
5	2.045	23.09	3.52	128	36.33	3.03
6	2.035	28.28	3.51	410	116.95	9.75
7	2.04	33.45	3.51	950	270.31	22.53
8	2.03	38.62	3.50	229	65.48	5.46
9	1.805	43.49	3.11	125	40.20	3.35
Total	18.03		31.05	2011.96		

NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.
 NO INSULATION ON OUTLET FOR BULK TEMPERATURE.

DATE: Oct 24, 1991 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: 79%-21% NITROGEN/OXYGEN BY VOLUME
 BULK OUT TEMP. K: AT 1 HR = 538 AT 12 HR = 538

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	1.5	END	1.6
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)	
6.80866	6.80907	0.00041	0.000409	

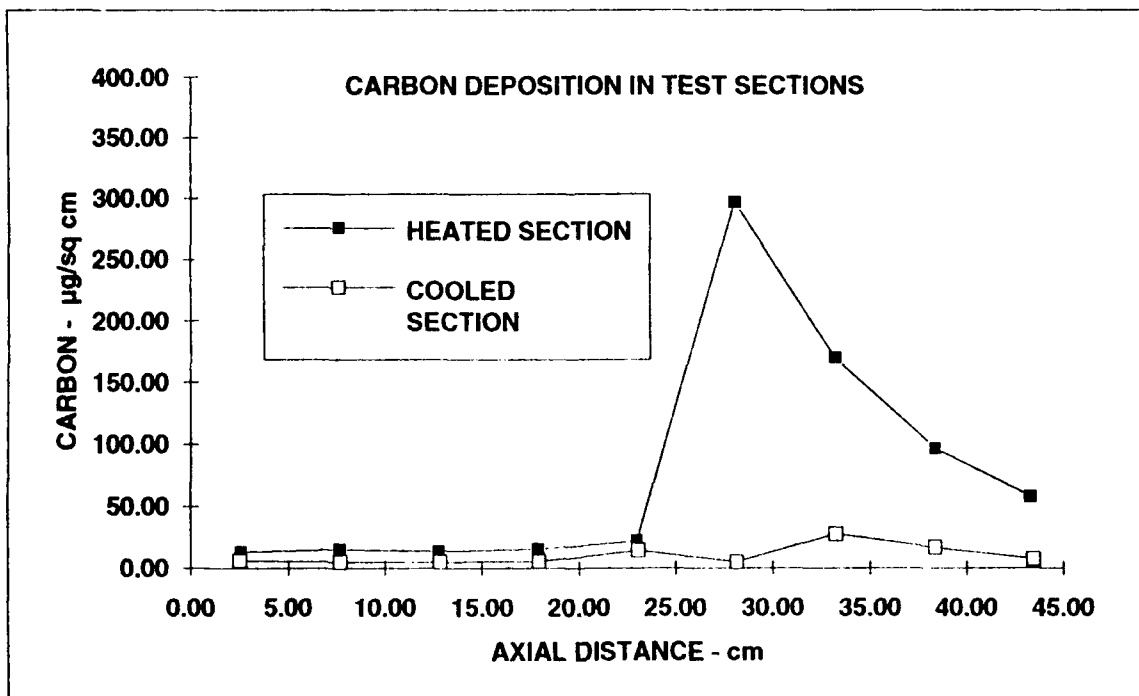
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	0.1	END	0.1
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)	
6.58528	6.58718	0.0019	0.00133	

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP	START	1.1	END	1.1
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)	
6.56254	6.56355	0.00101	0.000647	

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	6061725	2652845		STREAM 1	N/A	N/A
STREAM 2	5704941	2527653		STREAM 2	5854368	2600165
STREAM 3	7355296	12932	N/A	STREAM 3	7197277	3112221



D1N574A2.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	45.1	13.02	1.09
2	2.01	7.66	3.46	51.3	14.81	1.23
3	2.01	12.76	3.46	47.3	13.66	1.14
4	2.013	17.87	3.47	54.8	15.80	1.32
5	2.005	22.98	3.45	75	21.71	1.81
6	2.015	28.08	3.47	1030	296.71	24.73
7	2.025	33.21	3.49	592	169.69	14.14
8	2.025	38.36	3.49	336	96.31	8.03
9	1.875	43.31	3.23	187	57.89	4.82
Total	17.99		30.99	2418.50		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.45	21.00	6.08	0.51
2	2.04	7.68	3.51	17.00	4.85	0.40
3	2.01	12.81	3.46	17.60	5.08	0.42
4	2.03	17.94	3.49	18.80	5.39	0.45
5	2.01	23.06	3.46	48.90	14.12	1.18
6	2.02	28.17	3.47	17.20	4.95	0.41
7	2.00	33.27	3.45	94.80	27.51	2.29
8	2.01	38.36	3.45	57.90	16.76	1.40
9	2.01	43.45	3.45	26.80	7.76	0.65
Total	18.11		31.20	320.00		

NOTES:

DATE: 30-Mar-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 100% NITROGEN
 BULK OUT TEMP. K: AT 1 HR = N/A AT 6 HR = N/A

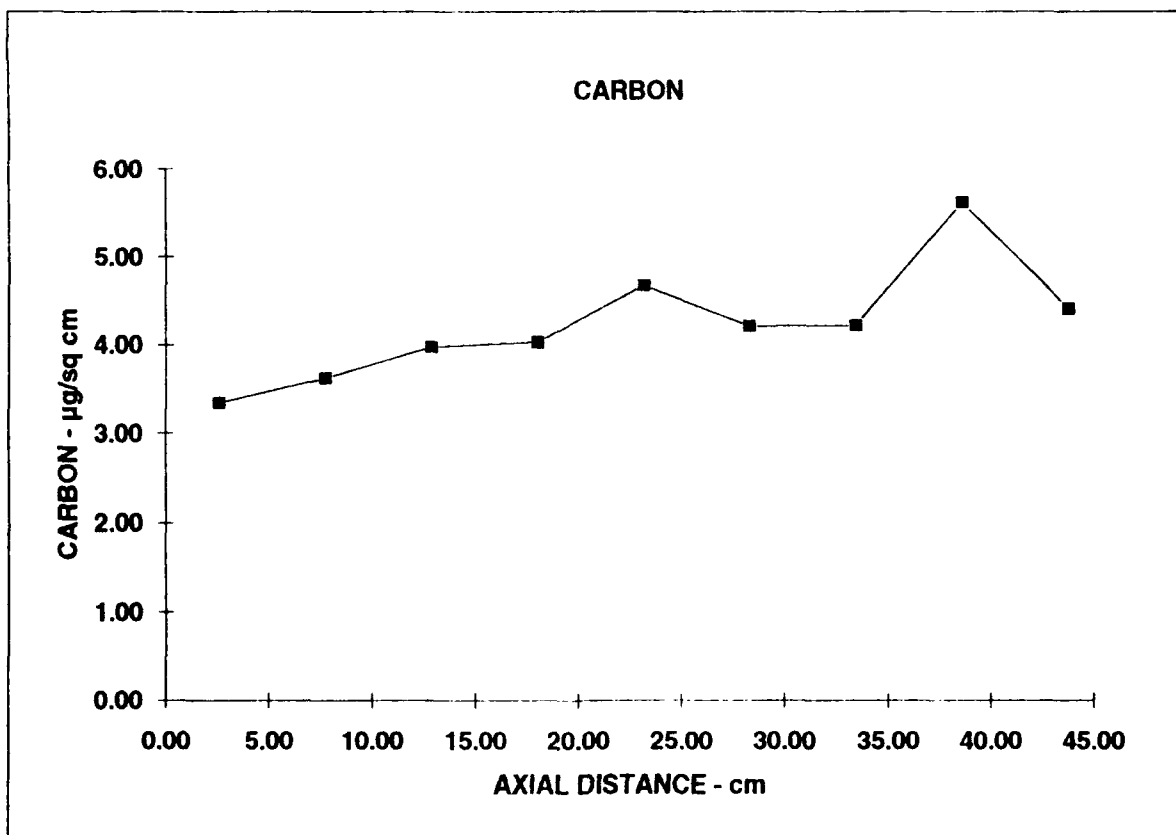
F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
0	0	0	0

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	N/A	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	N/A	77910		STREAM 1	N/A	120696
STREAM 2	N/A	74699		STREAM 2	N/A	112310
STREAM 3	N/A	0	53586	STREAM 3	N/A	127582



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.03	2.58	3.50	11.7	3.35	0.56
2	2.035	7.74	3.51	12.7	3.62	0.60
3	2.03	12.90	3.50	13.9	3.97	0.66
4	2.03	18.06	3.50	14.1	4.03	0.67
5	2.025	23.21	3.49	16.3	4.67	0.78
6	2.025	28.35	3.49	14.7	4.21	0.70
7	2.035	33.51	3.51	14.8	4.22	0.70
8	2.035	38.68	3.51	19.7	5.62	0.94
9	2.025	43.83	3.49	15.4	4.41	0.74
Total	18.27		31.48	133.30		

NOTES:

OXYGEN CONTENT OF INCOMING FUEL DROPPED THROUGHOUT TEST, AS FOLLOWS;

TIME HOURS	STREAM 1 OXYGEN	STREAM 2 OXYGEN	STREAM 3 OXYGEN	STREAM 3 METHANE
	120696	112310	127582	
0	112079	104930	10258	86954
1	105747	97936	11722	74913
2	101713	96477	10617	66136
3	77910	74699	0	53586
4	59372	55563	0	43249
5	51269	48794	0	39789
6	45685	43510	0	37668

DATE:
SET UP: CONFIGURATION # 1
FUEL DESIGNATION: POSF2747
FLOW: 16ml/min
BLOCK TEMP K: 544 K
DURATION: 6 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = N/A AT 6 HR = N/A

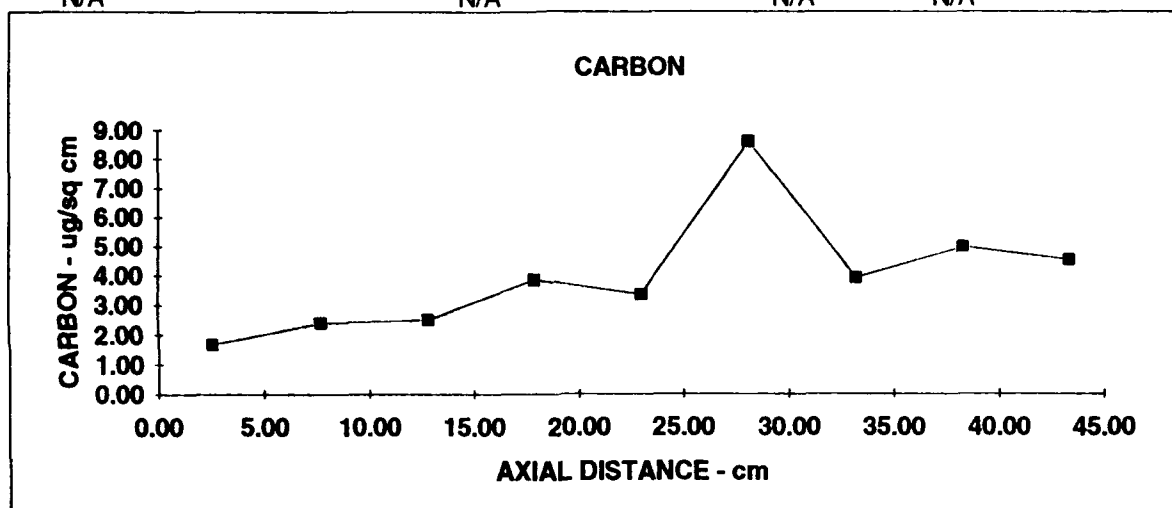
ADDITIVE & AMOUNT: JP-8
 Additives: 22.5 mg/l DCI-4,
 1 mg/l ASA-3, 0.15% (VOL) DiEGME

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.015	2.56	3.47	5.77	1.66	0.28
2	2.02	7.68	3.48	8.29	2.38	0.40
3	2.02	12.81	3.48	8.66	2.49	0.41
4	2.005	17.93	3.45	13.3	3.85	0.64
5	2.01	23.03	3.46	11.6	3.35	0.56
6	2.02	28.14	3.48	29.9	8.59	1.43
7	2	33.25	3.45	13.4	3.89	0.65
8	2	38.33	3.45	17.1	4.96	0.83
9	2	43.41	3.45	15.5	4.50	0.75
Total	18.09		31.17	123.52		

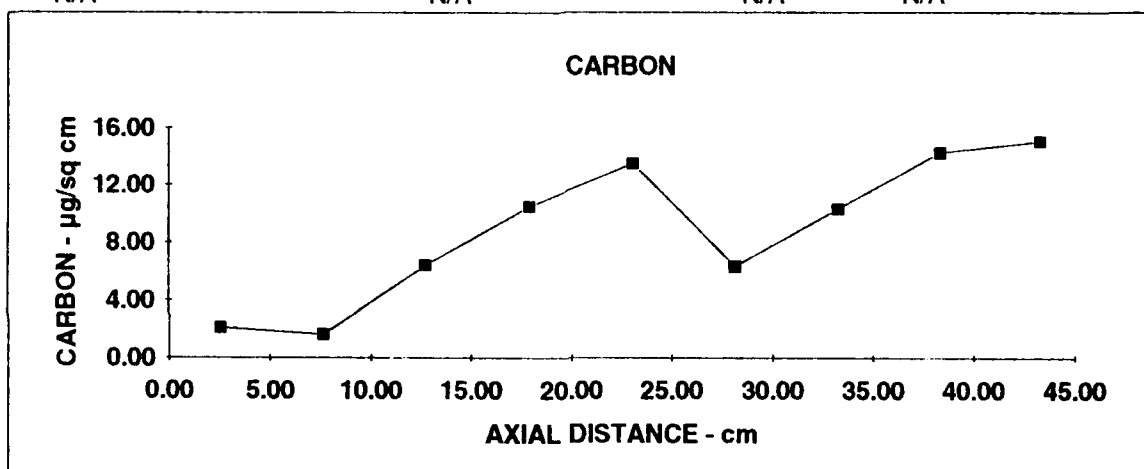
NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

DATE: N/A TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: JP-8
 FLOW: 16ml/min Additives: 22.5 mg/l DCI-4A,
 BLOCK TEMP K: 544 K 1 mg/l ASA-3, 0.15% (Vol) DiEGME
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = N/A AT 12 HR = N/A
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2	2.54	3.45	7.14	2.07	0.17
2	2.02	7.65	3.48	5.58	1.60	0.13
3	2.035	12.80	3.51	22.5	6.42	0.53
4	2.025	17.95	3.49	36.6	10.49	0.87
5	2.02	23.09	3.48	46.9	13.48	1.12
6	2.005	28.20	3.45	21.9	6.34	0.53
7	2.01	33.30	3.46	35.6	10.28	0.86
8	2	38.39	3.45	49.1	14.25	1.19
9	1.89	43.33	3.26	48.9	15.02	1.25
Total	18.01		31.02	274.22		

NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

D1P572A1.XLS

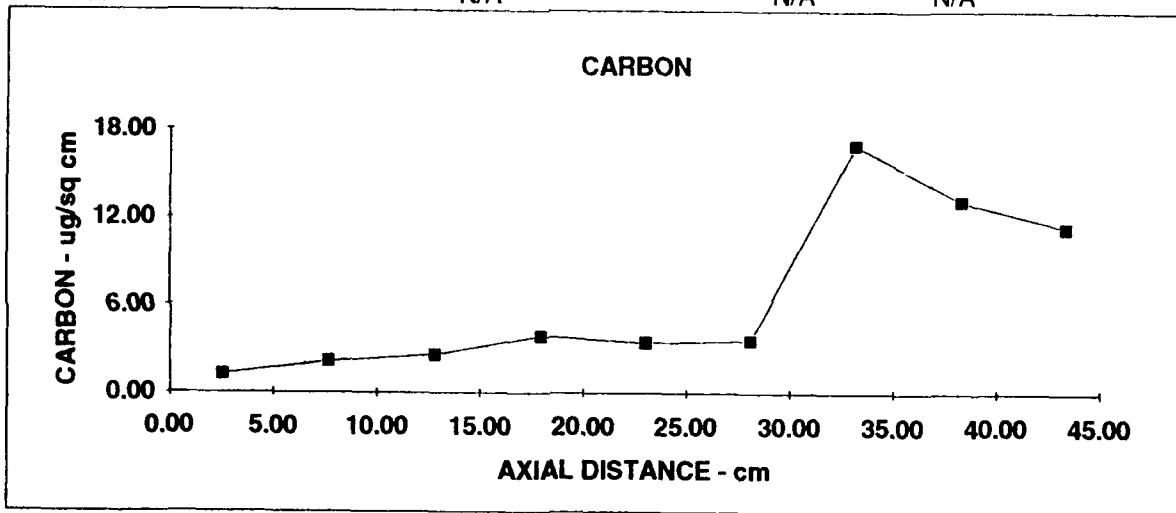
DATE: N/A TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: JP8
 FLOW: 16ml/min Additives: 22.5 mg/l DCI-4A,
 BLOCK TEMP K: 573 K 1 mg/l ASA-3, 0.15% (Vol) DiEGME
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = N/A AT 6 HR = N/A

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	4.25	1.23	0.20
2	2.01	7.66	3.46	7.42	2.14	0.36
3	2.05	12.81	3.53	9.15	2.59	0.43
4	2	17.96	3.45	13.3	3.86	0.64
5	2	23.04	3.45	11.8	3.42	0.57
6	2	28.12	3.45	12.4	3.60	0.60
7	2.005	33.20	3.45	58.7	16.99	2.83
8	2.02	38.32	3.48	45.8	13.16	2.19
9	1.955	43.36	3.37	38.2	11.34	1.89
Total	18.05		31.10	201.02		

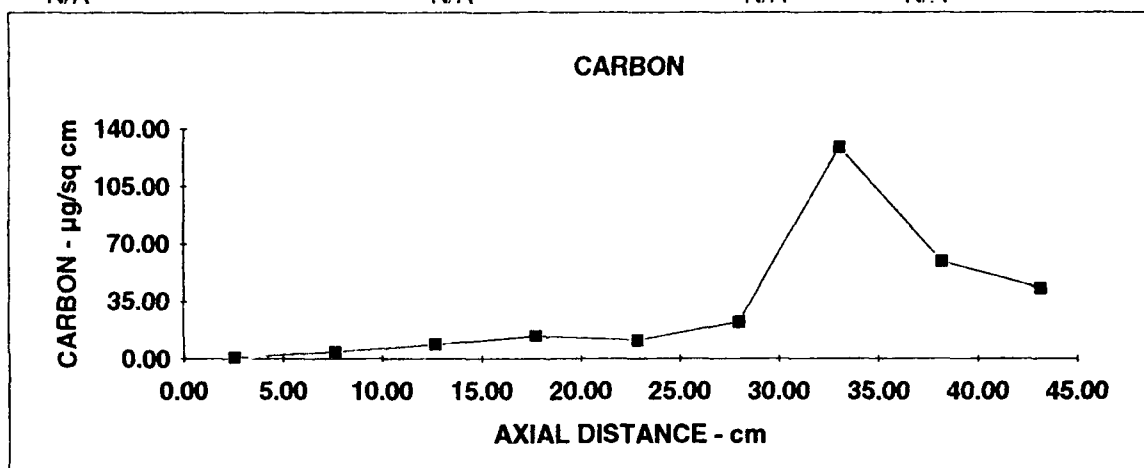
NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

DATE: N/A TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: JP-8
 FLOW: 16ml/min Additives: 22.5 mg/l DCI-4A,
 BLOCK TEMP K: 573 K 1 mg/l ASA-3, 0.15% (Vol) DiEGME
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = N/A AT 12 HR = N/A
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

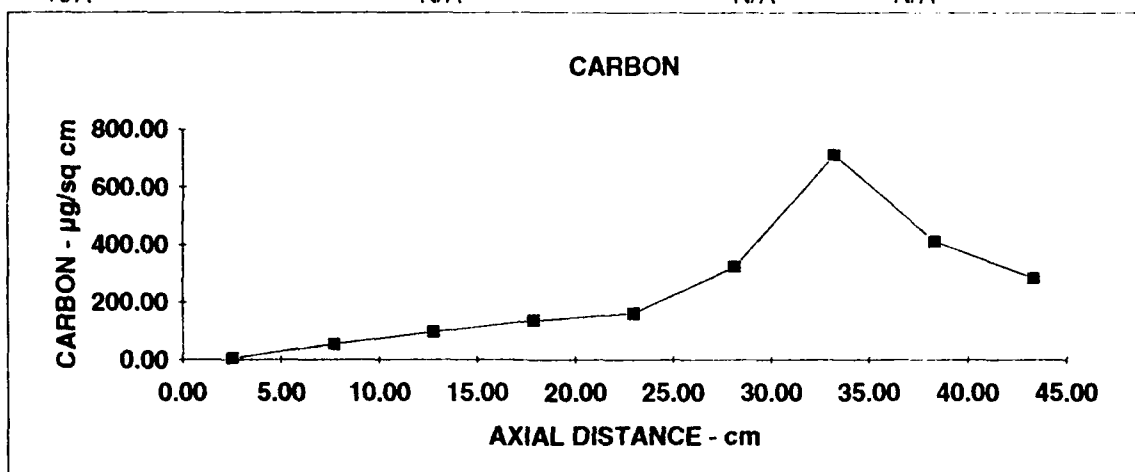
Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2	2.54	3.45	3.69	1.07	0.09
2	1.99	7.61	3.43	14.8	4.32	0.36
3	2	12.67	3.45	30.6	8.88	0.74
4	2	17.75	3.45	48.7	14.13	1.18
5	2.02	22.86	3.48	39.5	11.35	0.95
6	2.015	27.98	3.47	78.4	22.58	1.88
7	2.01	33.10	3.46	447	129.08	10.76
8	2.02	38.21	3.48	207	59.48	4.96
9	1.855	43.14	3.20	138	43.18	3.60
Total	17.91		30.86	1007.69		

NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

DATE: N/A TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: JP-8
 FLOW: 16ml/min Additives: 11.5 mg/l DCI-4A,
 BLOCK TEMP K: 573 K 1 mg/l ASA-3, 0.15% (Vol) DiEGME
 DURATION: 24 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = N/A AT 24 HR = N/A
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

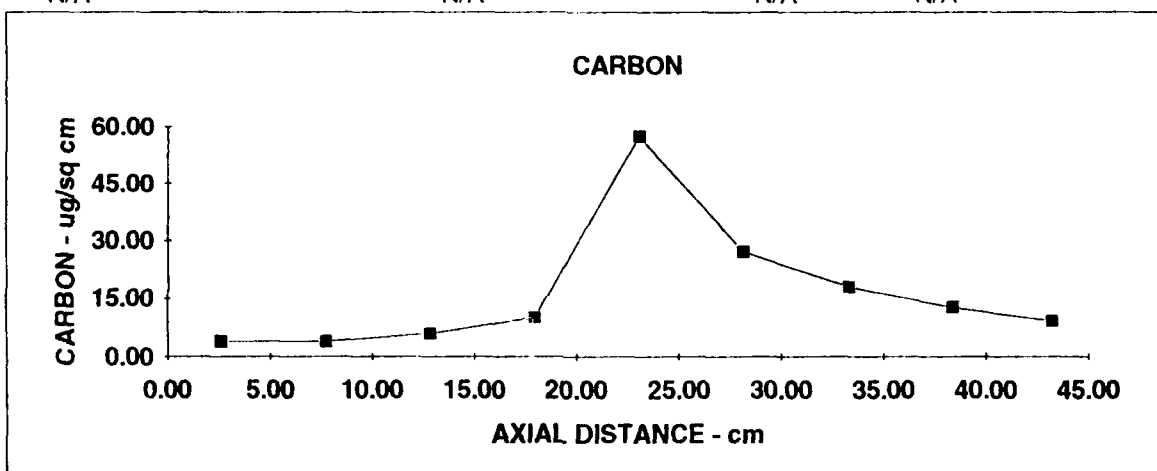
Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.015	2.56	3.47	17.5	5.04	0.21
2	2.02	7.68	3.48	187	53.73	2.24
3	1.99	12.78	3.43	330	96.26	4.01
4	2.02	17.87	3.48	471	135.34	5.64
5	2.015	22.99	3.47	559	161.03	6.71
6	2	28.09	3.45	1110	322.15	13.42
7	2.01	33.19	3.46	2460	710.40	29.60
8	2.025	38.31	3.49	1430	409.90	17.08
9	1.9	43.29	3.27	929	283.81	11.83
Total	18.00		31.00	7493.50		

NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

DATE: N/A TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF2747 ADDITIVE & AMOUNT: JP-8
 FLOW: 16ml/min Additives: 22.5 mg/l DCI-4A,
 BLOCK TEMP K: 608 K 1 mg/l ASA-3, 0.15% (Vol) DiEGME
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = N/A AT 6 HR = N/A
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START N/A END N/A
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

**HEATED SECTION**

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.04	2.59	3.51	13.6	3.87	0.64
2	2.01	7.73	3.46	13.4	3.87	0.64
3	2.01	12.84	3.46	20.2	5.83	0.97
4	2.025	17.96	3.49	34.7	9.95	1.66
5	2	23.08	3.45	198	57.46	9.58
6	2.02	28.18	3.48	94	27.01	4.50
7	2.015	33.31	3.47	62	17.86	2.98
8	2.005	38.41	3.45	43.3	12.54	2.09
9	1.8	43.24	3.10	28	9.03	1.50
Total	17.93		30.88	507.20		

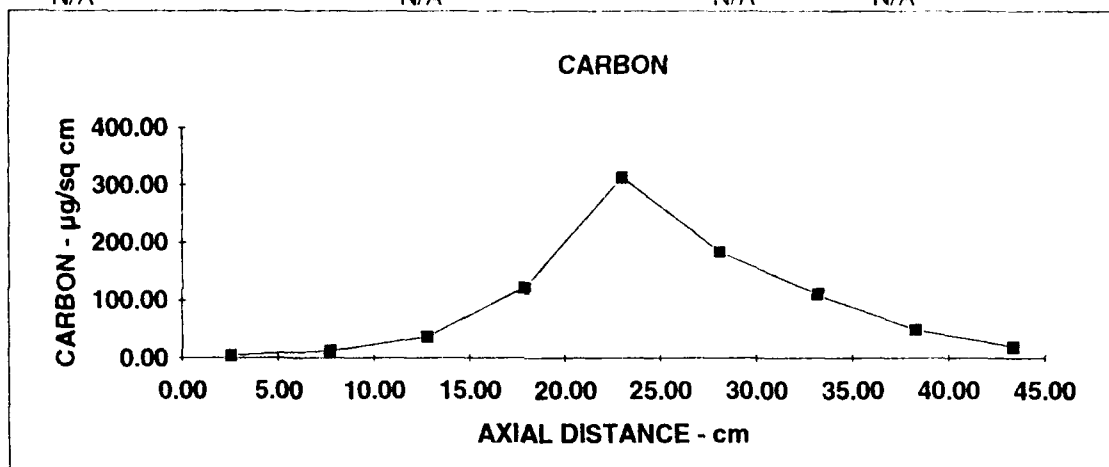
NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

DIP614A1.XLS

DATE: N/A **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 1
FUEL DESIGNATION: POSF2747 **ADDITIVE & AMOUNT:** JP-8
FLOW: 16ml/min Additives: 22.5 mg/l DCI-4A +
BLOCK TEMP K: 608 K 1 mg/l ASA-3 + 0.15% (VOL) DiEGME
DURATION: 12 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = N/A AT 12 HR = N/A
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START N/A END N/A
WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START N/A END N/A
WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	17.5	5.05	0.42
2	2.025	7.68	3.49	44.2	12.67	1.06
3	2	12.79	3.45	128	37.15	3.10
4	1.995	17.86	3.44	417	121.33	10.11
5	2.02	22.96	3.48	1090	313.21	26.10
6	2.005	28.07	3.45	631	182.67	15.22
7	2.015	33.18	3.47	379	109.18	9.10
8	2	38.28	3.45	168	48.76	4.06
9	2	43.36	3.45	67.3	19.53	1.63
Total	18.07		31.13	2942.00		

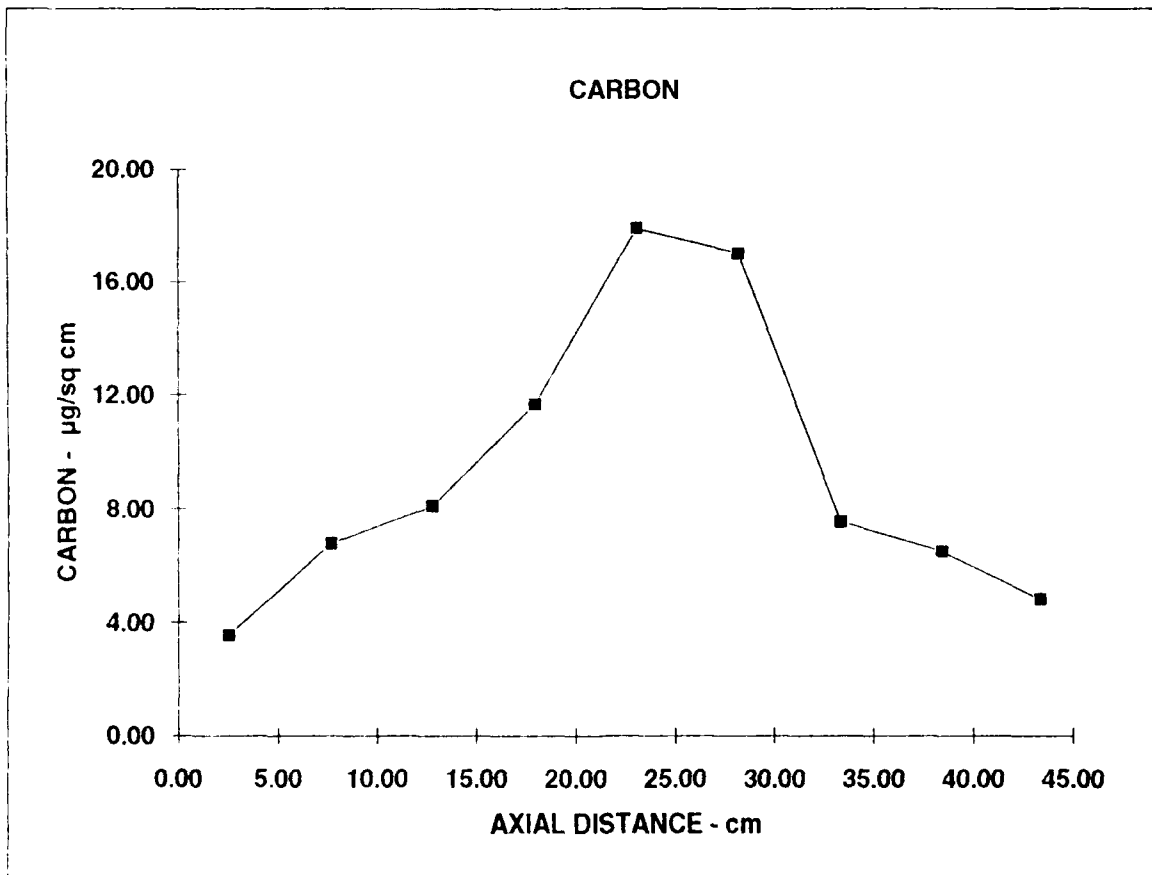
NOTES:

TEST RUN BEFORE GAS CHROMATOGRAPH AVAILABLE.

DATE: 9-Aug-91 TITLE: DEPOSITION TEST
 SET UP: Configuration # 1
 FUEL DESIGNATION: POSF 2799 ADDITIVE & AMOUNT: None
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 21% O - 79 %N
 BULK OUT TEMP. K: AT 1 HR = 529 AT 6 HR = 533
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.7 END 1.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.7 END 0.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6320000	2775878		STREAM 1	N/A	N/A
STREAM 2	6027930	2672902		STREAM 2	N/A	N/A
STREAM 3	7505651	16977	1690509	STREAM 3	N/A	N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour	Calculated Bulk temp. K
1	2.01	2.55	3.46	12.3	3.55	0.59	336
2	2.02	7.67	3.48	23.7	6.81	1.14	385
3	2.03	12.81	3.50	28.3	8.09	1.35	418
4	2.03	17.97	3.50	40.8	11.67	1.94	448
5	2.01	23.10	3.46	62	17.90	2.98	478
6	2.02	28.22	3.48	59.2	17.01	2.84	504
7	2.01	33.34	3.46	26.2	7.57	1.26	524
8	2	38.43	3.45	22.5	6.53	1.09	537
9	1.89	43.37	3.26	15.7	4.82	0.80	547
Total	16.01		27.58	278.40			

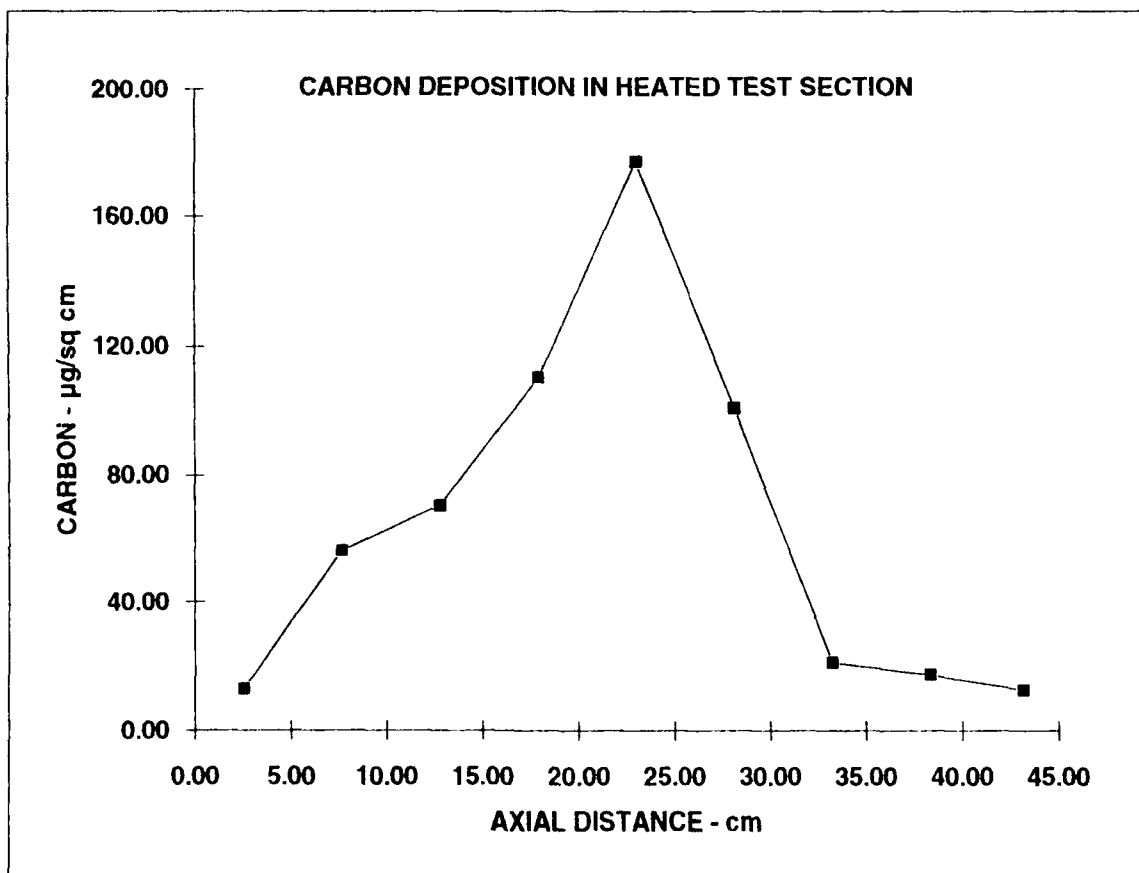
NOTES:

Filters were not weighed nor subjected to carbon burn-off analysis.
 Fuel POSF-2799 is Jet Propellant Thermally Stable per MILT-25524.
 It contains JFA-5 among other additives.

DATE: 13-Aug-91 TITLE: DEPOSITION TEST
 SET UP: Configuration # 1
 FUEL DESIGNATION: POSF2799 ADDITIVE & AMOUNT: See Notes.
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: 21% O - 79 %N
 BULK OUT TEMP. K: AT 1 HR = 522 AT 12 HR = 522
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.6 END 1.5
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.7 END 0.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6268349	2753902		STREAM 1	N/A	N/A
STREAM 2	6070090	2681834		STREAM 2	N/A	N/A
STREAM 3	7474019	15877	1484983	STREAM 3	N/A	N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	45.1	13.02	1.09
2	2.015	7.66	3.47	195	56.17	4.68
3	2.02	12.79	3.48	245	70.40	5.87
4	2.02	17.92	3.48	384	110.34	9.20
5	2.01	23.04	3.46	613	177.02	14.75
6	2	28.13	3.45	348	101.00	8.42
7	2.015	33.23	3.47	73.1	21.06	1.75
8	2.01	38.34	3.46	59.6	17.21	1.43
9	1.815	43.20	3.13	39.3	12.57	1.05
Total	17.92		30.86	2002.10		

NOTES:

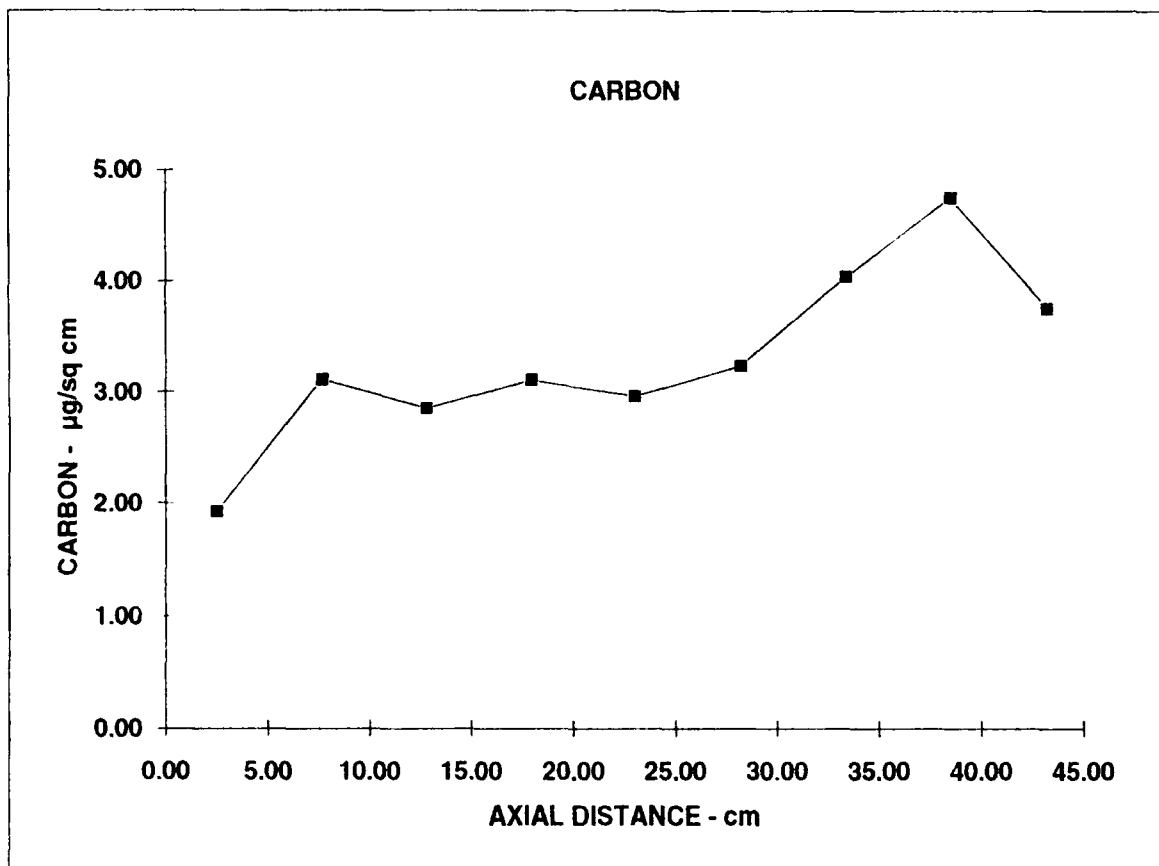
POSF-2799 is Jet Propellant Thermally Stable per MIL-T25524 and contains JFA-5 among other additives.

The filters were not weighed nor subjected to carbon burn-off analysis.

DATE: 14-Aug-91 TITLE: DEPOSITION TEST
 SET UP: Configuration # 1
 FUEL DESIGNATION: POSF 2799 ADDITIVE & AMOUNT: SEE NOTES.
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 100% Nitrogen
 BULK OUT TEMP. K: AT 1 HR = 528 AT 6 HR = 530
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.5 END 1.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.6 END 0.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	7799885	94234		STREAM 1	N/A	N/A
STREAM 2	7624019	85775		STREAM 2	N/A	N/A
STREAM 3	9225555	0	60312	STREAM 3	N/A	N/A



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.005	2.55	3.45	6.66	1.93	0.32
2	2.03	7.67	3.50	10.9	3.12	0.52
3	2.02	12.81	3.48	9.95	2.86	0.48
4	2.015	17.94	3.47	10.8	3.11	0.52
5	2.015	23.06	3.47	10.3	2.97	0.49
6	2.025	28.19	3.49	11.3	3.24	0.54
7	2.025	33.33	3.49	14.1	4.04	0.67
8	2.005	38.45	3.45	16.4	4.75	0.79
9	1.73	43.19	2.98	11.2	3.76	0.63
Total	17.87		30.79	101.61		

NOTES: Fuel POSF2799 is Jet Propellant Thermally Stable per MIL-T-25524. It contains JFA-5 and other additives.

DATE: 4-Dec-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** 25 mg/l of Antioxidant "C"
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 2.5 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 536 AT 2.5 HR = 536
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 0.5 END 0.5
WEIGHT BEFORE (g) 7.27224 **WEIGHT AFTER (g)** 7.27245 **CHANGE (g)** 0.00021 **BURN-OFF (grams)** 0.000175

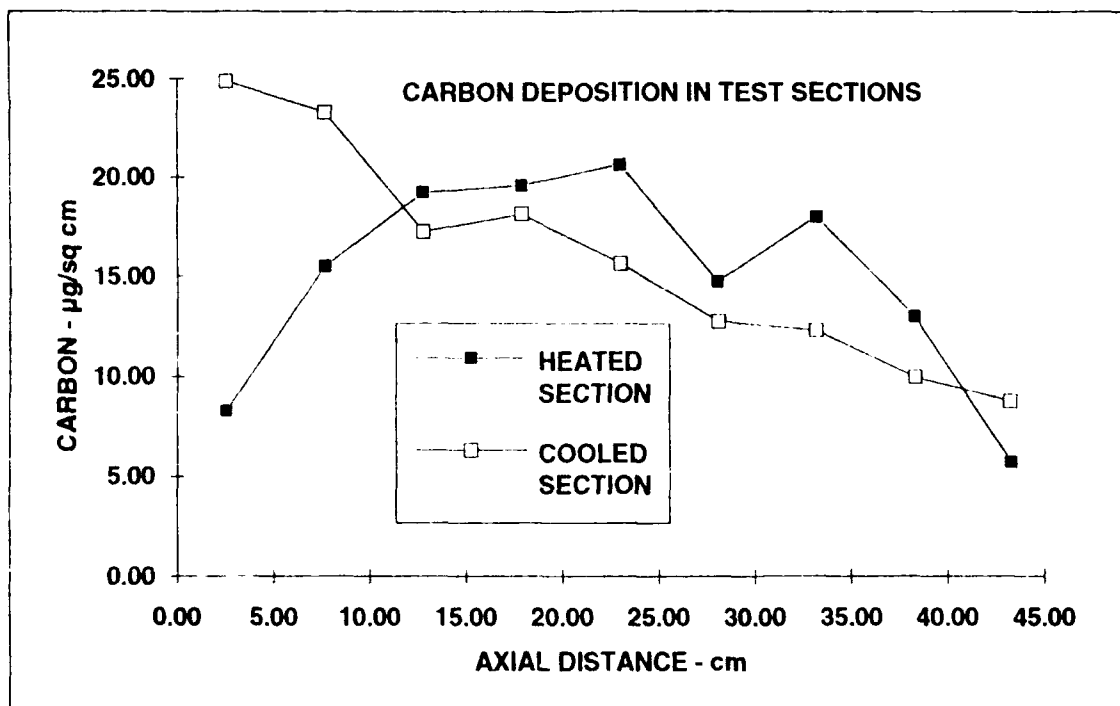
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START 0 END 0.5
WEIGHT BEFORE (g) 6.62543 **WEIGHT AFTER (g)** 6.62562 **CHANGE (g)** 0.00019 **BURN-OFF (grams)** 0.000609

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP START 1 END 33
WEIGHT BEFORE (g) 6.62188 **WEIGHT AFTER (g)** 6.6313 **CHANGE (g)** 0.00942 **BURN-OFF (grams)** 0.00483

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5711914	2545974		STREAM 1	5693408	2584269
STREAM 2	5395613	2429693		STREAM 2	5704298	2580712
STREAM 3	6617434	20468	811285	STREAM 3	6878592	3072240



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	28.6	8.26	3.30
2	2.01	7.66	3.46	53.6	15.48	6.19
3	2.005	12.76	3.45	66.4	19.22	7.69
4	2.01	17.86	3.46	67.8	19.58	7.83
5	2.01	22.96	3.46	71.5	20.65	8.26
6	2.01	28.07	3.46	51	14.73	5.89
7	2.025	33.19	3.49	62.8	18.00	7.20
8	2	38.30	3.45	44.8	13.00	5.20
9	1.935	43.30	3.33	19.1	5.73	2.29
Total	18.02		31.04	465.60		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.56	3.47	86.40	24.89	9.96
2	2.02	7.68	3.47	80.90	23.30	9.32
3	2.02	12.80	3.47	59.90	17.25	6.90
4	2.02	17.91	3.47	62.90	18.12	7.25
5	2.01	23.03	3.46	54.20	15.65	6.26
6	2.00	28.12	3.45	43.80	12.71	5.08
7	2.01	33.20	3.45	42.50	12.30	4.92
8	2.02	38.32	3.48	34.80	10.00	4.00
9	1.85	43.22	3.18	28.00	8.81	3.52
Total	17.94		30.91	493.40		

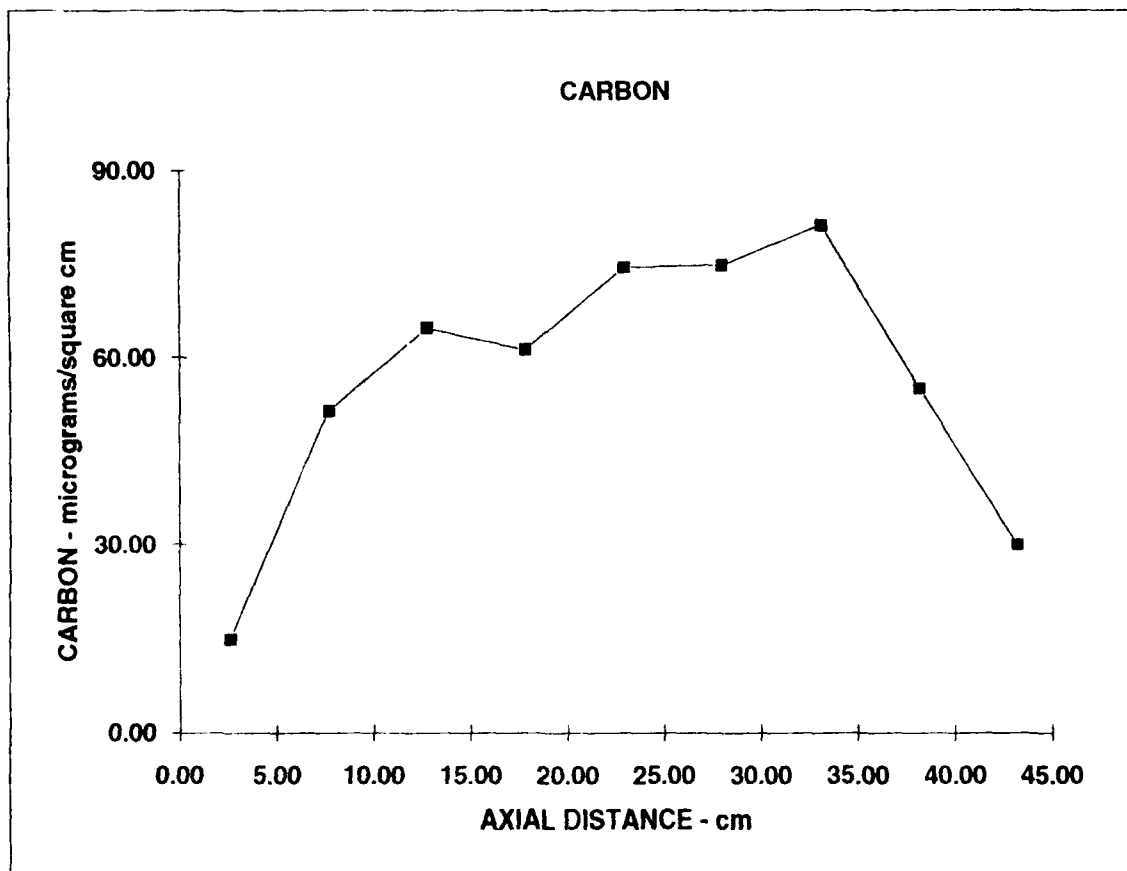
NOTES:

TEST STOPPED DUE TO FILTER LOADING & CONTROL VALVE STICKING

DATE: 20-Aug-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION #1
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: JFA-5
 FLOW: 16ml/min Additive at 12 mg/l.
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 524 AT 6 HR = 524
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 2.2 END 2.2
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 2 END 34
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5867933	2623098		STREAM 1	NOT	RUN
STREAM 2	5545306	2509312		STREAM 2		
STREAM 3	6818640	0	739037	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.05	2.60	3.53	52.3	14.81	2.47
2	1.985	7.73	3.42	176	51.47	8.58
3	2	12.79	3.45	223	64.72	10.79
4	2	17.87	3.45	211	61.24	10.21
5	2.005	22.96	3.45	257	74.40	12.40
6	1.995	28.04	3.44	257	74.77	12.46
7	2.01	33.12	3.46	281	81.15	13.52
8	2	38.21	3.45	190	55.14	9.19
9	1.958	43.24	3.37	101	29.94	4.99
Total	18.00		31.02	1748.30		

NOTES:

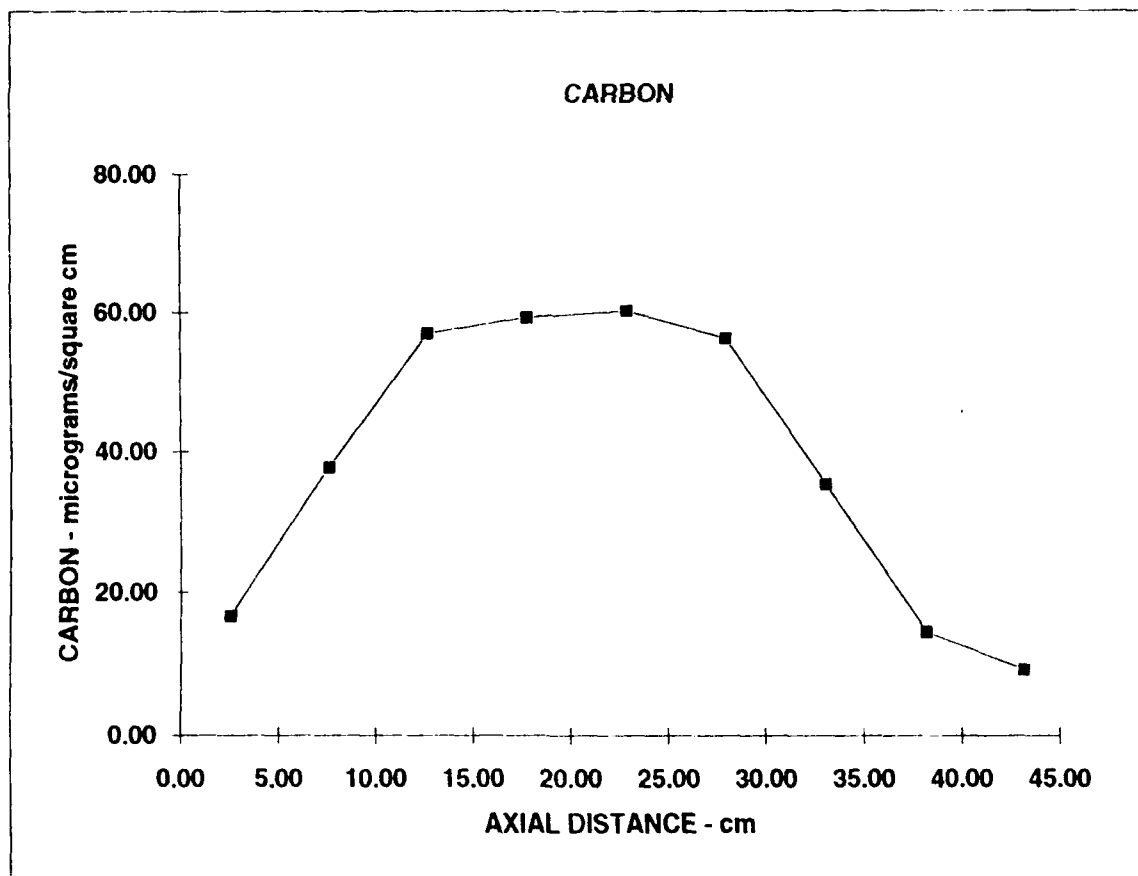
PRESSURE DROP ON OUTLET FILTER 28.7 PSI AFTER THREE HOURS
 OUTLET FILTER TEMPERATURE AT 337 K

DATE: 28-Aug-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: JFA-5
 FLOW: 16ml/min Additive at 50 mg/l
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 537 AT 6 HR = 537
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 2.2 END 2.2
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START 0.7 END 16
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	7691306	4152650		STREAM 1	6459818	2681150
STREAM 2	5544186	2461552		STREAM 2	6302112	2593733
STREAM 3	7078640	0	784212	STREAM 3	6636048	2934184



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2	2.54	3.45	57.2	16.60	2.77
2	2	7.62	3.45	130	37.73	6.29
3	1.975	12.67	3.40	194	57.02	9.50
4	2.016	17.74	3.47	206	59.31	9.89
5	2.014	22.85	3.47	209	60.24	10.04
6	2	27.95	3.45	194	56.30	9.38
7	2.01	33.05	3.46	122	35.23	5.87
8	2.028	38.17	3.49	50.1	14.34	2.39
9	1.88	43.14	3.24	29.7	9.17	1.53
Total	17.92		30.88	1192.00		

NOTES:

PRESSURE DROP ON OUTLET FILTER

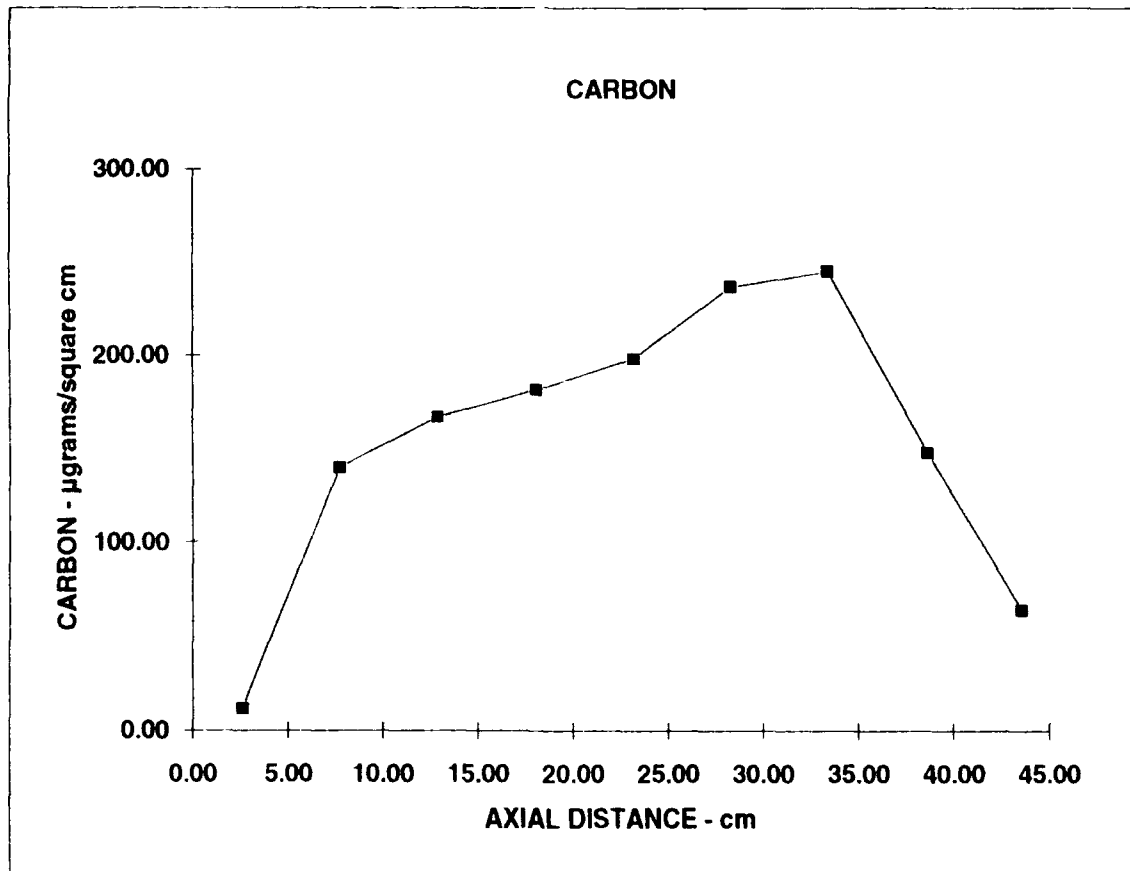
HRS	0	1	2	3	4	5	6
DROP	0.7	0.9	1.1	1.4	2.4	6.9	15.8

*NO NOTICABLE CHANGE OF OXYGEN - NITROGEN - METHANE DURING TEST

DATE: 22-Aug-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: JFA-5
 FLOW: 16ml/min Additive at 12 mg/l
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 524 AT 6 HR = 531
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 2.2 END 1.9
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.7 END 33.9
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5870090	2602810		STREAM 1	NOT	RUN
STREAM 2	5561955	2488070		STREAM 2		
STREAM 3	6829472	0	717076	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.027	2.57	3.49	40.1	11.48	0.96
2	2.038	7.74	3.51	491	139.84	11.65
3	2.026	12.90	3.49	582	166.74	13.90
4	2.026	18.04	3.49	633	181.35	15.11
5	2.01	23.17	3.46	686	198.10	16.51
6	1.991	28.25	3.43	811	236.44	19.70
7	2.054	33.39	3.54	867	245.01	20.42
8	2.096	38.66	3.61	534	147.88	12.32
9	1.777	43.58	3.06	195	63.70	5.31
Total	18.05		31.09	4839.10		

NOTES:

TEMPERATURE OF OUTLET FILTER 393 K

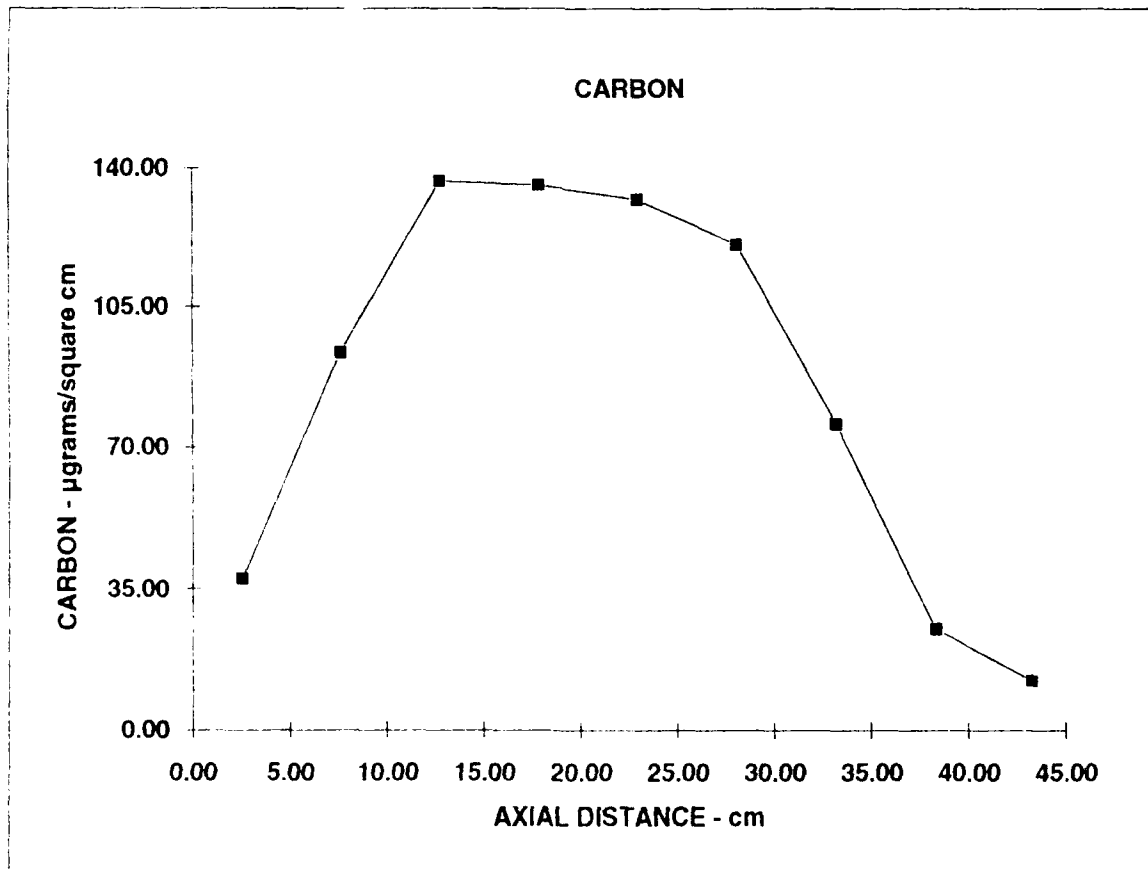
PRESSURE DROP ON OUTLET FILTER

HOURS	1	3	6	12
DROP	0.7	0.8	0.8	33.9

DATE: 29-Aug-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: JFA-5
 FLOW: 16ml/min Additive at 50 mg/l.
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 536 AT 12 HR = 536
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.8 END 1.8
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.7 END 35
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6624890	2948598		STREAM 1	5962205	2541774
STREAM 2	5615725	2484920		STREAM 2	5500781	2429502
STREAM 3	7030157	0	797203	STREAM 3	6719002	2967696



D3J574A2.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.995	2.53	3.44	129	37.53	3.13
2	2.01	7.62	3.46	324	93.56	7.80
3	2.01	12.73	3.46	473	136.59	11.38
4	2.01	17.83	3.46	470	135.73	11.31
5	2	22.92	3.45	455	132.05	11.00
6	2.03	28.04	3.50	422	120.66	10.06
7	2.01	33.17	3.46	263	75.95	6.33
8	2.03	38.30	3.50	87.2	24.93	2.08
9	1.86	43.24	3.20	39.2	12.23	1.02
Total	17.96		30.93	2662.40		

NOTES:

PRESSURE DROP ON OUTLET FILTER

HRS	0	5	6	7	8
DROP	0.7	1.4	3.2	8.4	18.3
HRS	9	10	12		
DROP	30.3	34.3	35		

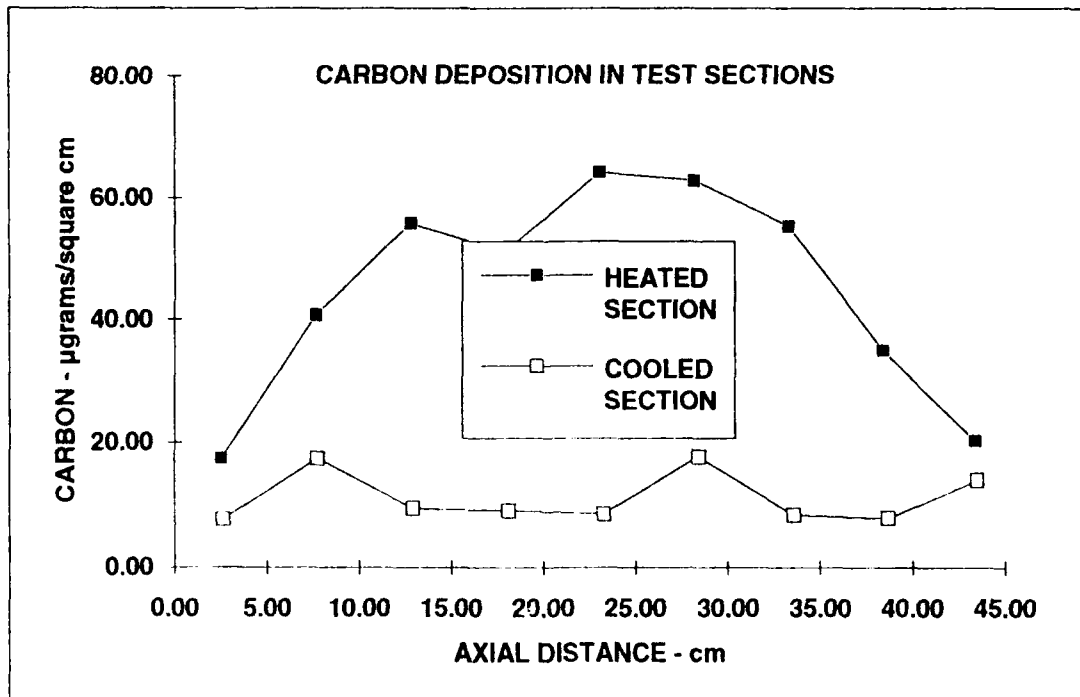
NO NOTICABLE CHANGE IN OXYGEN-NITROGEN-METHANE,
SAMPLED EVERY HOUR DURING TEST.

DATE: 7-Jan-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: 6mg/l MDA-2
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 534 AT 6 HR = 537
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 0.5 END 0.5
 WEIGHT BEFORE (g) 6.7959 WEIGHT AFTER (g) 6.796 CHANGE 0.0001 BURN-OFF (grams) 0.000172

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0 END 0.5
 WEIGHT BEFORE (g) 6.6053 WEIGHT AFTER (g) 6.6073 CHANGE 0.002 BURN-OFF (grams) 0.00142

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
 PRESSURE DROP START 1 END 26
 WEIGHT BEFORE (g) 6.653 WEIGHT AFTER (g) 6.6587 CHANGE 0.0057 BURN-OFF (grams) 0.00264

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5417443	2414430		STREAM 1	5542205	2412181
STREAM 2	5488301	2455352		STREAM 2	5309786	2366861
STREAM 3	6695194	16283	827011	STREAM 3	6625050	2936496



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.00	2.54	3.45	59.6	17.30	2.88
2	2.025	7.65	3.49	142	40.70	6.78
3	2.01	12.78	3.46	193	55.73	9.29
4	2.025	17.90	3.49	178	51.02	8.50
5	2.025	23.04	3.49	224	64.21	10.70
6	2.02	28.18	3.48	219	62.93	10.49
7	2.015	33.31	3.47	192	55.31	9.22
8	2.01	38.42	3.46	121	34.94	5.82
9	1.89	43.37	3.26	65.8	20.21	3.37
Total	18.02		31.05	1394.40		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.04	2.59	3.51	26.80	7.63	1.27
2	2.03	7.75	3.49	60.50	17.34	2.89
3	2.05	12.93	3.53	33.30	9.43	1.57
4	2.01	18.08	3.46	31.40	9.07	1.51
5	2.06	23.25	3.54	30.20	8.53	1.42
6	2.03	28.43	3.49	61.50	17.63	2.94
7	2.02	33.56	3.47	29.00	8.35	1.39
8	2.01	38.67	3.46	27.40	7.91	1.32
9	1.79	43.49	3.08	42.80	13.92	2.32
Total	18.02		31.04	342.90		

NOTES:

NONE.

DATE: 10-Jan-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** 6 mg/l MDA
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 12 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 541 AT 12 HR = 541
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 0.1 END 0.7
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE** **BURN-OFF (grams)**
 7.247 7.2472 0.0002 0.000131

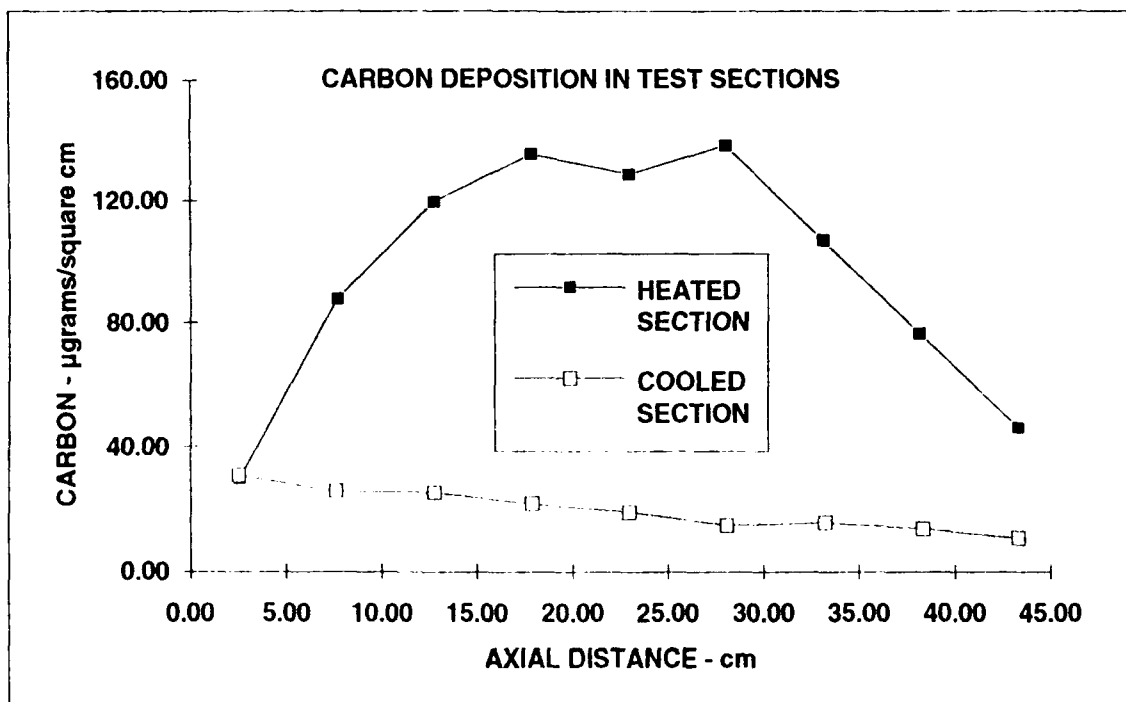
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START 1.5 END 1.8
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE** **BURN-OFF (grams)**
 6.6292 6.636 0.0068 0.00219

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP START (See notes) END (See notes)
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE** **BURN-OFF (grams)**
 (See notes) (See notes) (See notes) (See notes)

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	4855232	2194549		STREAM 1	NOT	RUN
STREAM 2	5299936	2371357		STREAM 2		
STREAM 3	6104675	18415	855407	STREAM 3		



D3M574A1.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.03	2.58	3.50	104	29.74	2.48
2	2	7.70	3.45	302	87.65	7.30
3	1.995	12.77	3.44	411	119.58	9.97
4	2.01	17.86	3.46	470	135.73	11.31
5	2.015	22.97	3.47	447	128.76	10.73
6	1.98	28.04	3.41	472	138.37	11.53
7	2.015	33.12	3.47	371	106.87	8.91
8	2.01	38.23	3.46	265	76.53	6.38
9	2.015	43.34	3.47	161	46.38	3.86
Total	18.07		31.13	3003.00		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.005	2.55	3.45	106	30.69	2.56
2	2.01	7.65	3.46	89.1	25.73	2.14
3	2.03	12.78	3.50	88.6	25.33	2.11
4	2	17.89	3.45	74.8	21.71	1.81
5	1.995	22.97	3.44	65.4	19.03	1.59
6	2.04	28.09	3.51	51.9	14.77	1.23
7	2.02	33.25	3.48	54.3	15.60	1.30
8	2.035	38.40	3.51	48.3	13.78	1.15
9	1.86	43.35	3.20	34.3	10.70	0.89
Total	18.00		31.00	612.70		

NOTES:

FILTER F3 REPLACED DURING TEST

WEIGHT - grams

FILTER F3	PSI	HOURS	BEFORE	AFTER	DIFF.	BURN-OFF
ELEM. # 1	22	6	6.663	6.6683	0.0053	0.00238
ELEM. # 2	23	1	6.5957	6.5991	0.0034	0.000844
ELEM. # 3	19	1	6.5738	6.5763	0.0025	0.0012
ELEM. # 4	23	4	6.6226	6.6314	0.0088	0.00437

DATE: 7-Jan-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION #2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** 6 mg/l MDA-2
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 24 Hrs.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 533 AT 24 HR = 547
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 2 END 2.2
WEIGHT BEFORE (g) 7.282 **WEIGHT AFTER (g)** 7.2821 **CHANGE** 0.00001 **BURN-OFF (grams)** 0.000122

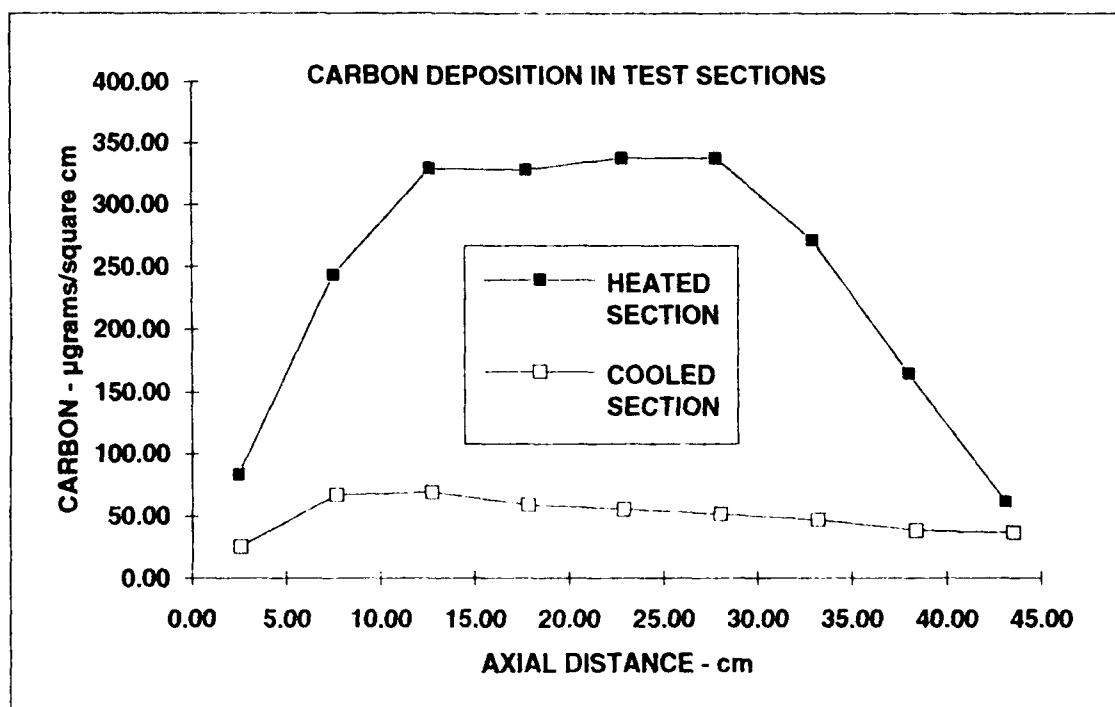
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START 0 END 4
WEIGHT BEFORE (g) 6.6171 **WEIGHT AFTER (g)** 6.6213 **CHANGE** 0.0042 **BURN-OFF (grams)** 0.00302

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP START N/A END N/A
WEIGHT BEFORE (g) N/A **WEIGHT AFTER (g)** N/A **CHANGE** N/A **BURN-OFF (grams)** N/A

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	NOT	RUN		STREAM 1	NOT	RUN
STREAM 2				STREAM 2		
STREAM 3				STREAM 3		



D3M578A1.XLS

HEATED SECTION

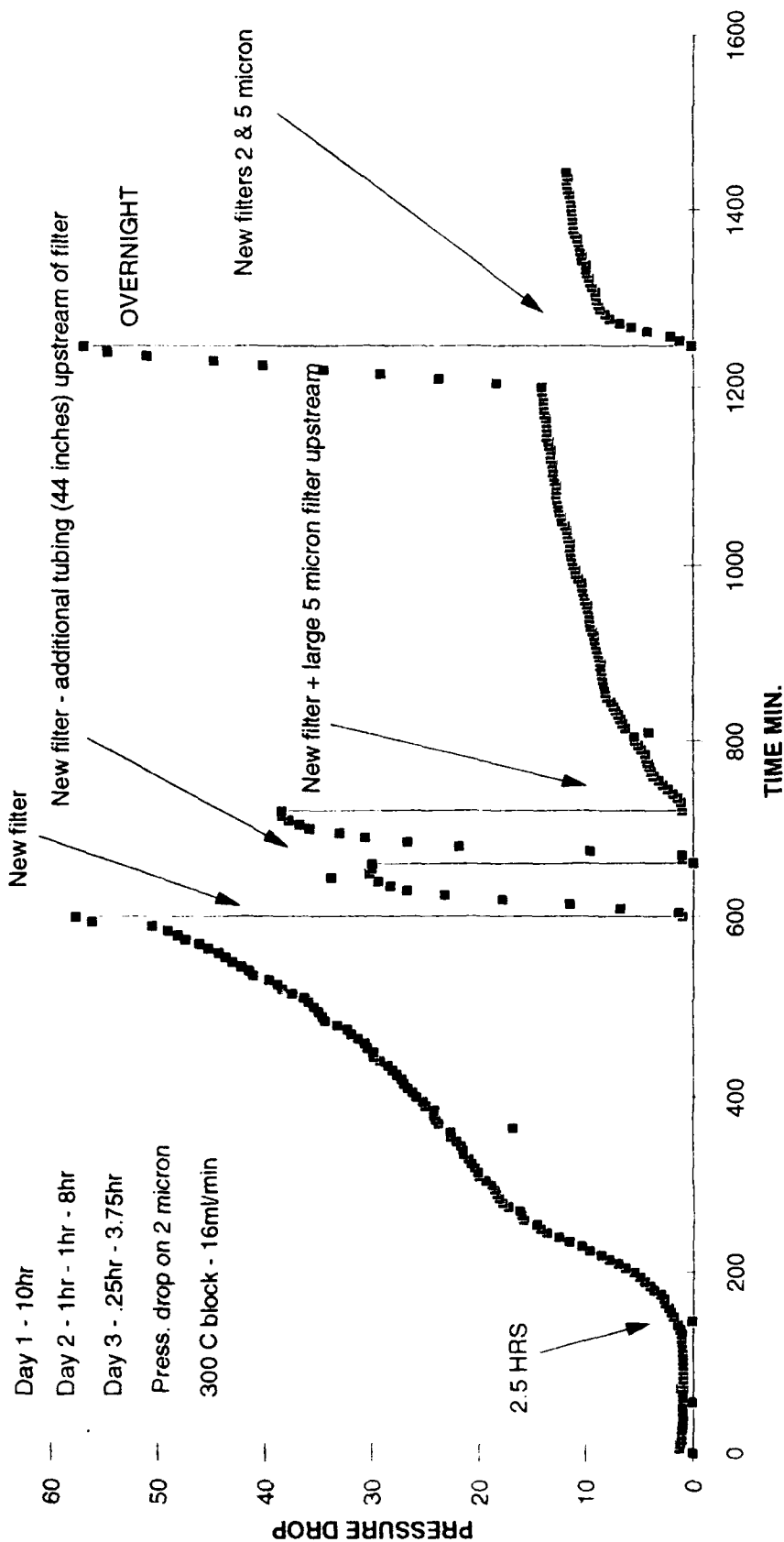
Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-gram per cm ²	Rate micro-grams per cm ² per hour
1	1.95	2.48	3.36	280	83.35	3.47
2	2.01	7.51	3.46	843	243.44	10.14
3	2.01	12.61	3.46	1140	329.21	13.72
4	2.015	17.72	3.47	1140	328.39	13.68
5	1.975	22.79	3.40	1150	337.98	14.08
6	1.975	27.81	3.40	1150	337.98	14.08
7	2.025	32.89	3.49	948	271.74	11.32
8	2.02	38.02	3.48	573	164.65	6.86
9	1.975	43.10	3.40	210	61.72	2.57
Total	17.96		30.93	7434.00		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-gram per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.56	3.47	89	25.64	1.07
2	2	7.66	3.45	230	66.75	2.78
3	2	12.74	3.45	237	68.78	2.87
4	1.99	17.81	3.43	203	59.21	2.47
5	2.02	22.90	3.48	193	55.46	2.31
6	2.025	28.04	3.49	180	51.60	2.15
7	2.045	33.20	3.52	165	46.83	1.95
8	2.055	38.41	3.54	137	38.70	1.61
9	2	43.56	3.45	126	36.57	1.52
Total	18.15		31.27	1560.00		

NOTES: FILTER F3 REPLACED DURING TEST. USED F3 ELEMENTS ANALYZED.
SEE ATTACHED CHART FOR PRESSURE DROP DURING TEST - DP3.

JET A + 6 mg/l MDA - 24 HOURS

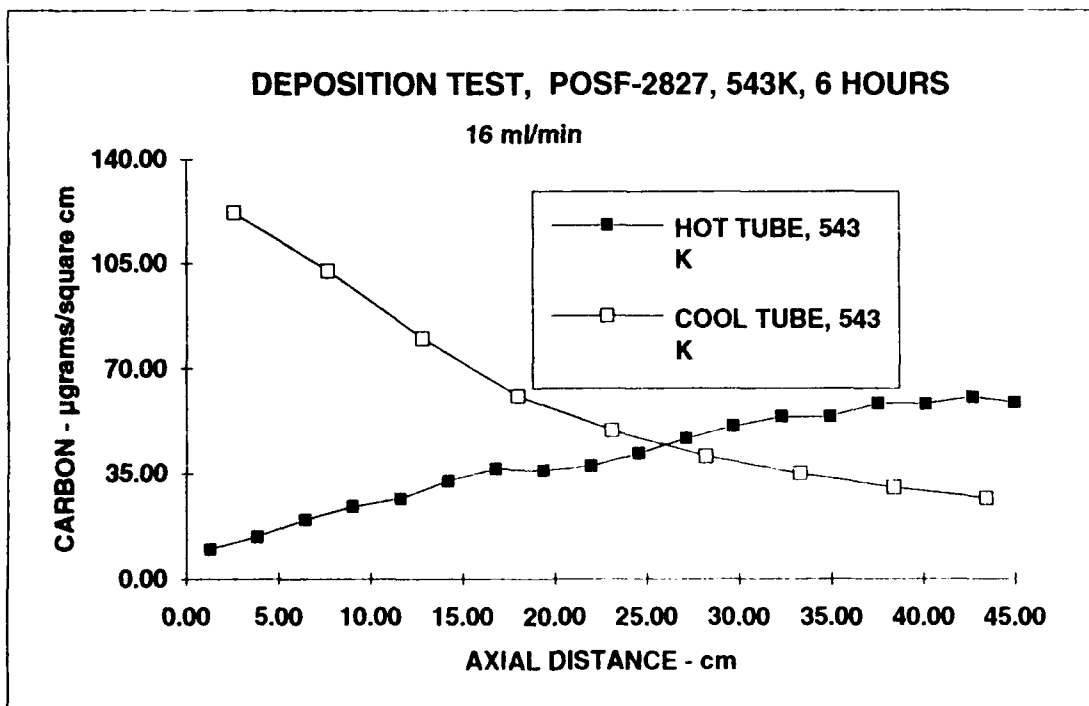


DATE: 20-May-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 543
DURATION: 6 HRS.
PURGE GAS MIXTURE: O 21% - N 79%
BULK OUT TEMP. K: AT 1 HR = 517 AT 6 HR = 520
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 1.5 END 1.5
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE (g)** **BURN-OFF (grams)**
 7.14704 7.14723 0.00019 0.000141

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0 END 0.1
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE (g)** **BURN-OFF (grams)**
 6.58855 6.59364 0.00509 0.00266

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 1 END 1.9
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE (g)** **BURN-OFF (g)**
 6.6293 6.67373 0.04443 0.02556

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5999504	2655414		STREAM 1	5744416	2505864
STREAM 2	5789021	2519456		STREAM 2	5819997	2509792
STREAM 3	6718640	0	290622	STREAM 3	6681914	2902606



D3N542A1.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1	1.27	1.72	16.8	9.75	1.63
2	1.01	3.82	1.74	24.1	13.85	2.31
3	1.025	6.41	1.77	34.6	19.59	3.27
4	1.02	9.00	1.76	41.8	23.79	3.96
5	1.025	11.60	1.77	47	26.62	4.44
6	1	14.17	1.72	55.9	32.45	5.41
7	1.025	16.74	1.77	64.5	36.53	6.09
8	1.035	19.36	1.78	64	35.89	5.98
9	1.01	21.96	1.74	64.7	37.18	6.20
10	1.015	24.53	1.75	72.6	41.52	6.92
11	1.01	27.10	1.74	81.1	46.61	7.77
12	1.025	29.69	1.77	89.6	50.74	8.46
13	1.03	32.30	1.77	95.6	53.87	8.98
14	1.03	34.91	1.77	95.5	53.82	8.97
15	1.025	37.52	1.77	103	58.33	9.72
16	1.02	40.12	1.76	102	58.04	9.67
17	1	42.68	1.72	104	60.37	10.06
18	0.775	44.94	1.34	78.1	58.49	9.75
Total	18.08		31.15	1234.90		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	422.00	121.87	20.31
2	2.01	7.66	3.46	355.00	102.52	17.09
3	2.04	12.80	3.51	281.00	79.95	13.33
4	2.03	17.97	3.50	213.00	60.90	10.15
5	2.00	23.09	3.45	170.00	49.34	8.22
6	2.00	28.17	3.45	140.00	40.63	6.77
7	2.02	33.27	3.48	121.00	34.77	5.79
8	1.99	38.37	3.43	104.00	30.33	5.06
9	1.99	43.42	3.43	90.90	26.51	4.42
Total	18.09		31.17	1896.90		

NOTES:

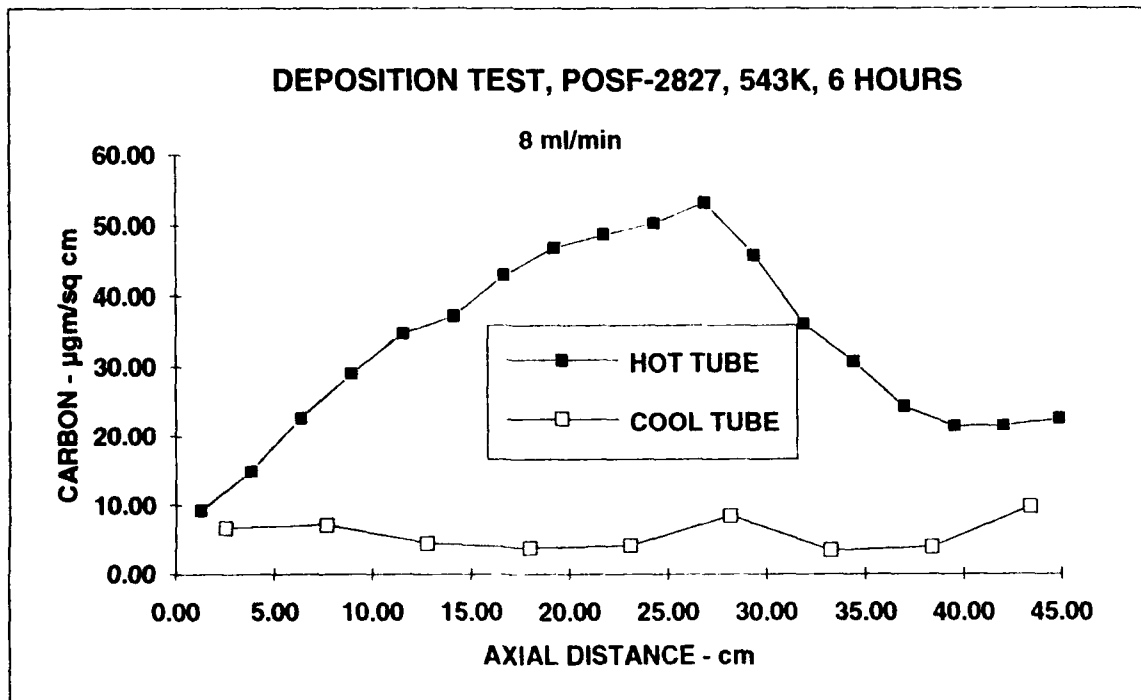
HIGH PRESSURE DROP ON COOL FILTER (F3) DURING FIRST PART OF TEST

DATE: 12-May-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 8ml/min
BLOCK TEMP K: 543
DURATION: 6 HRS.
PURGE GAS MIXTURE: O 21% - N 79%
BULK OUT TEMP. K: AT 1 HR = 519 AT 6 HR = 520
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 0.9 END 0.8
WEIGHT BEFORE (g) 7.1646 **WEIGHT AFTER (g)** 7.16461 **CHANGE** 0.000010 **BURN-OFF (grams)** 0.000114

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0.1 END 0.2
WEIGHT BEFORE (g) 6.63226 **WEIGHT AFTER (g)** 6.63392 **CHANGE** 0.00166 **BURN-OFF (grams)** 0.000809

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 0.7 END 9.3
WEIGHT BEFORE (g) 6.6269 **WEIGHT AFTER (g)** 6.63071 **CHANGE** 0.00381 **BURN-OFF (grams)** 0.00202

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5746339	2487093		STREAM 1	5755741	2454690
STREAM 2	5856211	2518357		STREAM 2	5788288	2517050
STREAM 3	7595850	16708	691550	STREAM 3	6877178	2885797



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1	1.27	1.72	15.8	9.17	1.53
2	1	3.81	1.72	25.5	14.80	2.47
3	1.005	6.36	1.73	39.2	22.64	3.77
4	1.025	8.93	1.77	51.3	29.05	4.84
5	1.025	11.54	1.77	61.2	34.66	5.78
6	1	14.11	1.72	63.9	37.09	6.18
7	1.01	16.66	1.74	74.6	42.87	7.15
8	1	19.22	1.72	80.5	46.73	7.79
9	1	21.76	1.72	83.8	48.64	8.11
10	1.02	24.32	1.76	88.3	50.25	8.37
11	1.005	26.89	1.73	92	53.14	8.86
12	0.99	29.43	1.71	78	45.73	7.62
13	0.97	31.92	1.67	60.2	36.02	6.00
14	1.01	34.43	1.74	53.4	30.69	5.11
15	1.005	36.99	1.73	42	24.26	4.04
16	0.985	39.52	1.70	36.3	21.39	3.57
17	0.99	42.02	1.71	36.7	21.52	3.59
18	1.25	44.87	2.15	48.3	22.43	3.74
Total	18.29		31.51	1031.00		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	22.90	6.61	1.10
2	2.01	7.66	3.46	24.50	7.08	1.18
3	2.04	12.80	3.51	15.50	4.41	0.74
4	2.03	17.97	3.50	13.10	3.75	0.62
5	2.00	23.09	3.45	14.00	4.06	0.68
6	2.00	28.17	3.45	28.90	8.39	1.40
7	2.02	33.27	3.48	11.80	3.39	0.57
8	1.99	38.37	3.43	13.50	3.94	0.66
9	1.99	43.42	3.43	33.50	9.77	1.63
Total	18.09		31.17	177.70		

NOTES:

PRESSURE DROP ON COOL FILTER
SEE DATA ACQUISITION DURING TEST

DATE: 22-May-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 4ml/min
BLOCK TEMP K: 543
DURATION: 6 HRS.
PURGE GAS MIXTURE: O 21% - N 79%
BULK OUT TEMP. K: AT 1 HR = 510 AT 6 HR = 511
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 0.6 END 0.6
WEIGHT BEFORE (g) 7.27504 **WEIGHT AFTER (g)** 7.27507 **CHANGE (g)** 0.00003 **BURN-OFF (grams)** 0.000114

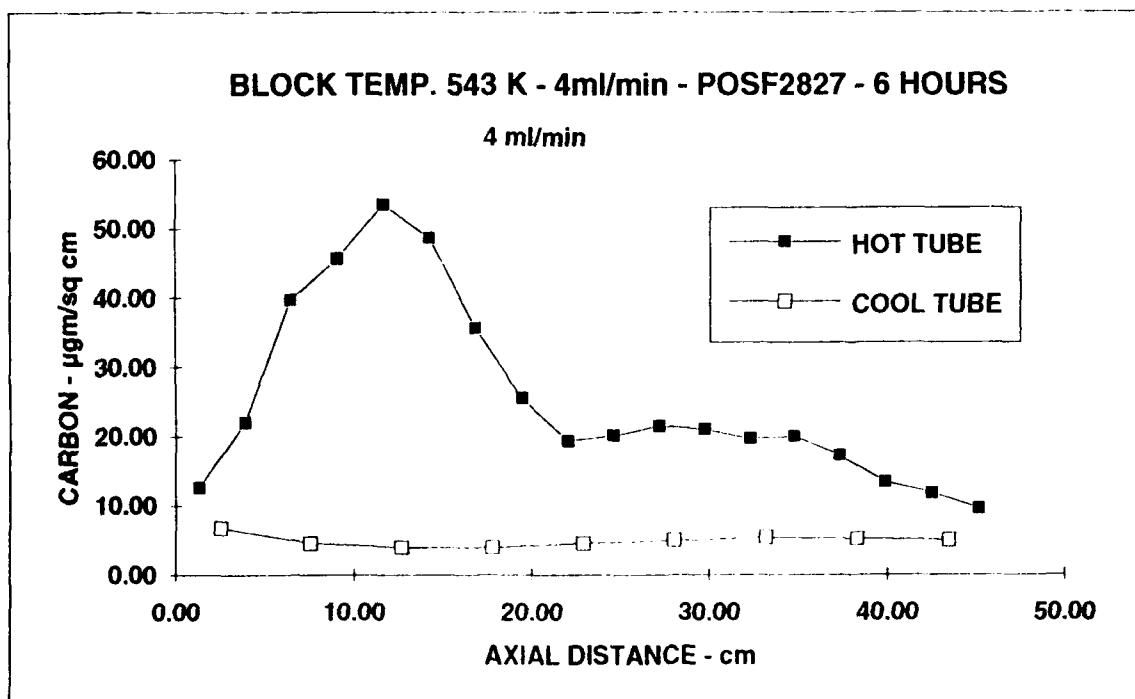
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP START 0 END 0
WEIGHT BEFORE (g) 6.63645 **WEIGHT AFTER (g)** 6.63768 **CHANGE (g)** 0.00123 **BURN-OFF (grams)** 0.000499

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP START 0.8 END 0.8
WEIGHT BEFORE (g) 6.60194 **WEIGHT AFTER (g)** 6.60271 **CHANGE (g)** 0.00077 **BURN-OFF (grams)** 0.000423

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5784701	2485034		STREAM 1	5773520	2476829
STREAM 2	5861053	2519658		STREAM 2	7179923	2827754
STREAM 3	7174752	15758	737982	STREAM 3	9128602	3576274



D3N542A3.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.025	1.30	1.77	22.1	12.52	2.09
2	1.02	3.90	1.76	38.7	22.02	3.67
3	1.015	6.48	1.75	69.4	39.69	6.61
4	1.01	9.06	1.74	79.3	45.57	7.60
5	1.05	11.67	1.81	96.7	53.46	8.91
6	1.01	14.29	1.74	84.6	48.62	8.10
7	1.03	16.88	1.77	63.2	35.62	5.94
8	1	19.46	1.72	43.9	25.48	4.25
9	1.015	22.02	1.75	33.8	19.33	3.22
10	1.02	24.60	1.76	35.3	20.09	3.35
11	1.02	27.19	1.76	37.8	21.51	3.59
12	1	29.76	1.72	36.1	20.95	3.49
13	0.99	32.28	1.71	33.5	19.64	3.27
14	0.99	34.80	1.71	34.1	19.99	3.33
15	1	37.33	1.72	29.7	17.24	2.87
16	1.025	39.90	1.77	23.5	13.31	2.22
17	1.03	42.51	1.77	20.8	11.72	1.95
18	1.045	45.14	1.80	17.1	9.50	1.58
Total	18.30		31.52	799.60		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.00	2.54	3.45	23.30	6.76	1.13
2	1.98	7.59	3.41	15.50	4.54	0.76
3	2.04	12.70	3.51	13.60	3.87	0.64
4	1.98	17.81	3.41	13.20	3.87	0.64
5	2.03	22.90	3.50	15.80	4.52	0.75
6	2.04	28.07	3.51	17.20	4.89	0.82
7	2.02	33.22	3.47	18.50	5.33	0.89
8	2.02	38.34	3.48	17.80	5.11	0.85
9	2.02	43.47	3.48	17.40	5.00	0.83
Total	18.13		31.23	152.30		

NOTES:

PRESSURE DROP ON COOL FILTER
SEE DATA ACQUISITION DURING TEST

D3N572A1.XLS

DATE: 19-Jul-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 1
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 6 HRS.
PURGE GAS MIXTURE: 79%-21% NITROGEN/OXYGEN
BULK OUT TEMP. K: AT 1 HR = 531 AT 6 HR = 531

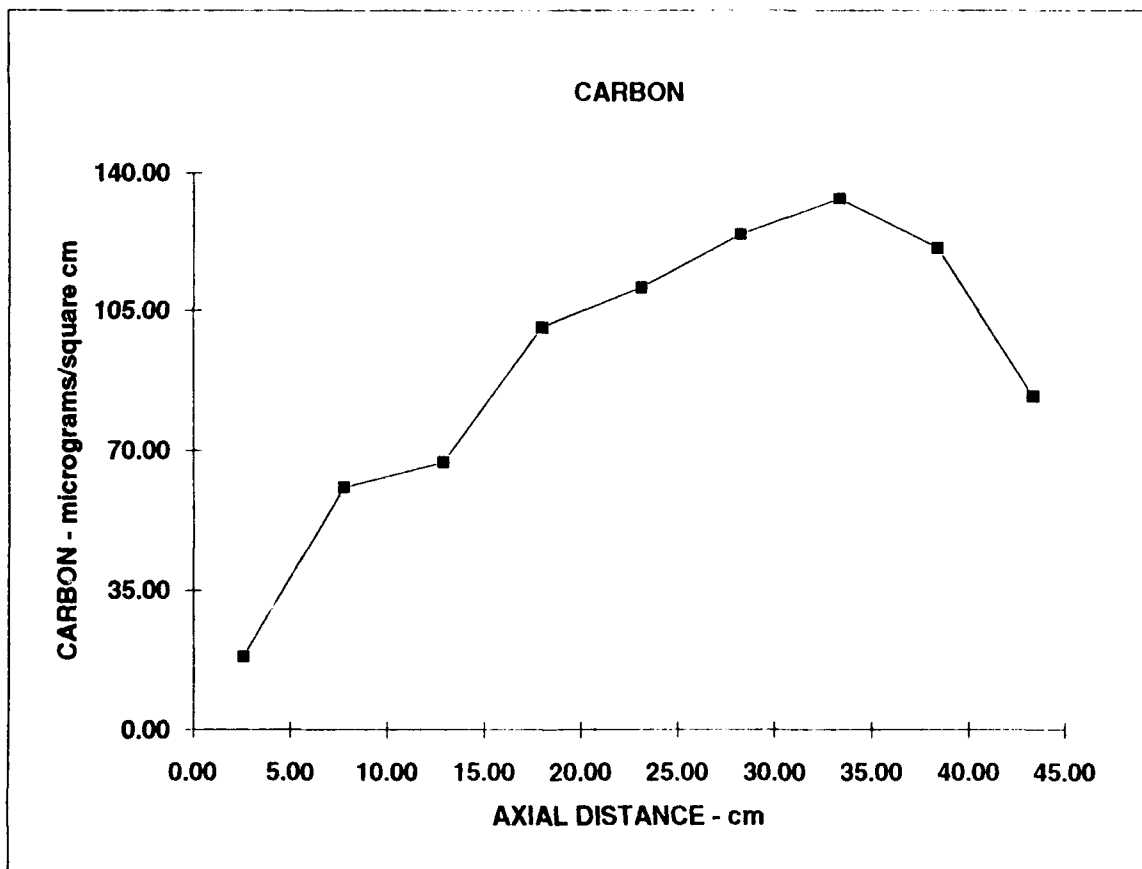
F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	1.3	END	1.2
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE	BURN-OFF (grams)	
N/A	N/A	N/A	N/A	

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	0.6	END	3.6
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE	BURN-OFF (grams)	
N/A	N/A	N/A	N/A	

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5223552	2304397		STREAM 1	NOT	RUN
STREAM 2	5292192	2329117		STREAM 2		
STREAM 3	6478397	17653	690099	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-gram per cm ²	Rate micro-grams per cm ² per hour
1	2.04	2.59	3.51	64.2	18.27	3.04
2	2.04	7.77	3.51	214	60.89	10.15
3	2.01	12.92	3.46	232	67.00	11.17
4	2.01	18.02	3.46	349	100.78	16.80
5	2.015	23.13	3.47	385	110.90	18.48
6	2.02	28.26	3.48	433	124.42	20.74
7	2	33.36	3.45	460	133.50	22.25
8	2.005	38.45	3.45	418	121.01	20.17
9	1.87	43.37	3.22	269	83.50	13.92
Total	18.01		31.03	2824.20		

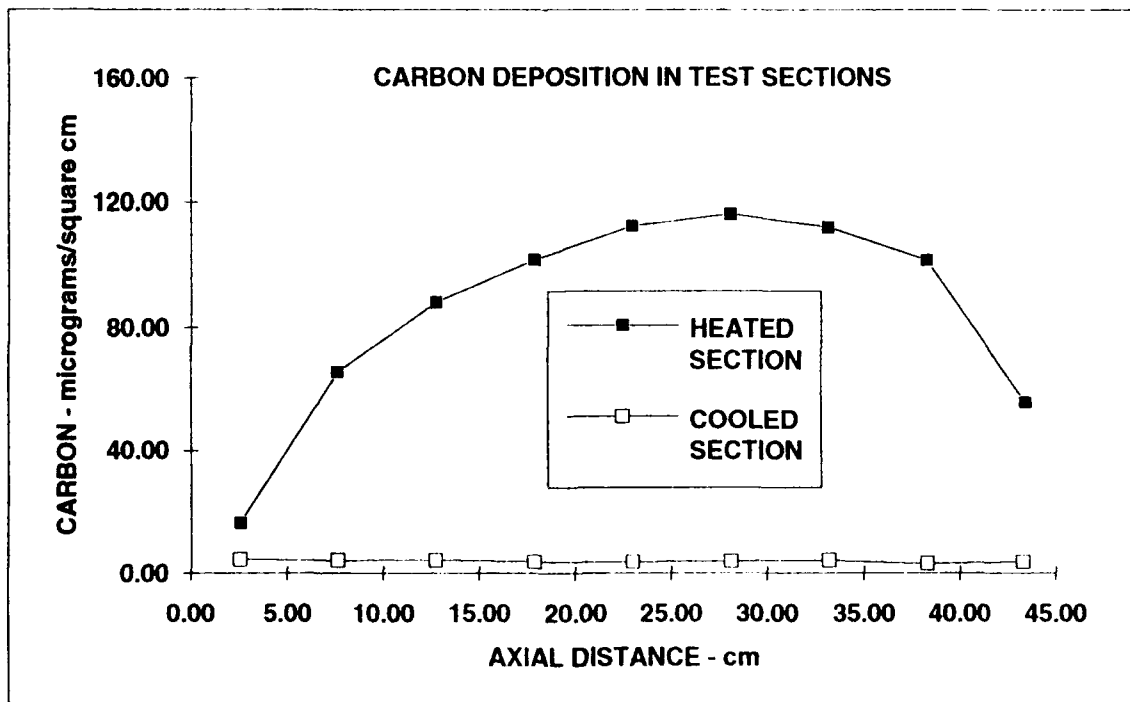
NOTES:

DATE: 14-Nov-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 6 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 538 AT 6 HR = 538
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 1.5 END 1.6
WEIGHT BEFORE (g) 6.81003 **WEIGHT AFTER (g)** 6.81019 **CHANGE (g)** 0.00016 **BURN-OFF (grams)** 0.000183

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0.1 END 0.1
WEIGHT BEFORE (g) 6.48846 **WEIGHT AFTER (g)** 6.49337 **CHANGE(g)** 0.00491 **BURN-OFF (grams)** 0.000279

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 1 END 1.6
WEIGHT BEFORE (g) 6.63314 **WEIGHT AFTER (g)** 6.63419 **CHANGE(g)** 0.00105 **BURN-OFF (grams)** 0.00043

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6285501	2746198		STREAM 1	NOT	RUN
STREAM 2	5701344	2551166		STREAM 2		
STREAM 3	7461501	13378	753443	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.56	3.47	56.3	16.22	2.70
2	2.005	7.66	3.45	227	65.72	10.95
3	2.005	12.76	3.45	304	88.01	14.67
4	2.015	17.86	3.47	353	101.69	16.95
5	2.01	22.97	3.46	389	112.34	18.72
6	2.015	28.09	3.47	403	116.09	19.35
7	2.02	33.21	3.48	390	112.07	18.68
8	2.015	38.33	3.47	352	101.40	16.90
9	2.01	43.45	3.46	193	55.73	9.29
Total	18.11		31.20	2667.30		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.45	15.50	4.49	0.75
2	2.00	7.63	3.45	14.20	4.12	0.69
3	2.02	12.73	3.47	14.50	4.18	0.70
4	2.02	17.86	3.48	12.70	3.65	0.61
5	2.01	22.97	3.46	12.40	3.58	0.60
6	2.02	28.09	3.48	13.50	3.88	0.65
7	2.00	33.20	3.45	13.70	3.98	0.66
8	2.01	38.28	3.45	10.50	3.04	0.51
9	1.95	43.30	3.35	11.90	3.55	0.59
Total	18.02		31.05	118.90		

NOTES:

BASELINE TEST WITH NEW HEATING BLOCK

DATE: 26-Feb-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF2827
 FLOW: 4 ml/min
 BLOCK TEMP K: 573
 DURATION: 6 HRS,
 PURGE GAS MIXTURE: 79% NITROGEN @ 21% OXYGEN BY VOLUME
 BULK OUT TEMP. K: AT 1 HR = 533 AT 6 HR = 533

F1 = INLET FILTER SIZE .5 MICRON

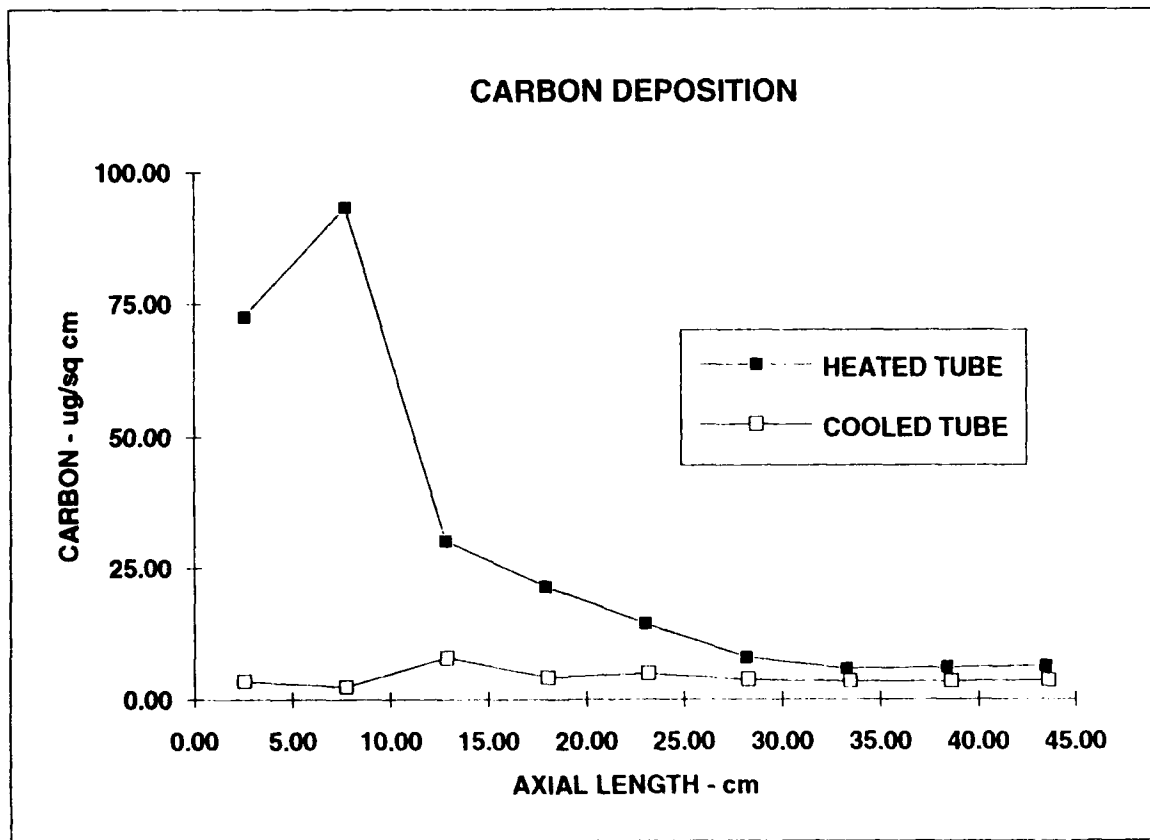
PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
N/A	N/A	N/A	0.000132

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
N/A	N/A	N/A	0.000266

F3 = OUTLET FILTER SIZE 2 MICRON (COOLED SECTION)

PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
N/A	N/A	N/A	0.000281



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.03	2.57	3.49	253	72.52	12.09
2	2.02	7.71	3.48	325	93.39	15.56
3	2.02	12.84	3.48	105	30.17	5.03
4	1.987	17.93	3.42	73.4	21.44	3.57
5	2.03	23.03	3.50	50	14.30	2.38
6	2.02	28.17	3.48	27.6	7.93	1.32
7	2	33.28	3.45	19.8	5.75	0.96
8	2.005	38.39	3.49	21.3	6.11	1.02
9	1.97	43.46	3.39	21.2	6.25	1.04
Total	18.10		31.18	875.10		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.03	2.57	3.49	12.20	3.50	0.58
2	2.05	7.75	3.53	8.39	2.38	0.40
3	2.01	12.90	3.45	27.40	7.93	1.32
4	2.03	18.02	3.50	14.60	4.17	0.70
5	2.02	23.16	3.48	16.80	4.83	0.80
6	2.04	28.32	3.51	13.00	3.70	0.62
7	2.02	33.48	3.48	11.90	3.42	0.57
8	2.03	38.62	3.50	12.20	3.49	0.58
9	1.90	43.61	3.27	11.60	3.54	0.59
Total	18.12		31.22	128.09		

NOTES: FLOW RATE = 4 ml/min.

DATE: 24-Feb-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF2827
 FLOW : 8 ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 79% NITROGEN AND 21% OXYGEN

F1 = INLET FILTER SIZE .5 MICRON

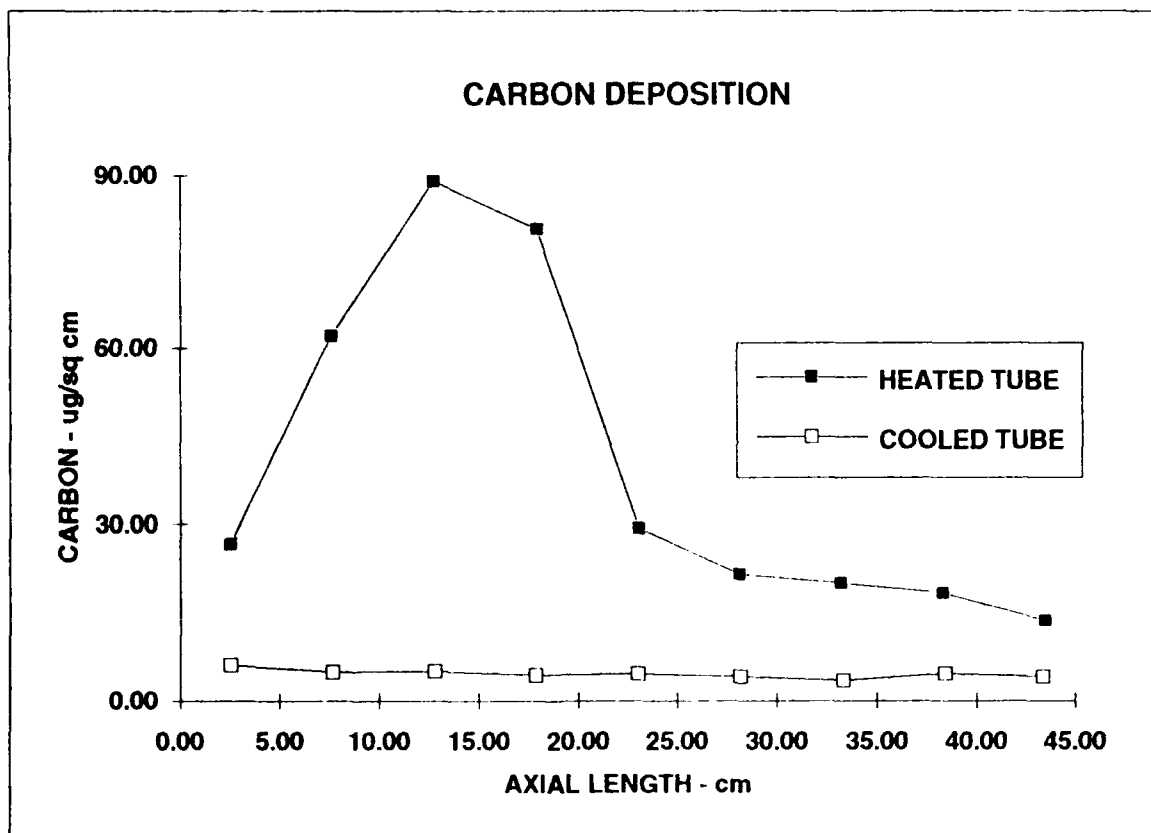
PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
N/A	N/A	N/A	0.0000047

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
N/A	N/A	N/A	0.001007

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP	START	END	
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g)	BURN-OFF (grams)
N/A	N/A	N/A	0.000284



HEATED SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.45	92	26.63	4.44
2	2	7.63	3.45	214	62.11	10.35
3	2.035	12.76	3.51	312	88.99	14.83
4	2.04	17.93	3.51	284	80.81	13.47
5	2	23.06	3.45	101	29.31	4.89
6	2	28.14	3.45	74	21.48	3.58
7	2	33.22	3.45	68.8	19.97	3.33
8	2.025	38.33	3.49	63.6	18.23	3.04
9	2.05	43.51	3.53	48	13.59	2.27
Total	18.16		31.28	1209.40		

COOLING SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.55	3.46	21.00	6.06	1.01
2	2.02	7.67	3.48	17.00	4.88	0.81
3	2.01	12.79	3.46	17.50	5.05	0.84
4	2.01	17.89	3.46	15.40	4.45	0.74
5	2.01	23.00	3.46	16.10	4.65	0.77
6	2.05	28.16	3.53	14.50	4.11	0.68
7	2.02	33.32	3.48	12.00	3.45	0.57
8	2.00	38.43	3.45	16.00	4.64	0.77
9	1.90	43.38	3.27	13.3	4.06	0.68
Total	18.03		31.06	142.80		

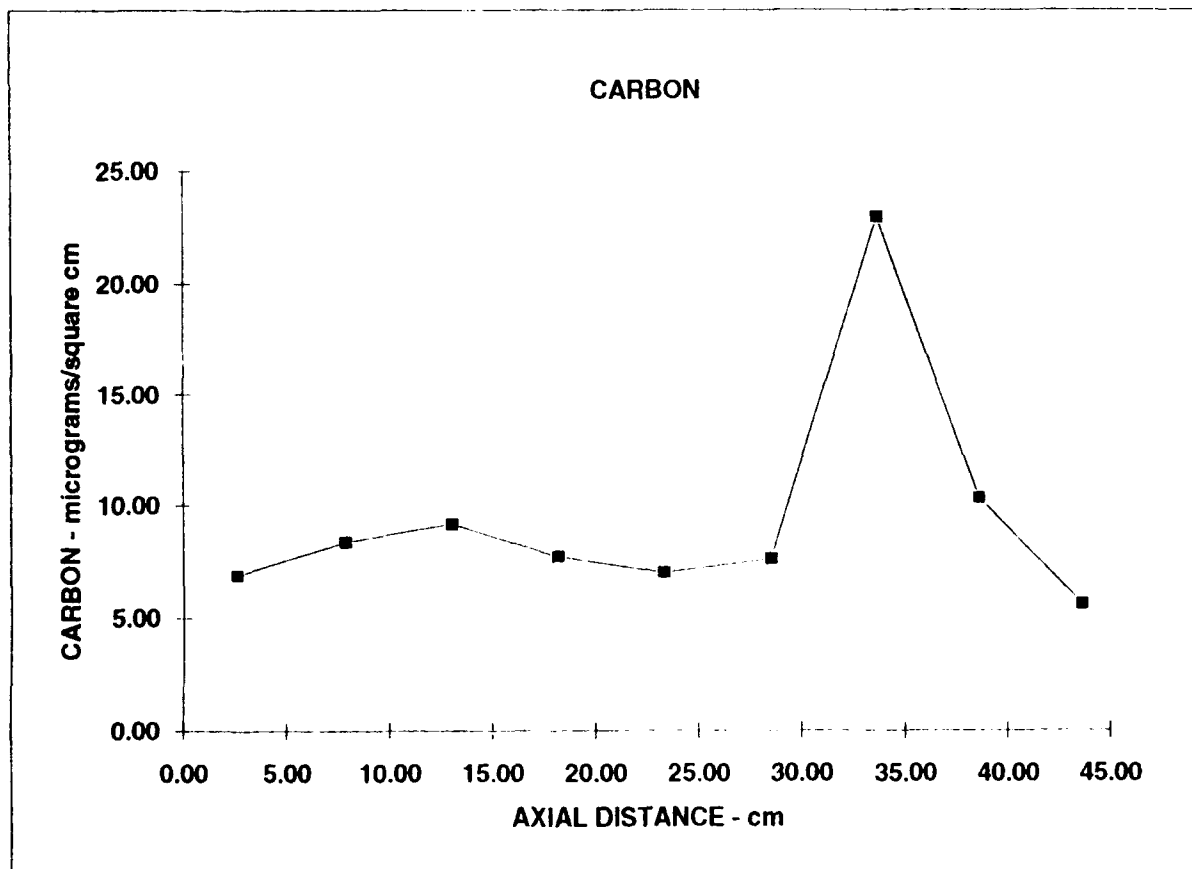
NOTES: FLOW RATE OF 8 ml/min.

D3N572N1.XLS

DATE: 30-Jul-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: SEE NOTES
 BULK OUT TEMP. K: AT 1 HR = 541 AT 6 HR = 541
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.5 END 1.4
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.7 END 0.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

<u>1/2 HOUR</u>	NITROGEN	OXYGEN	METHANE	<u>6 HOURS</u>	NITROGEN	OXYGEN	METHANE
STREAM 1	7030669	179437		STREAM 1	7047466	78651	
STREAM 2	7053328	172468		STREAM 2	7103280	79543	
STREAM 3	8786067	17906	80641	STREAM 3	8907149	13789	63692



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.07	2.63	3.57	24.6	6.90	1.15
2	2.04	7.85	3.51	29.4	8.37	1.39
3	2.025	13.01	3.49	32	9.17	1.53
4	2.04	18.17	3.51	27.1	7.71	1.29
5	2.035	23.35	3.51	24.5	6.99	1.16
6	2.03	28.51	3.50	26.6	7.61	1.27
7	2.035	33.67	3.51	80.5	22.96	3.83
8	1.875	38.64	3.23	33.3	10.31	1.72
9	2.05	43.62	3.53	19.7	5.58	0.93
Total	18.20		31.36	297.70		

NOTES:

OVERNIGHT PURGE WITH 75% NITROGEN AND 25% OXYGEN.
 PURGE DURING TEST WITH 100% NITROGEN.

DATE: 6-May-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 900 CCM N2 & 237 CCM OF O2 FOR 15 HRS
 BULK OUT TEMP. K: AT 1 HR = 542 AT 6 HR = 542

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START 1.5	END 1.5
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g) BURN-OFF (grams)
7.15697	7.15724	0.00027 0.00014

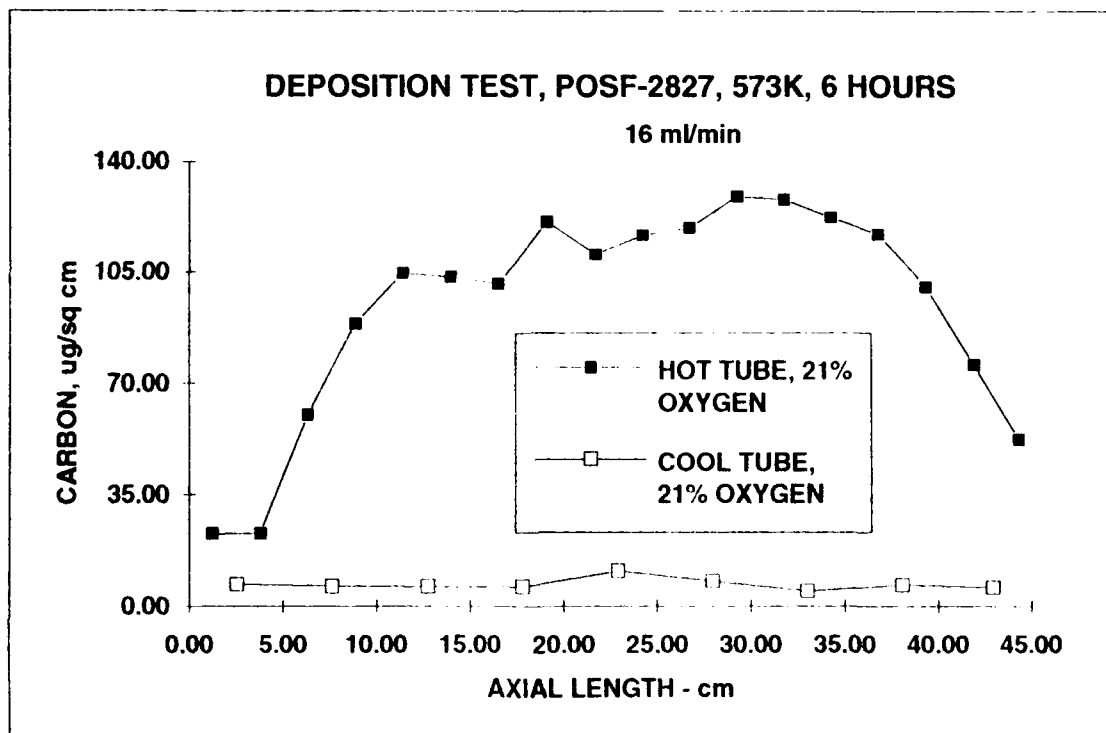
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START 0	END 0.4
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g) BURN-OFF (grams)
6.5924	6.5985	0.0061 0.0034

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP	START 1	END 1.1
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g) BURN-OFF (grams)
6.59054	6.59188	0.00134 0.000466

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5811891	2543538		STREAM 1	5955757	2580906
STREAM 2	5893690	2585214		STREAM 2	6039773	2590032
STREAM 3	7118925	0	1157612	STREAM 3	6985731	3014362



D3N572P1.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	0.993	1.26	1.71	38.9	22.74	3.79
2	1.003	3.80	1.73	39.7	22.97	3.83
3	1	6.34	1.72	104	60.37	10.06
4	0.988	8.86	1.70	151	88.71	14.79
5	1	11.39	1.72	180	104.48	17.41
6*	1.006	13.94	1.73	179	103.28	17.21
7	1.015	16.50	1.75	177	101.22	16.87
8	1.029	19.10	1.77	214	120.71	20.12
9	1.004	21.68	1.73	191	110.42	18.40
10	0.992	24.22	1.71	199	116.44	19.41
11	0.992	26.74	1.71	203	118.78	19.80
12	1.001	29.27	1.72	222	128.73	21.46
13	0.981	31.78	1.69	216	127.80	21.30
14	0.989	34.29	1.70	208	122.08	20.35
15	1.014	36.83	1.75	204	116.78	19.46
16	0.998	39.39	1.72	172	100.04	16.67
17	1.005	41.93	1.73	131	75.66	12.61
18	0.885	44.33	1.52	80	52.47	8.74
Total	17.90		30.83	2909.60		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.997	2.54	3.44	23.5	6.83	1.14
2	2.006	7.62	3.46	21.6	6.25	1.04
3	2.009	12.72	3.46	21.4	6.18	1.03
4	2	17.81	3.45	21.1	6.12	1.02
5	2.014	22.91	3.47	38.1	10.98	1.83
6	1.964	27.96	3.38	26.4	7.80	1.30
7	2.005	33.00	3.45	16.7	4.83	0.81
8	2.005	38.09	3.45	22.9	6.63	1.10
9	1.807	42.93	3.11	18.6	5.97	1.00
Total	17.807			210.3		

NOTES:

* SECTION 6 OF HEATED SECTION SUSPECT. USED AVERAGE OF SECTIONS 5 AND 7.

TOTAL ACID NUMBER (mg KOH/g fuel):

ASTM D664 ASTM D3242

UNSTRESSED FUEL

0.0078

0.0011

STRESSED FUEL

0.0500

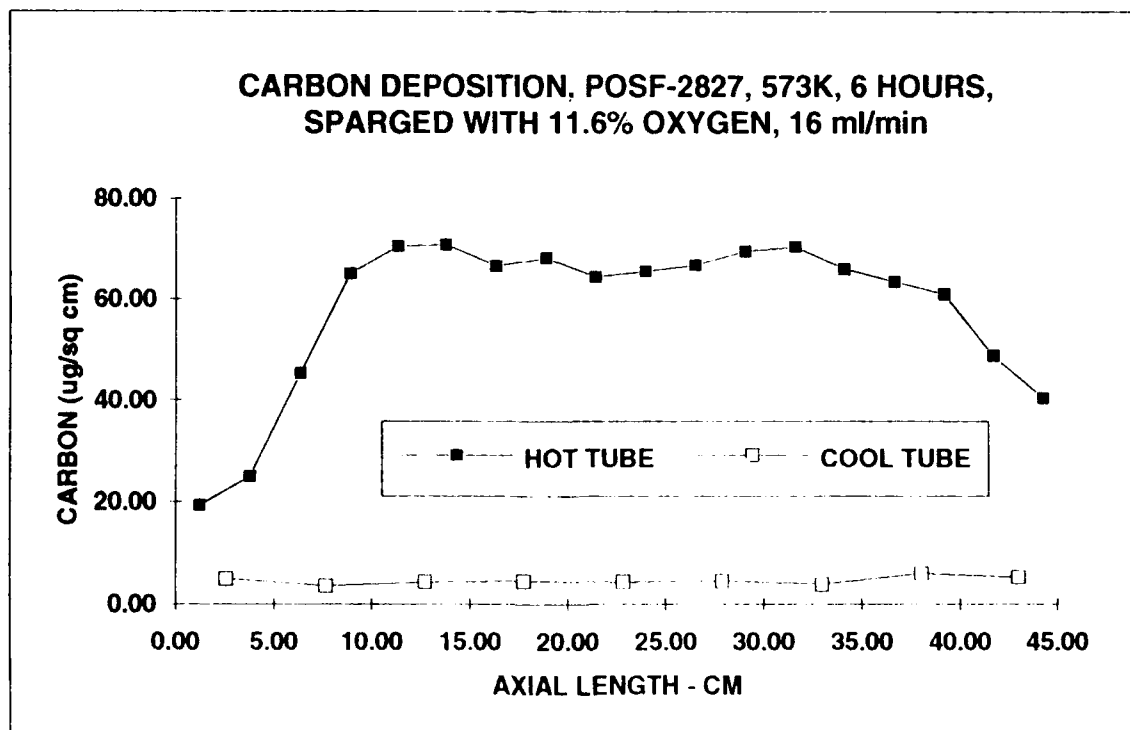
0.0129

DATE: MAY 8,1992 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 900 CCM N2 & 118.5 CCM OF O2 FOR 15 HRS
 BULK OUT TEMP. K: AT 1 HR = 541 AT 6 HR = 543
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.5 END 1.5
 WEIGHT BEFORE (g) 7.16983 WEIGHT AFTER (g) 7.17007 CHANGE (g) 0.00024 BURN-OFF (grams) 0.000146

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0 END 0
 WEIGHT BEFORE (g) 6.58811 WEIGHT AFTER (g) 6.59142 CHANGE (g) 0.00331 BURN-OFF (grams) 0.00153

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
 PRESSURE DROP START 0.9 END 0.9
 WEIGHT BEFORE (g) 6.64486 WEIGHT AFTER (g) 6.64513 CHANGE (g) 0.00027 BURN-OFF (grams) 0.000121

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6582362	1479723		STREAM 1	6607194	1467651
STREAM 2	6651635	1517769		STREAM 2	6645018	1512421
STREAM 3	7646323	10406	698843	STREAM 3	8132109	1809187



D3N572P2.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	0.975	1.24	1.68	32.4	19.29	3.21
2	1.025	3.78	1.77	43.8	24.80	4.13
3	1.01	6.36	1.74	78.7	45.23	7.54
4	1	8.92	1.72	112	65.01	10.84
5	0.93	11.37	1.60	113	70.53	11.75
6	1	13.82	1.72	122	70.81	11.80
7	1.02	16.38	1.76	117	66.58	11.10
8	0.98	18.92	1.69	115	68.11	11.35
9	1	21.44	1.72	111	64.43	10.74
10	1.01	23.99	1.74	114	65.52	10.92
11	1	26.54	1.72	115	66.75	11.13
12	1.01	29.10	1.74	121	69.54	11.59
13	0.99	31.64	1.71	120	70.36	11.73
14	1.02	34.19	1.76	116	66.01	11.00
15	0.98	36.73	1.69	107	63.38	10.56
16	0.99	39.23	1.71	104	60.98	10.16
17	1	41.76	1.72	83.9	48.70	8.12
18	0.995	44.29	1.71	69.3	40.43	6.74
Total	17.94		30.90	1795.10		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.005	2.55	3.45	17.1	4.95	0.83
2	2	7.63	3.45	12.3	3.57	0.59
3	1.995	12.71	3.44	14.7	4.28	0.71
4	1.98	17.75	3.41	15.3	4.49	0.75
5	2	22.81	3.45	14.7	4.27	0.71
6	2.005	27.90	3.45	15.4	4.46	0.74
7	1.99	32.97	3.43	13.4	3.91	0.65
8	1.995	38.03	3.44	20.5	5.96	0.99
9	1.925	43.01	3.32	17.2	5.19	0.86
Total	17.895			140.6		

NOTES:

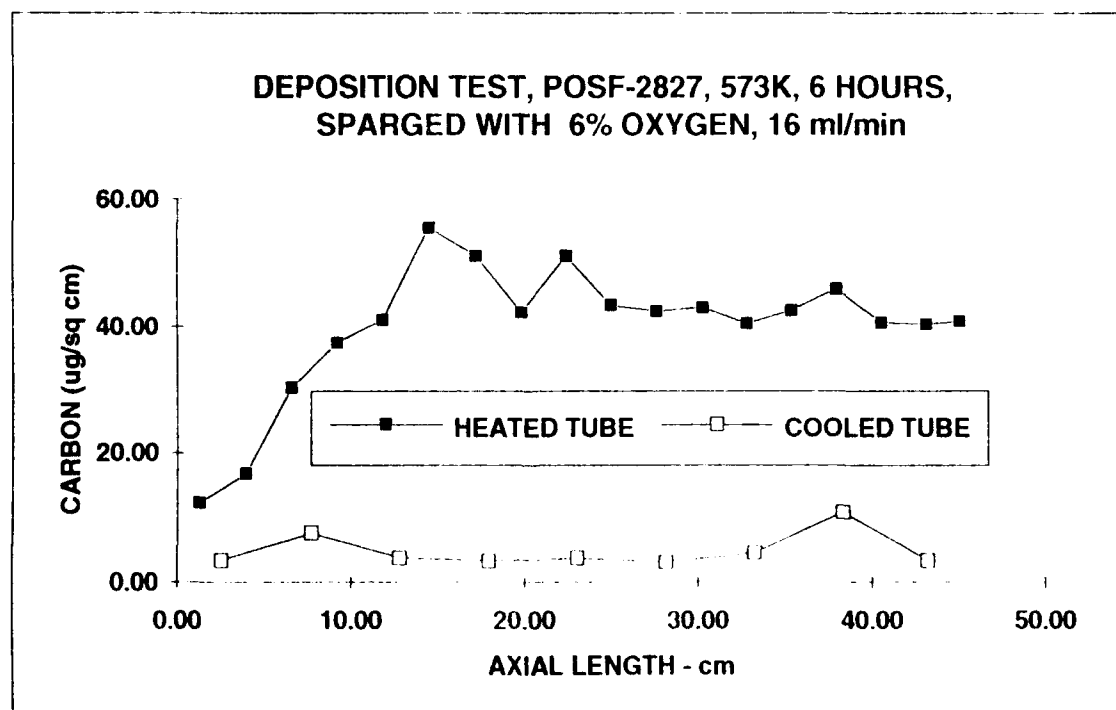
TOTAL ACID NUMBER (mg KOH/g fuel):	ASTM D664	ASTM D3242
UNSTRESSED FUEL	0.0078	0.0011
STRESSED FUEL	0.0306	0.0084

DATE: 12-May-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION #2
FUEL DESIGNATION: POSF2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 573
DURATION: 6 HRS.
PURGE GAS MIXTURE: 900 CCM N2 & 59.25 CCM OF O2 FOR 15 HRS
BULK OUT TEMP. K: AT 1 HR = 543 AT 6 HR = 543
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 1.8 END 1.8
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE (g)** **BURN-OFF (grams)**
 7.28702 7.28726 0.00024 0.000126

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0 END 0.1
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE (g)** **BURN-OFF (grams)**
 6.62402 6.62674 0.00272 0.000968

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 1 END 0.9
WEIGHT BEFORE (g) **WEIGHT AFTER (g)** **CHANGE (g)** **BURN-OFF (grams)**
 6.62062 6.62088 0.00026 0.000122

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	6864666	1023273		STREAM 1	7066189	848907
STREAM 2	6923341	1037973		STREAM 2	7191344	866948
STREAM 3	7975066	24172	355186	STREAM 3	8172621	973480



D3N572P3.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.03	1.31	1.77	21.7	12.23	2.04
2	1.04	3.94	1.79	30	16.74	2.79
3	1.04	6.58	1.79	54.2	30.25	5.04
4	1.025	9.20	1.77	66.1	37.43	6.24
5	1.05	11.84	1.81	74.2	41.02	6.84
6	1.045	14.50	1.80	100	55.55	9.26
7	1.055	17.16	1.82	92.9	51.11	8.52
8	1.02	19.80	1.76	74.3	42.28	7.05
9	1.02	22.39	1.76	89.7	51.05	8.51
10	1.025	24.99	1.77	76.4	43.26	7.21
11	1.04	27.61	1.79	76	42.42	7.07
12	1.03	30.24	1.77	76.3	43.00	7.17
13	0.998	32.81	1.72	69.4	40.36	6.73
14	1.015	35.37	1.75	74.3	42.49	7.08
15	1.01	37.94	1.74	79.8	45.86	7.64
16	1.035	40.54	1.78	72.3	40.55	6.76
17	0.995	43.12	1.71	69.1	40.31	6.72
18	0.515	45.04	0.89	36.2	40.80	6.80
Total	17.99		30.99	1232.90		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.57	3.48	11.7	3.36	0.56
2	2.025	7.70	3.49	26.1	7.48	1.25
3	2.015	12.83	3.47	13	3.74	0.62
4	2.015	17.95	3.47	11.2	3.23	0.54
5	2.005	23.06	3.45	12.6	3.65	0.61
6	2.01	28.16	3.46	10.7	3.09	0.51
7	2	33.25	3.45	15.5	4.50	0.75
8	1.978	38.30	3.41	36.9	10.83	1.80
9	1.859	43.17	3.20	10.6	3.31	0.55
Total	17.927			148.3		

NOTES:

TOTAL ACID NUMBER (mg KOH/g fuel):	ASTM D664	ASTM D3242
UNSTRESSED FUEL	0.0078	0.0011
STRESSED FUEL	0.0199	0.0044

D3N572P4.XLS

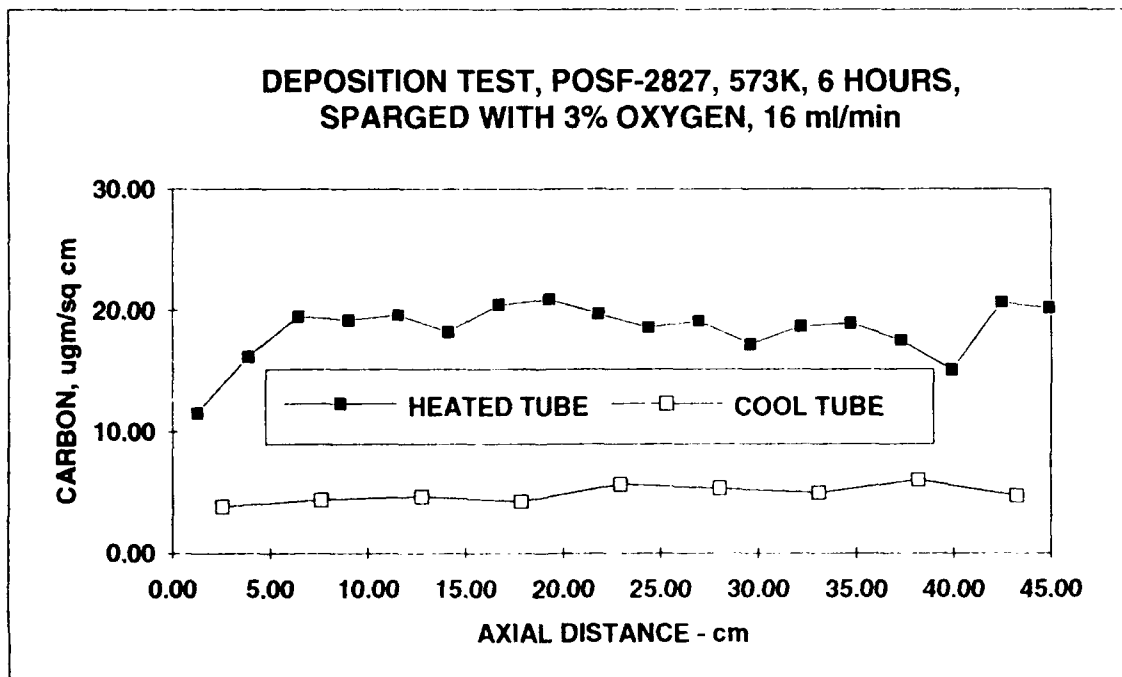
DATE: JUNE 9,1992 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION #2
 FUEL DESIGNATION: POSF2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: 900 CCM N2 & 30 CCM OF O2 FOR 15 HRS.
 BULK OUT TEMP. K: AT 1 HR = 271 AT 6 HR = 271

F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START END
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 7.15095 7.16611 0.01516 0.00026

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0 END 0.1
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 6.6321 6.65018 0.01808 0.000222

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
 PRESSURE DROP START 1 END 0.9
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 6.63546 6.64168 0.00622 0.000218

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6714768	460725		STREAM 1	6830179	477349
STREAM 2	6829021	447293		STREAM 2	6811984	477783
STREAM 3	8197898	0	236517	STREAM 3	8139085	536882



D3N572P4.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1	1.27	1.72	19.9	11.55	1.93
2	1.03	3.85	1.77	28.7	16.17	2.70
3	1.01	6.44	1.74	33.9	19.48	3.25
4	1	8.99	1.72	33.1	19.21	3.20
5	1.01	11.54	1.74	34.1	19.60	3.27
6	1.015	14.12	1.75	31.9	18.24	3.04
7	1.015	16.69	1.75	35.7	20.42	3.40
8	1.01	19.27	1.74	36.3	20.86	3.48
9	1.01	21.83	1.74	34.3	19.71	3.29
10	1	24.38	1.72	32	18.57	3.10
11	1.03	26.96	1.77	33.9	19.10	3.18
12	1.05	29.60	1.81	31.1	17.19	2.87
13	1.01	32.22	1.74	32.5	18.68	3.11
14	1	34.77	1.72	32.6	18.92	3.15
15	1.015	37.33	1.75	30.6	17.50	2.92
16	1.015	39.91	1.75	26.3	15.04	2.51
17	1	42.47	1.72	35.5	20.61	3.43
18	0.9	44.88	1.55	31.3	20.19	3.36
Total	18.12		31.22	573.70		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2	2.54	3.45	13.3	3.86	0.64
2	2.01	7.63	3.46	15.4	4.45	0.74
3	2	12.73	3.45	16.1	4.67	0.78
4	2.015	17.82	3.47	14.9	4.29	0.72
5	2.015	22.94	3.47	19.7	5.67	0.95
6	1.99	28.03	3.43	18.3	5.34	0.89
7	2.005	33.10	3.45	17.2	4.98	0.83
8	2	38.19	3.45	20.8	6.04	1.01
9	1.995	43.26	3.44	16.2	4.71	0.79
Total	18.03			151.9		

NOTES:

TOTAL ACID NUMBER (mg KOH/g fuel):	ASTM D664	ASTM D3242
UNSTRESSED FUEL	0.0078	0.0011
STRESSED FUEL	0.0181	0.0063

DATE: 24-Jul-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 1
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: 79%-21% NITROGEN/OXYGEN
 BULK OUT TEMP. K: AT 1 HR = 540 AT 12 HR = 539

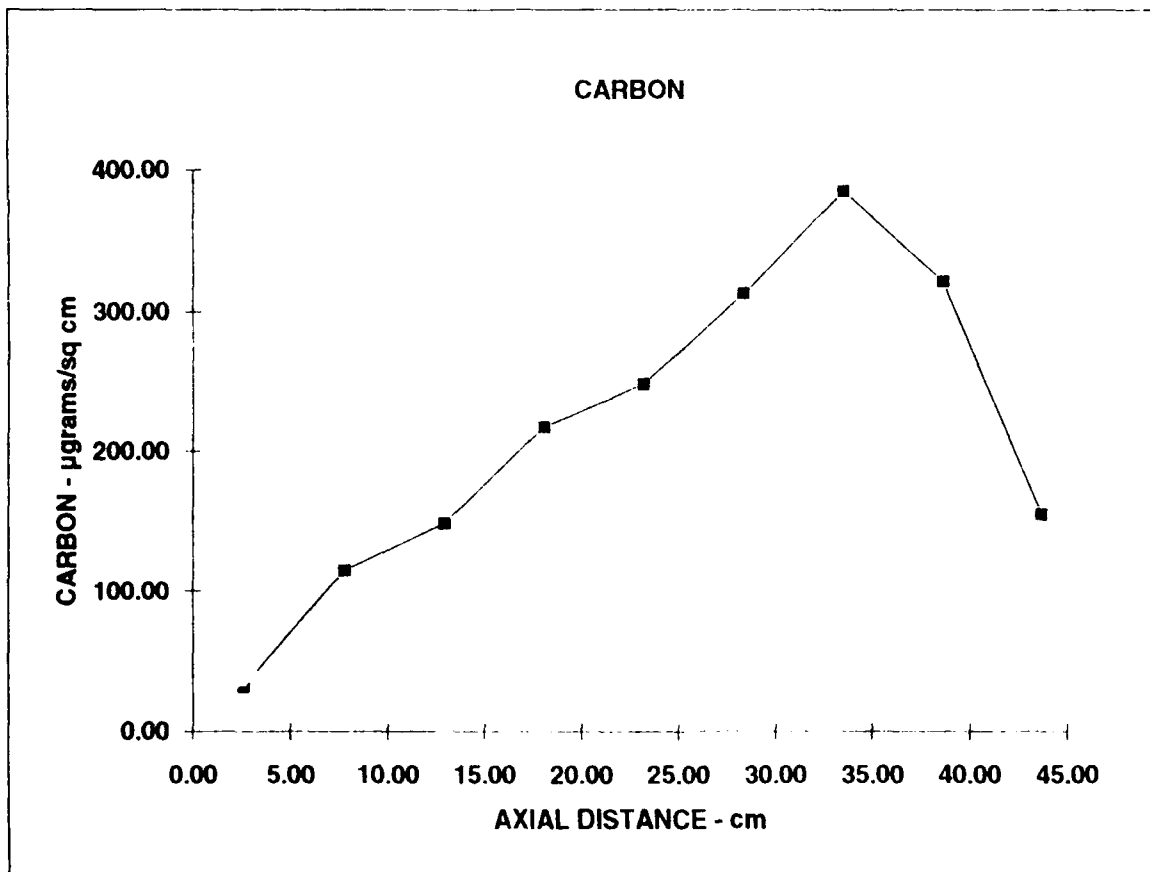
F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	1.4	END	1.4
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	0.7	END	25.3
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5595920	2473594		STREAM 1	NOT	RUN
STREAM 2	5664314	2505754		STREAM 2		
STREAM 3	7079264	15271	827146	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.044	2.60	3.52	111	31.52	2.63
2	2.029	7.77	3.50	400	114.43	9.54
3	2.035	12.93	3.51	521	148.61	12.38
4	2.025	18.09	3.49	759	217.56	18.13
5	2.02	23.22	3.48	863	247.98	20.67
6	2.042	28.38	3.52	1100	312.68	26.06
7	2.021	33.54	3.48	1340	384.86	32.07
8	2.025	38.68	3.49	1120	321.04	26.75
9	1.953	43.73	3.36	521	154.85	12.90
Total	18.19		31.34	6735.00		

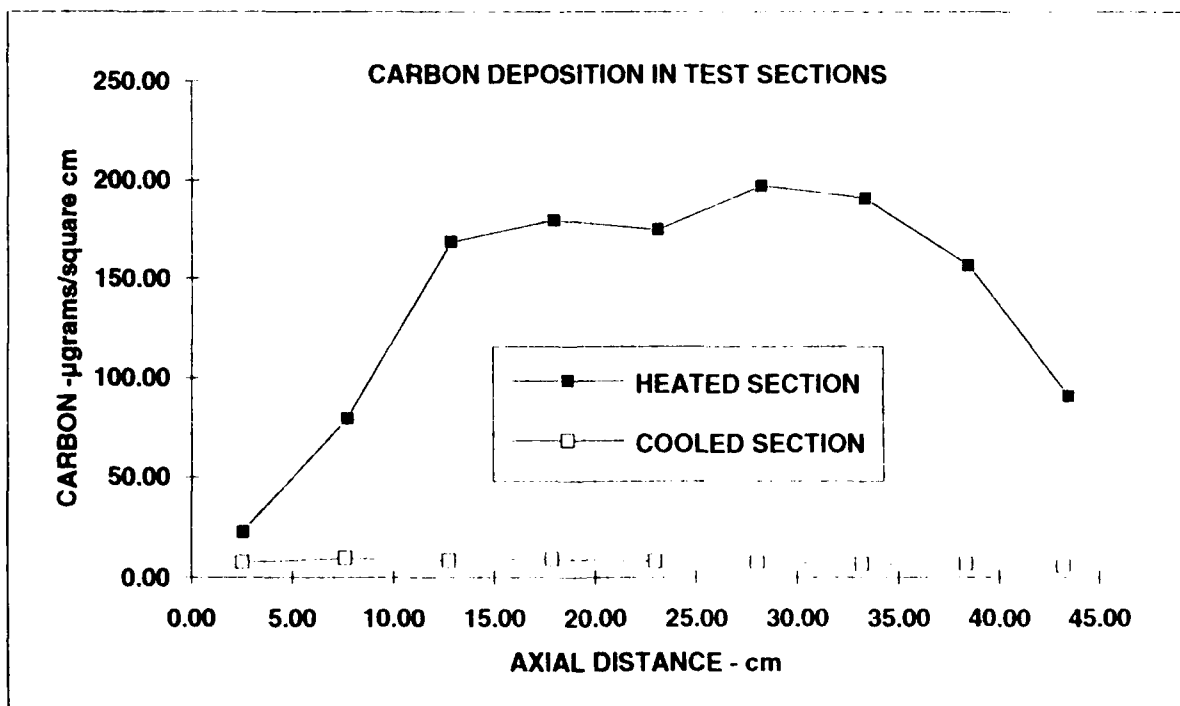
NOTES:

DATE: 24-Oct-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 541 AT 12 HR = 541
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.6 END 1.9
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.7 END 1.4
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
 PRESSURE DROP START 0.8 END 0.9
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5482560	2625757		STREAM 1	5664861	2638589
STREAM 2	5477763	2633661		STREAM 2	5507981	2634946
STREAM 3	6944973	183684	704315	STREAM 3	6639952	3130288



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.03	2.58	3.50	78.90	22.56	1.88
2	2.02	7.72	3.48	276.00	79.39	6.62
3	2.03	12.85	3.49	588.00	168.54	14.05
4	2.01	17.98	3.47	623.00	179.64	14.97
5	2.03	23.11	3.49	609.00	174.56	14.55
6	2.02	28.25	3.48	686.00	197.12	16.43
7	2.02	33.38	3.48	664.00	190.80	15.90
8	2.02	38.51	3.48	545.00	156.61	13.05
9	1.85	43.43	3.19	290.00	90.79	7.57
Total	18.03		31.05	4359.90		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.00	2.54	3.45	26.10	7.57	0.63
2	2.01	7.63	3.45	32.70	9.47	0.79
3	2.03	12.74	3.49	29.30	8.40	0.70
4	2.01	17.87	3.46	32.00	9.24	0.77
5	2.00	22.96	3.45	26.80	7.78	0.65
6	2.02	28.07	3.48	26.70	7.67	0.64
7	2.03	33.21	3.49	24.50	7.02	0.59
8	2.03	38.35	3.49	23.60	6.76	0.56
9	1.80	43.21	3.10	17.50	5.64	0.47
Total	17.91		30.86	239.20		

NOTES:

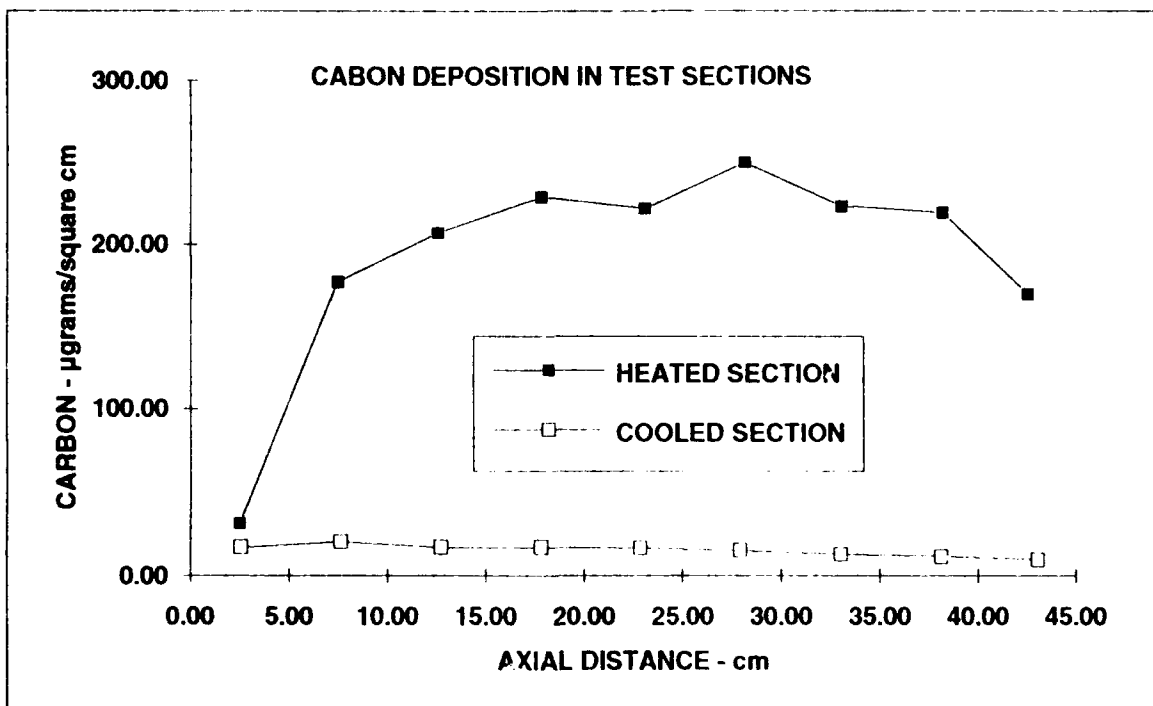
NEW CONFIGURATION # 2 SET-UP (NICKEL COVERED BLOCK AND
NEW PC DATA ACQUISITION SYSTEM).

DATE: 14-Nov-91 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573 K
 DURATION: 12 HRS.
 PURGE GAS MIXTURE: AIR
 BULK OUT TEMP. K: AT 1 HR = 518 AT 12 HR = 541
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 1.5 END 1.6
 WEIGHT BEFORE (g) 6.81421 WEIGHT AFTER (g) 6.81439 CHANGE (g) 0.00018 BURN-OFF (grams) 0.000182

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0.1 END 0.1
 WEIGHT BEFORE (g) 6.55968 WEIGHT AFTER (g) 6.56695 CHANGE (g) 0.00727 BURN-OFF (grams) 0.0047

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
 PRESSURE DROP START 1.1 END 1.1
 WEIGHT BEFORE (g) 6.53287 WEIGHT AFTER (g) 6.56045 CHANGE (g) 0.02758 BURN-OFF (grams) 0.0183

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6227059	2772429		STREAM 1	NOT	RUN
STREAM 2	5663456	2550070		STREAM 2		
STREAM 3	7124234	16105	730710	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.99	2.53	3.43	107	31.21	2.60
2	1.92	7.49	3.31	584	176.55	14.71
3	2.075	12.57	3.57	740	207.00	17.25
4	2.04	17.79	3.51	805	229.05	19.09
5	2.135	23.09	3.68	816	221.85	18.49
6	1.845	28.15	3.18	796	250.43	20.87
7	2.08	33.13	3.58	801	223.53	18.63
8	1.935	38.23	3.33	731	219.28	18.27
9	1.48	42.57	2.55	431	169.04	14.09
Total	17.50		30.15	5811.00		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.00	2.54	3.45	58.00	16.83	1.40
2	2.01	7.63	3.46	70.30	20.30	1.69
3	2.00	12.72	3.44	58.80	17.11	1.43
4	2.00	17.79	3.45	58.40	16.95	1.41
5	2.00	22.87	3.44	57.20	16.64	1.39
6	2.00	27.94	3.45	52.60	15.27	1.27
7	2.01	33.03	3.45	44.80	12.97	1.08
8	2.01	38.12	3.45	40.90	11.84	0.99
9	1.87	43.04	3.22	31.90	9.90	0.83
Total	17.88		30.80	472.90		

NOTES:

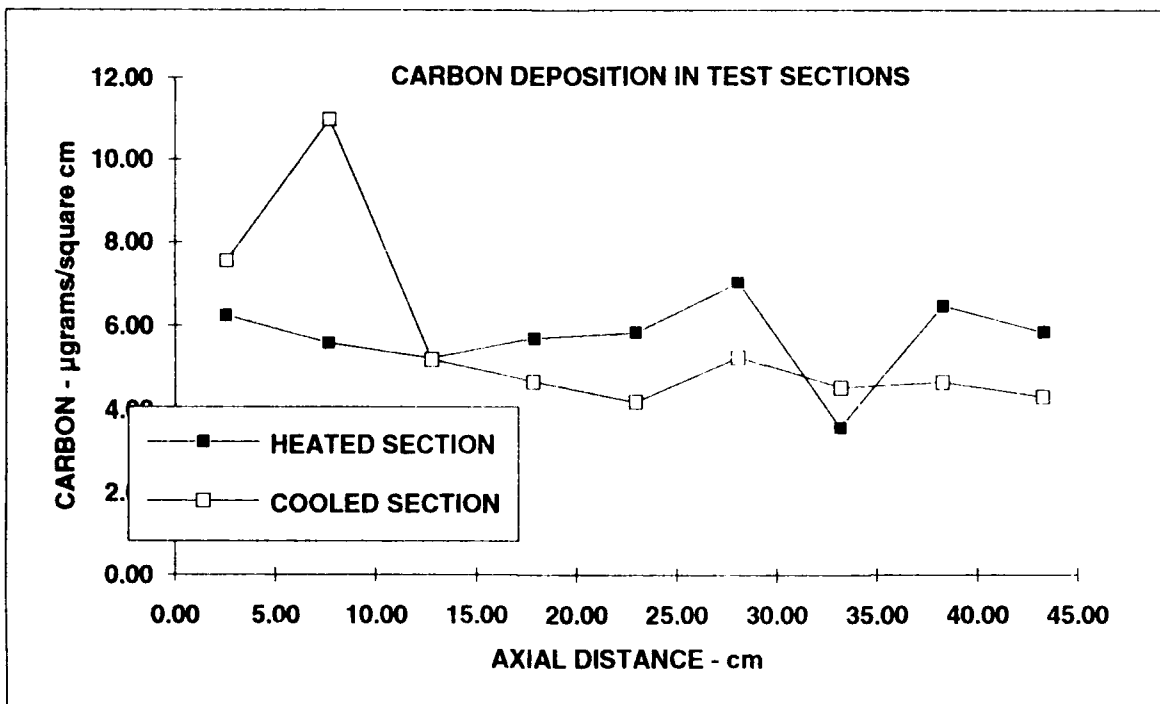
BASELINE DATA

DATE: 10-Dec-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 12 HRS.
PURGE GAS MIXTURE: NITROGEN
BULK OUT TEMP. K: AT 1 HR = 533 AT 12 HR = 541
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 1 END 1
WEIGHT BEFORE (g) 7.1068 **WEIGHT AFTER (g)** 7.10695 **CHANGE (g)** 0.00015 **BURN-OFF (grams)** 0.000223

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0 END 0.5
WEIGHT BEFORE (g) 6.62713 **WEIGHT AFTER (g)** 6.62917 **CHANGE (g)** 0.00204 **BURN-OFF (grams)** 0.000246

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 1 END 1
WEIGHT BEFORE (g) 6.61922 **WEIGHT AFTER (g)** 6.61932 **CHANGE (g)** 0.00010 **BURN-OFF (grams)** 0.000108

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	6745373	79564		STREAM 1	6868608	68155
STREAM 2	6825827	80314		STREAM 2	6799066	57688
STREAM 3	8368000	11614		STREAM 3	8220445	64577



D3N574N1.XLS

HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2	2.54	3.45	21.50	6.24	0.52
2	2.015	7.64	3.47	19.40	5.59	0.47
3	2.01	12.75	3.46	18.10	5.23	0.44
4	2.025	17.88	3.49	19.90	5.70	0.48
5	2	22.99	3.45	20.10	5.83	0.49
6	2.01	28.08	3.46	24.30	7.02	0.58
7	2.01	33.19	3.46	12.40	3.58	0.30
8	2.01	38.29	3.46	22.40	6.47	0.54
9	1.95	43.32	3.36	19.60	5.83	0.49
Total	18.03		31.06	177.70		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.56	3.47	26.20	7.55	0.63
2	2.01	7.67	3.46	38.00	10.97	0.91
3	2.01	12.78	3.46	18.00	5.20	0.43
4	2.00	17.87	3.45	16.10	4.67	0.39
5	2.01	22.96	3.46	14.50	4.19	0.35
6	2.03	28.09	3.50	18.40	5.26	0.44
7	2.02	33.23	3.47	15.70	4.52	0.38
8	1.98	38.30	3.41	15.90	4.66	0.39
9	1.95	43.29	3.36	14.50	4.32	0.36
Total	18.02		31.05	177.30		

NOTES:

OXYGEN DECREASING DURING TEST

1.5 Hours	NITROGEN	OXYGEN	METHANE
STREAM 1	6745373	79564	
STREAM 2	6825827	80314	
STREAM 3	8368000	11614	60074
12 Hours			
STREAM 1	NITROGEN	OXYGEN	METHANE
STREAM 2	6789565	48930	
STREAM 3	6844394	48186	
	8375981	0	83075

DATE: 7-Feb-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF2827 ADDITIVE & AMOUNT: NONE
 FLOW: 16ml/min
 BLOCK TEMP K: 573
 DURATION: 24 HRS
 PURGE GAS MIXTURE: 79% NITROGEN & 21% OXYGEN BY VOLUME
 BULK OUT TEMP. K: AT 1 HR = 543 AT 24 HR = 547

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	2	END	2
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
7.114	7.1383		0.0243	0.0212

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

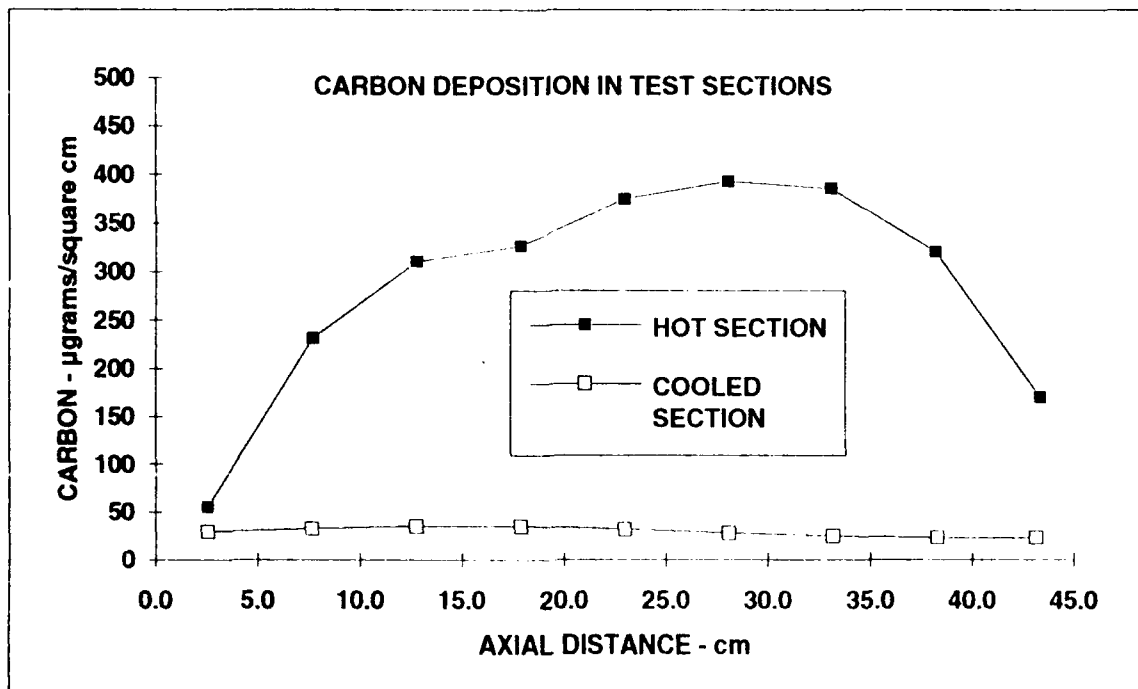
PRESSURE DROP	START	N/A	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
6.5875	6.6054		0.0179	0.004865

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP	START	PLUGGED	END	N/A
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)

SEE NOTES

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	NOT	RUN		STREAM 1	NOT	RUN
STREAM 2				STREAM 2		
STREAM 3				STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.6	3.48	191	55	2
2	2.018	7.7	3.48	804	231	10
3	2	12.8	3.45	1068	310	13
4	2.02	17.9	3.48	1134	326	14
5	1.993	23.0	3.43	1284	374	16
6	2.023	28.1	3.49	1367	392	16
7	1.984	33.2	3.42	1316	385	16
8	2.016	38.3	3.47	1110	320	13
9	1.984	43.3	3.42	580	170	7
Total	18.06		31.11	8854.00		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.01	2.6	3.47	102	29	1.2
2	2	7.7	3.45	112	33	1.4
3	2.016	12.8	3.47	121	35	1.5
4	2.014	17.9	3.47	122	35	1.5
5	2.01	23.0	3.46	110	32	1.3
6	1.992	28.1	3.43	95.8	28	1.2
7	2.014	33.2	3.47	86.1	25	1.0
8	2.007	38.3	3.46	79.8	23	1.0
9	1.819	43.1	3.13	72.1	23	1.0
Total	17.89		30.81	900.80		

NOTES:

THE COOLED FILTER (F3) PLUGGED, WAS REPLACED, AND AGAIN PLUGGED.
IT WAS EVENTUALLY REPLACED WITH A MUCH LARGER, UNWEIGHED FILTER.

D3N612A1.XLS

DATE: 1-Aug-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 1
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 608 K
DURATION: 6 HRS.
PURGE GAS MIXTURE: 79%-21% NITROGEN/OXYGEN
BULK OUT TEMP. K: AT 1 HR = 573 AT 6 HR = 578

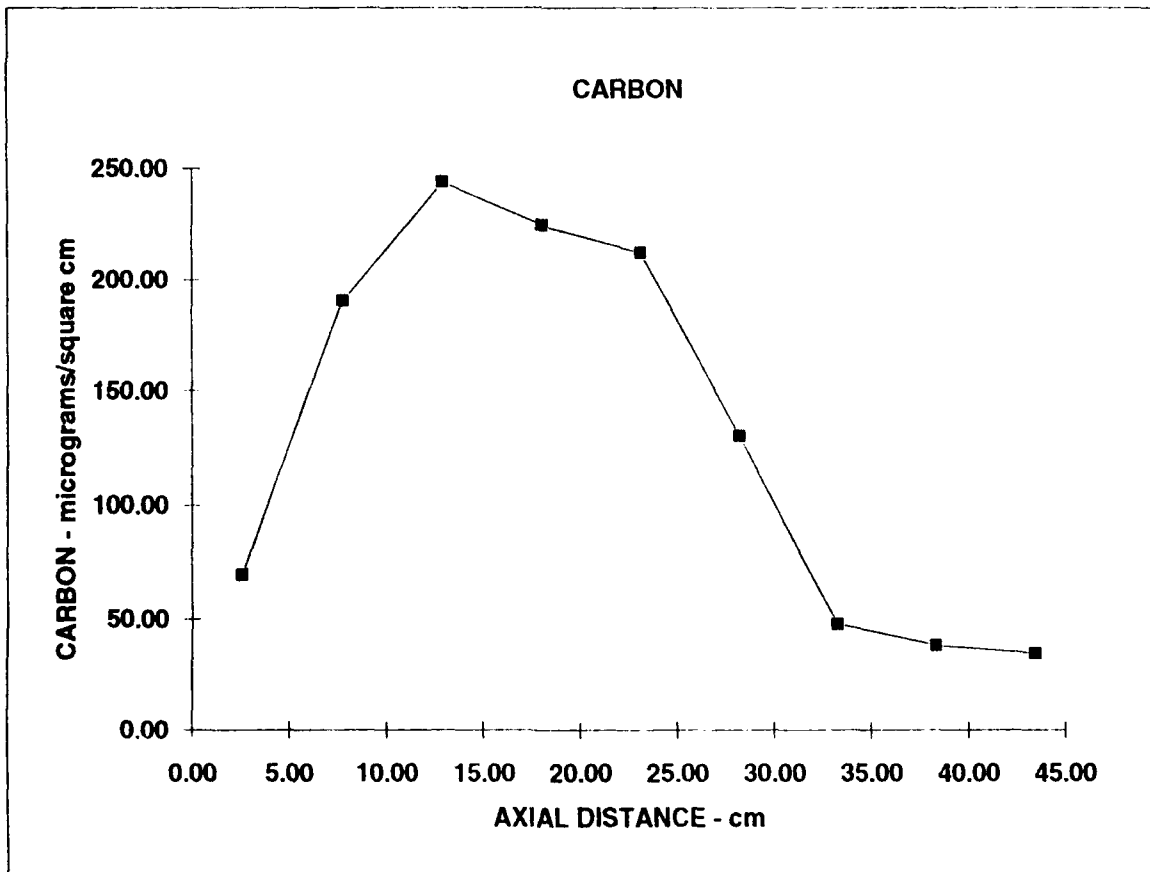
F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	1.4	END	1.3
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	0.6	END	1.2
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5530877	2437856		STREAM 1	NOT	RUN
STREAM 2	5568045	2460642		STREAM 2		
STREAM 3	7031779	17605	1146942	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.04	2.59	3.51	245	69.71	11.62
2	2.035	7.77	3.51	667	190.25	31.71
3	2.02	12.92	3.48	849	243.96	40.66
4	2.01	18.03	3.46	778	224.67	37.45
5	2.005	23.13	3.45	733	212.20	35.37
6	2	28.22	3.45	449	130.31	21.72
7	1.99	33.29	3.43	163	47.54	7.92
8	2	38.35	3.45	131	38.02	6.34
9	1.99	43.42	3.43	118	34.42	5.74
Total	18.09		31.17	4133.00		

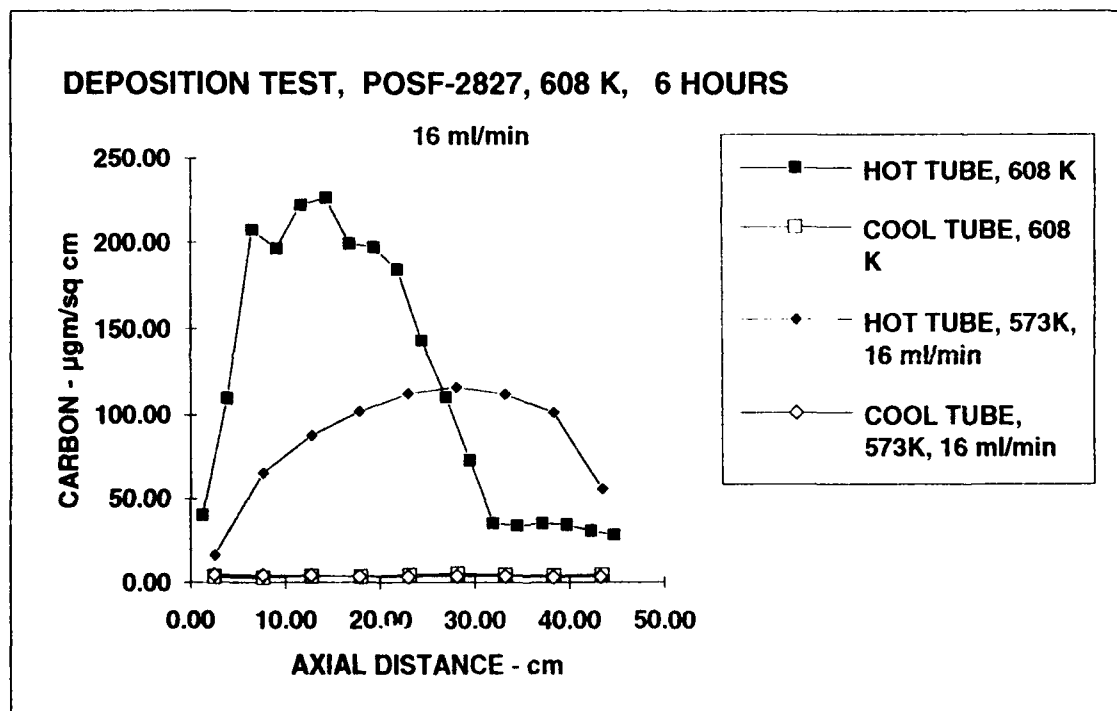
NOTES:

DATE: 27-May-92 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** NONE
FLOW: 16ml/min
BLOCK TEMP K: 608
DURATION: 6 HRS.
PURGE GAS MIXTURE: O 21% - N 79%
BULK OUT TEMP. K: AT 1 HR = 574 AT 6 HR = 578
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 1.5 END 1.4
WEIGHT BEFORE (g) 7.12381 **WEIGHT AFTER (g)** 7.12386 **CHANGE (g)** 5E-05 **BURN-OFF (grams)** 0.000126

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0 END 0
WEIGHT BEFORE (g) 6.57363 **WEIGHT AFTER (g)** 6.57564 **CHANGE (g)** 0.00201 **BURN-OFF (grams)** 0.000458

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 1.1 END 1.1
WEIGHT BEFORE (g) 6.6338 **WEIGHT AFTER (g)** 6.63422 **CHANGE (g)** 0.00042 **BURN-OFF (grams)** 0.000239

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5704397	2578757		STREAM 1	5704397	2578757
STREAM 2	5757475	2612373		STREAM 2	5757475	2612373
STREAM 3	7277005	15248	1119163	STREAM 3	6913658	3082870



D3N612A2.XLS

HEATED SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour	Calculated Bulk temp. K
1	1.025	1.30	1.77	71.6	40.55	6.76	
2	1.02	3.90	1.76	193	109.83	18.30	
3	1.01	6.48	1.74	361	207.47	34.58	
4	1.025	9.06	1.77	347	196.50	32.75	
5	1.025	11.66	1.77	392	221.99	37.00	
6	1.01	14.25	1.74	394	226.43	37.74	
7	0.99	16.79	1.71	340	199.35	33.22	
8	1	19.32	1.72	340	197.35	32.89	
9	1	21.86	1.72	317	184.00	30.67	
10	1.01	24.41	1.74	249	143.10	23.85	
11	1	26.96	1.72	190	110.28	18.38	
12	0.98	29.48	1.69	124	73.44	12.24	
13	1	31.99	1.72	60.6	35.18	5.86	
14	1.02	34.56	1.76	59.5	33.86	5.64	
15	1.015	37.14	1.75	61.7	35.28	5.88	
16	1.015	39.72	1.75	60.7	34.71	5.79	
17	1	42.28	1.72	52.7	30.59	5.10	
18	0.9	44.69	1.55	43.7	28.18	4.70	
Total	18.05		31.09	3657.50			

COOLING SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour	Calculated Bulk temp. K
1	2.01	2.55	3.46	10.80	3.12	0.52	
2	2.02	7.66	3.47	10.10	2.91	0.43	
3	2.04	12.81	3.51	13.30	3.78	0.63	
4	2.02	17.97	3.48	12.00	3.45	0.57	
5	2.03	23.11	3.50	16.00	4.57	0.76	
6	1.98	28.21	3.41	18.60	5.45	0.91	
7	2.02	33.29	3.48	16.50	4.74	0.79	
8	2.02	38.42	3.48	15.30	4.40	0.73	
9	1.90	43.40	3.27	15.70	4.80	0.80	
Total	18.04		31.07	128.30			

NOTES:

DATE: 28-May-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION #2
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: NONE
 FLOW: 8 ml/min
 BLOCK TEMP K: 608
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: O 21% - N 79%
 BULK OUT TEMP. K: AT 1 HR = 571 AT 6 HR 575

F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	1.3	END	1.1
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g BURN-OFF (grams))		
7.29212	7.29212	0	0.000128	

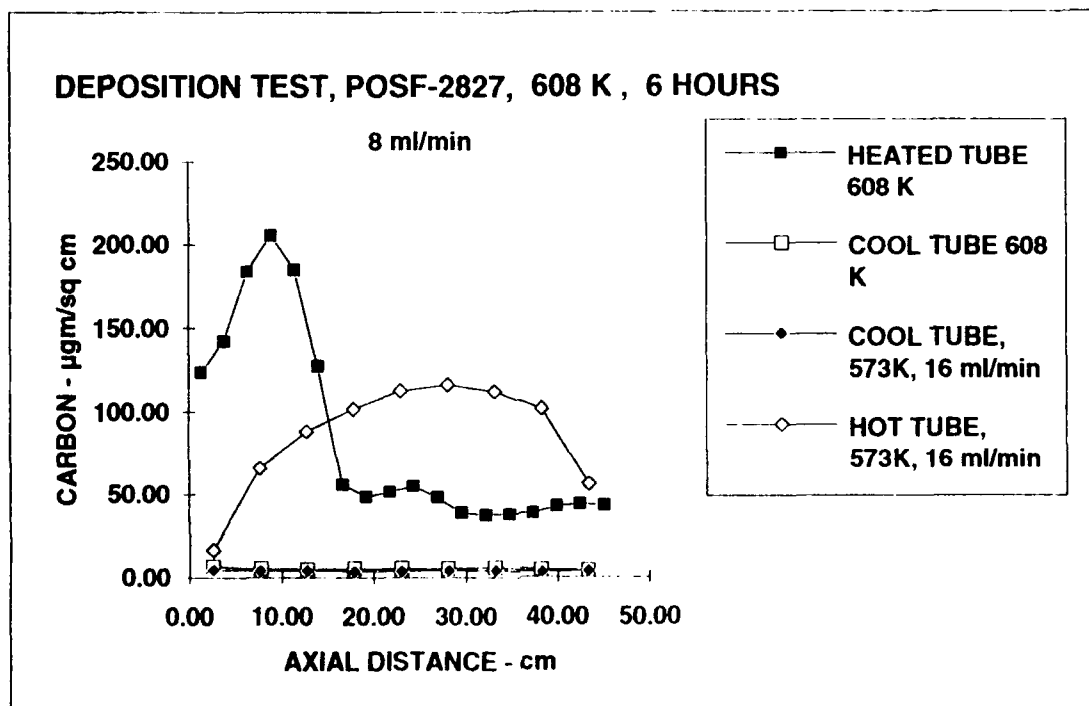
F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	0	END	0
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g BURN-OFF (grams))		
6.65356	6.65487	0.00131	0.000238	

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)

PRESSURE DROP	START	0.9	END	0.9
WEIGHT BEFORE (g)	WEIGHT AFTER (g)	CHANGE (g BURN-OFF (grams))		
6.64733	6.64815	0.00082	0.000467	

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5633680	2583922		STREAM 1	5675181	2572138
STREAM 2	5763891	2618206		STREAM 2	5758701	2604082
STREAM 3	7038099	17511	1116936	STREAM 3	7188514	3128277



D3N612A3.XLS

HEATED SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-gram	Micro-gram per cm ²	Rate micro-gram per cm ² per hour
1	1	1.27	1.72	213	123.64	20.61
2	1	3.81	1.72	245	142.21	23.70
3	0.995	6.34	1.71	315	183.76	30.63
4	1.005	8.88	1.73	356	205.61	34.27
5	1.01	11.44	1.74	321	184.48	30.75
6	1.005	14.00	1.73	220	127.06	21.18
7	1.04	16.60	1.79	99.9	55.76	9.29
8	1.005	19.20	1.73	84.1	48.57	8.10
9	1.025	21.77	1.77	90.2	51.08	8.51
10	1.01	24.36	1.74	95.1	54.65	9.11
11	1.01	26.92	1.74	82.9	47.64	7.94
12	1.06	29.55	1.83	70.4	38.55	6.43
13	1.03	32.21	1.77	66.2	37.31	6.22
14	0.99	34.77	1.71	64	37.52	6.25
15	1.025	37.33	1.77	67.5	38.22	6.37
16	1.01	39.92	1.74	73.4	42.18	7.03
17	1.01	42.48	1.74	76.2	43.79	7.30
18	1.025	45.07	1.77	75.4	42.70	7.12
Total	18.26		31.45	2615.30		

COOLING SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.02	2.57	3.48	22.80	6.55	1.09
2	2.01	7.68	3.46	17.70	5.11	0.85
3	2.00	12.78	3.45	17.20	4.99	0.83
4	2.01	17.86	3.45	17.30	5.01	0.83
5	2.01	22.96	3.46	18.20	5.26	0.88
6	2.00	28.05	3.45	18.20	5.28	0.88
7	2.00	33.13	3.45	20.00	5.80	0.97
8	2.00	38.21	3.45	15.10	4.38	0.73
9	1.99	43.28	3.42	13.50	3.95	0.66
Total	18.03		31.06	160.00		

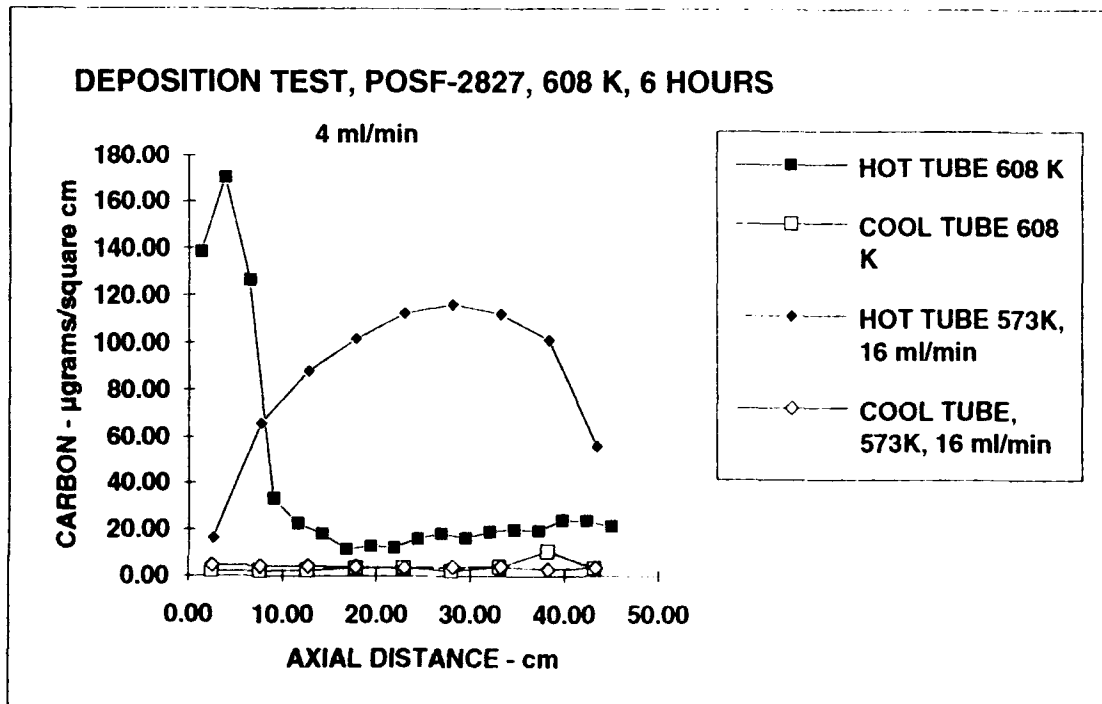
NOTES:

DATE: 29-May-92 TITLE: DEPOSITION TEST
 SET UP: CONFIGURATION # 2
 FUEL DESIGNATION: POSF 2827 ADDITIVE & AMOUNT: NONE
 FLOW: 4 ml/min
 BLOCK TEMP K: 608
 DURATION: 6 HRS.
 PURGE GAS MIXTURE: O 21% - N 79%
 BULK OUT TEMP. K: AT 1 HR = 569 AT 6 HR = 570
F1 = INLET FILTER SIZE .5 MICRON
 PRESSURE DROP START 0.7 END 0.8
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g BURN-OFF (grams)
 6.81713 6.81715 0.00002 0.000143

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
 PRESSURE DROP START 0 END 0
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g BURN-OFF (grams)
 6.66934 6.67038 0.00104 0.000213

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
 PRESSURE DROP START 0.6 END 0.7
 WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g BURN-OFF (grams)
 6.64811 6.64863 0.00052 0.000298

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5573024	2496365		STREAM 1	5573024	2496365
STREAM 2	5668048	2540758		STREAM 2	5668048	2540758
STREAM 3	7317725	18104	1216260	STREAM 3	7093514	3103230



D3N612A4.XLS

HEATED SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-gram	Micro-gram per cm ²	Rate micro-gram per cm ² per hour
1	1.02	1.30	1.76	243	138.28	23.05
2	1.01	3.87	1.74	296	170.11	28.35
3	1.02	6.45	1.76	222	126.33	21.06
4	1	9.02	1.72	57	33.09	5.51
5	1.005	11.56	1.73	38.8	22.41	3.73
6	1.015	14.13	1.75	31.7	18.13	3.02
7	1.04	16.74	1.79	20.4	11.39	1.90
8	1	19.33	1.72	22.2	12.89	2.15
9	0.985	21.85	1.70	20.9	12.32	2.05
10	1	24.37	1.72	27.6	16.02	2.67
11	1	26.91	1.72	31.3	18.17	3.03
12	0.985	29.43	1.70	27.7	16.32	2.72
13	1.04	32.00	1.79	33.7	18.81	3.13
14	1.01	34.61	1.74	34.7	19.94	3.32
15	1.005	37.17	1.73	33.9	19.58	3.26
16	1	39.71	1.72	41.4	24.03	4.01
17	1.025	42.28	1.77	41.3	23.39	3.90
18	1.04	44.91	1.79	37.9	21.15	3.53
Total	18.20		31.36	1261.50		

COOLING SECTION

Section	Lenght inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.96	2.49	3.38	7.16	2.12	0.35
2	2.01	7.53	3.46	7.25	2.09	0.35
3	2.02	12.65	3.48	8.01	2.30	0.38
4	2.00	17.75	3.45	12.00	3.48	0.58
5	2.02	22.86	3.48	11.70	3.36	0.56
6	2.01	27.98	3.46	7.40	2.14	0.36
7	2.00	33.07	3.45	13.10	3.80	0.63
8	2.01	38.16	3.46	37.10	10.71	1.79
9	1.92	43.15	3.31	11.00	3.33	0.55
Total	17.95		30.92	114.72		

NOTES:

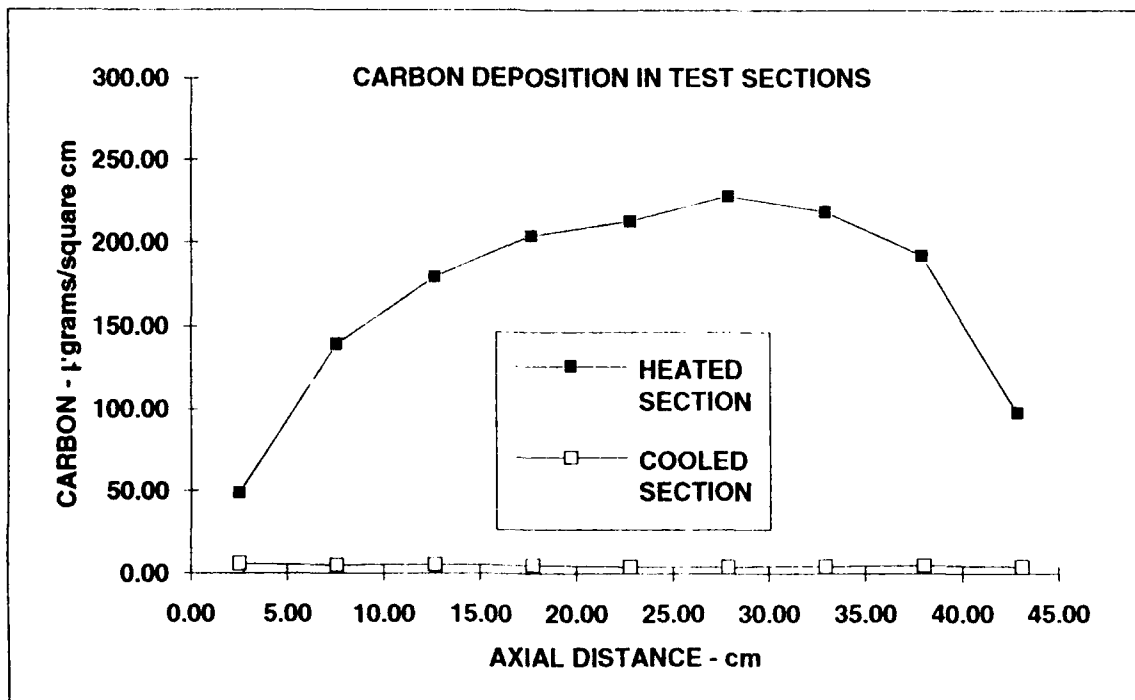
D3O574A1.XLS

DATE: 23-Nov-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 2
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** 25 mg/l of AO "B"
FLOW: 16ml/min
BLOCK TEMP K: 573 K
DURATION: 12 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 535 AT 12 HR = 536
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 0.5 END 0.5
WEIGHT BEFORE (g) 7.10402 **WEIGHT AFTER (g)** 7.16828 **CHANGE (g)** 0.06426 **BURN-OFF (grams)** N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0 END 0.5
WEIGHT BEFORE (g) 6.57204 **WEIGHT AFTER (g)** 6.5816 **CHANGE (g)** 0.00956 **BURN-OFF (grams)** 0.00583

F3 = OUTLET FILTER SIZE 2 MICRON (COOLING SECTION)
PRESSURE DROP START 1 END 17.3
WEIGHT BEFORE (g) 6.5491 **WEIGHT AFTER (g)** 6.55102 **CHANGE (g)** 0.00192 **BURN-OFF (grams)** 0.000866

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5836714	2643362		STREAM 1	6356938	2635522
STREAM 2	5783306	2615264		STREAM 2	6070387	2698922
STREAM 3	7158618	13835	724992	STREAM 3	6892925	3134606



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	1.98	2.51	3.41	166	48.66	4.06
2	1.991	7.56	3.43	477	139.06	11.59
3	1.993	12.62	3.43	617	179.70	14.97
4	1.996	17.68	3.44	701	203.85	16.99
5	2.016	22.78	3.47	739	212.77	17.73
6	1.997	27.88	3.44	784	227.88	18.99
7	1.985	32.93	3.42	747	218.44	18.20
8	1.924	37.90	3.31	638	192.48	16.04
9	2	42.88	3.45	337	97.81	8.15
Total	17.88		30.81	5206.00		

COOLING SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.00	2.53	3.44	20.00	5.82	0.48
2	1.99	7.59	3.42	17.70	5.18	0.43
3	2.01	12.66	3.46	18.20	5.26	0.44
4	2.00	17.75	3.44	17.70	5.14	0.43
5	1.99	22.82	3.43	14.60	4.26	0.35
6	2.00	27.88	3.44	14.90	4.33	0.36
7	2.00	32.97	3.45	16.20	4.69	0.39
8	1.99	38.04	3.43	17.00	4.96	0.41
9	1.99	43.09	3.43	14.70	4.29	0.36
Total	17.96		30.94	151.00		

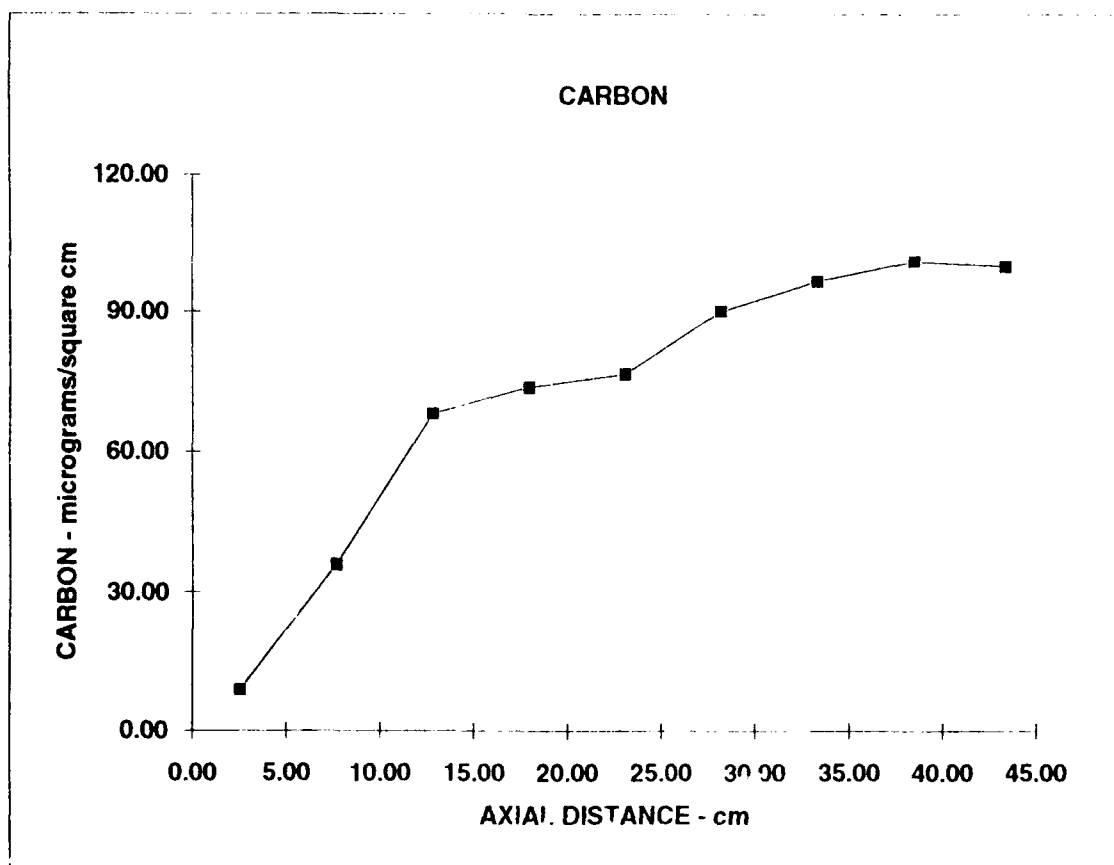
NOTES:

D3T572A1.XLS

DATE: 16-Sep-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 1
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** 100 mg/l of
FLOW: 16ml/min AO "A". Measured
BLOCK TEMP K: 573 K 75 mg/l by Ruler method.
DURATION: 6 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 530 AT 6 HR = 531
F1 = INLET FILTER SIZE .5 MICRON
PRESSURE DROP START 1.6 END 1.6
WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)
PRESSURE DROP START 0.7 END 10
WEIGHT BEFORE (g) WEIGHT AFTER (g) CHANGE (g) BURN-OFF (grams)
 N/A N/A N/A N/A

AT TEMP.	NITROGEN	OXYGEN	METHANE	AMBIENT	NITROGEN	OXYGEN
STREAM 1	5501664	2421165		STREAM 1	NOT	RUN
STREAM 2	5571533	2459898		STREAM 2		
STREAM 3	7074685	0	564487	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.013	2.56	3.47	30.7	8.85	1.48
2	2.015	7.67	3.47	125	36.01	6.00
3	2.033	12.81	3.50	238	67.95	11.33
4	2.02	17.96	3.48	256	73.56	12.26
5	2.03	23.10	3.50	267	76.34	12.72
6	2.025	28.25	3.49	314	90.01	15.00
7	2.035	33.41	3.51	339	96.69	16.12
8	2.015	38.55	3.47	351	101.11	16.85
9	1.81	43.41	3.12	312	100.05	16.68
Total	18.00		31.00	2232.70		

NOTES:

PRESSURE DROP ON OUTLET FILTER (TEMP. 413 K)

HRS	0	1	2	3	4	5	6
DROP	0.7	0.7	0.8	1	2.3	5.1	9.6

NO NOTICABLE CHANGE IN OXYGEN-NITROGEN-METHANE (SAMPLED EVERY HR.)

D3T574A1.XLS

DATE: 17-Sep-91 **TITLE:** DEPOSITION TEST
SET UP: CONFIGURATION # 1
FUEL DESIGNATION: POSF 2827 **ADDITIVE & AMOUNT:** AO "A"
FLOW: 16ml/min at 100 mg/l
BLOCK TEMP K: 573 K
DURATION: 12 HRS.
PURGE GAS MIXTURE: AIR
BULK OUT TEMP. K: AT 1 HR = 529 AT 12 HR = 529

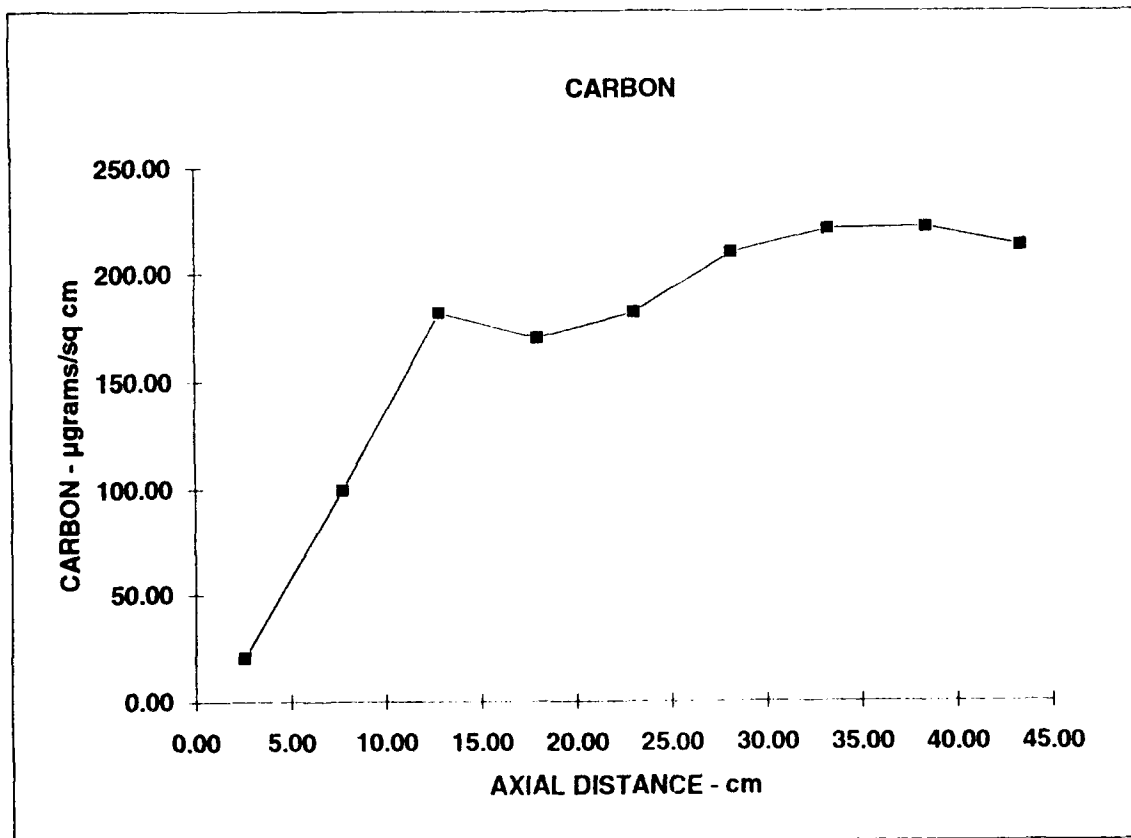
F1 = INLET FILTER SIZE .5 MICRON

PRESSURE DROP	START	1.9	END	1.7
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

F2 = OUTLET FILTER SIZE 2 MICRON (HEATED SECTION)

PRESSURE DROP	START	0.7	END	31
WEIGHT BEFORE (g)	WEIGHT AFTER (g)		CHANGE (g)	BURN-OFF (grams)
N/A	N/A		N/A	N/A

<u>AT TEMP.</u>	NITROGEN	OXYGEN	METHANE	<u>AMBIENT</u>	NITROGEN	OXYGEN
STREAM 1	5508941	2446224		STREAM 1	NOT	RUN
STREAM 2	5529248	2457282		STREAM 2		
STREAM 3	7076282	19739	594754	STREAM 3		



HEATED SECTION

Section	Length inches	Axial distance of center cm	Area cm ²	Measured carbon in micro-grams	Micro-grams per cm ²	Rate micro-grams per cm ² per hour
1	2.04	2.59	3.51	72.60	20.66	1.72
2	2.015	7.74	3.47	345.00	99.38	8.28
3	2.02	12.87	3.48	632.00	181.61	15.13
4	2.015	17.99	3.47	590.00	169.96	14.16
5	2.01	23.10	3.46	629.00	181.64	15.14
6	2.01	28.21	3.46	726.00	209.65	17.47
7	2.025	33.33	3.49	771.00	221.00	18.42
8	2.025	38.47	3.49	774.00	221.86	18.49
9	1.885	43.44	3.25	692.00	213.09	17.76
Total	18.05		31.09	5231.60		

NOTES:

PRESSURE DROP OF OUTLET FILTER

HRS	0	4	5	6	7	8	9
DROP	0.7	1.1	2.2	4.2	10	16	24.3

*NO NOTICABLE CHANGE IN MEASURED OXYGEN-NITROGEN-METHANE DURING TEST.

O1NVA1.XLS

OCT.18, 1991

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2747

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS.

AMBIENT READINGS ON THE THREE SAMPLE STREAMS.

	AREA COUNTS	
	OXYGEN	NITROGEN
WITH NATURAL DIFFUSION		
STREAM 1	2960288	6718643
STREAM 2	2832446	6383533
STREAM 3	3286957	7063594
AFTER NITROGEN AND OXYGEN SPARGE		
STREAM 1	2904866	6598813
STREAM 2	2579021	5877104
STREAM 3	3056704	7096591

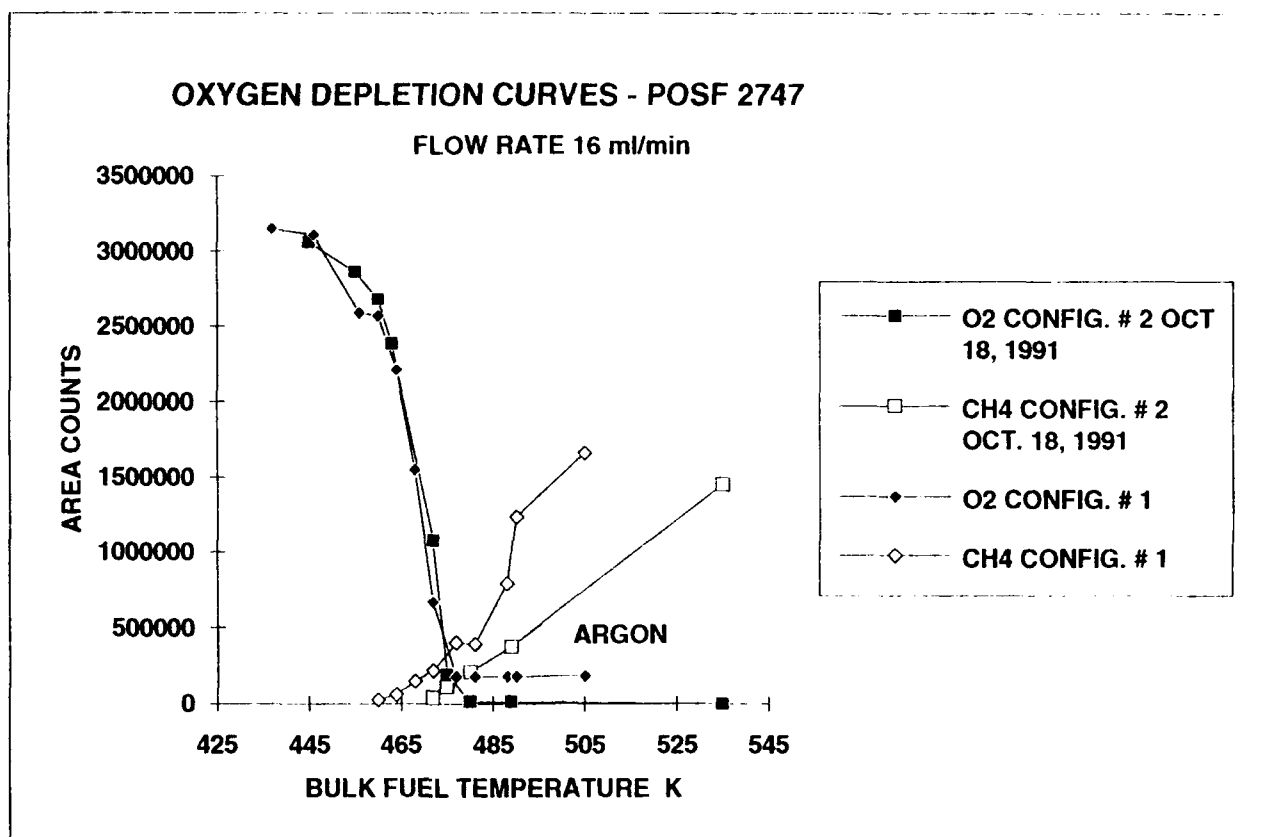
TEST WITH CONFIGURATION # 2 COPPER BLOCK

BLOCK	INLET	OUTLET	OXYGEN	NITROGEN	METHANE NOTE: Argon
	K	K	AREA	AREA	AREA removed from fuel by sparging.
472	298	445	3064296	7502195	
482	298	455	2864064	7367008	
487	298	460	2680029	7388784	
492	298	463	2384542	7299555	
502	298	472	1073219	7353760	38579
507	298	475	191702	7348970	108199
512	298	480	11240	7364099	207390
522	298	489	11583	7344752	375519
572	298	535	0	7548381	1448132

PREVIOUS TEST WITH CONFIGURATION # 1 COPPER BLOCK HEATER.

OUTLET	AREA COUNTS	
	TEMP. K	OXYGEN
437		3149978
446		3109818
456		2588029
460		2567742
464		2207328
468		1548674
472		663849
477		174154
481		175893
488		179562
490		178695
505		181512
		METHANE NOTE: Argon in fuel measured as oxygen.
		21839
		61578
		144080
		215965
		398791
		389878
		787039
		1234210
		1656930

CONSTANT FLOW CONTROL PROBLEM FIXED BY FLUSHING PUMP AND CHECK VALVES.



O2NVA1.XLS

8-Aug-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2799

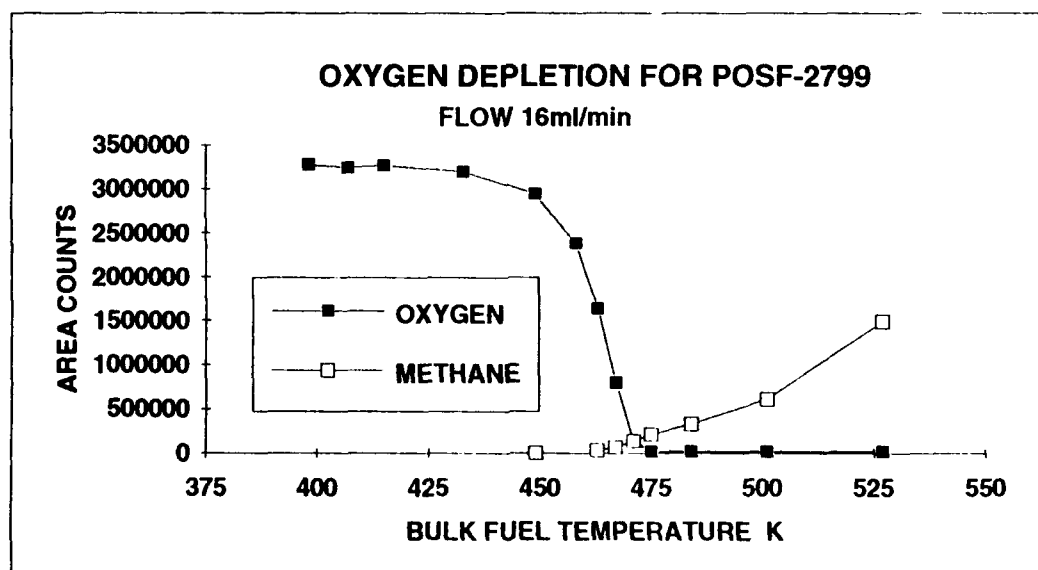
16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS ON THE THREE SAMPLE STREAMS

	TEMPERATURE K		NITROGEN	OXYGEN
	BLOCK	INLET	OUTLET	AREA
	297	297	297	
STREAM 1		297	297	5950186
STREAM 2		297	297	5850554
STREAM 3		297	297	7322544

	TEMP. K		NITROGEN	OXYGEN	METHANE
BLOCK	INLET	OUTLET	AREA	AREA	AREA
422	297	398	7465453	3270981	
432	297	407	7393117	3244712	
442	298	415	7460464	3263338	
462	299	433	7348643	3198605	
482	299	449	7377485	2940074	
492	299	458	7374730	2380117	
498	299	463	7355424	1637191	28084
503	300	467	7358435	791385	65527
508	300	471	7432403	133918	136321
512	300	475	7382944	17934	214886
523	301	484	7437888	18003	328341
543	301	501	7457232	19210	610003
572	301	527	7416781	18612	1484747



O3EVA1.XLS

4-Dec-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827 PLUS 25 mg/l ANTIOXIDANT "C"

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS ON THE THREE STREAMS

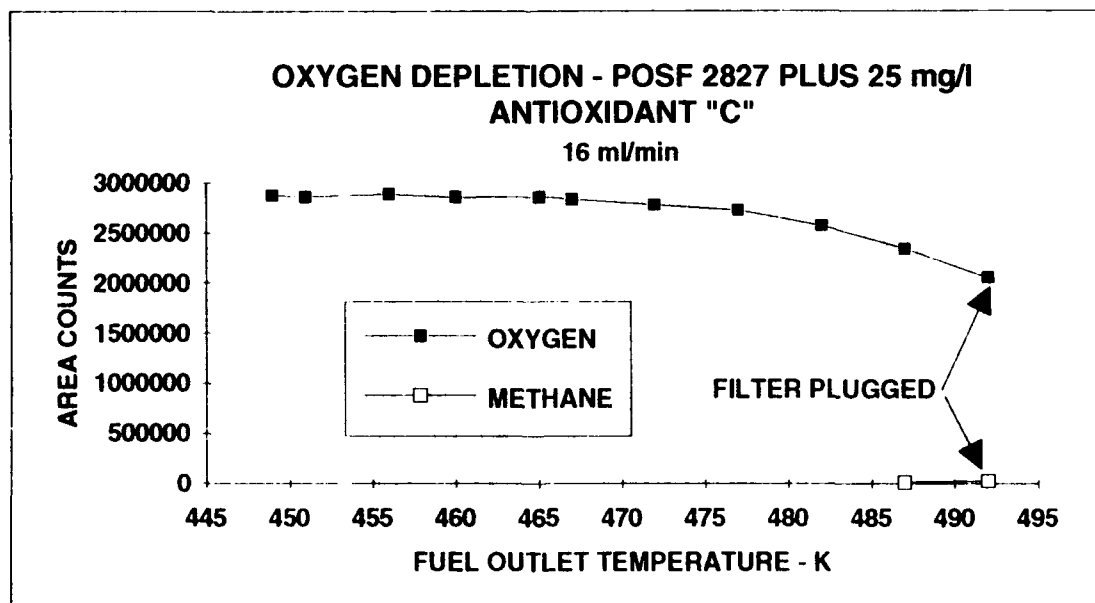
	AREA COUNTS	
	OXYGEN	NITROGEN
STREAM 1	2520648	5710784
STREAM 2	2404368	5422090
STREAM 3	2794584	6495770

TEST WITH CONFIGURATION# 2 COPPER BLOCK

TEMPERATURE - K

BLOCK	INLET	OUTLET	AREA COUNTS		
			OXYGEN	NITROGEN	METHANE
473		449	2876858	6360259	
478		451	2863954	6346528	
483		456	2888581	6520080	
488		460	2855893	6564563	
493		465	2861461	6589520	
498		467	2836686	6573008	
503		472	2780442	6604682	
508		477	2724582	6624621	
513		482	2569654	6602883	
518		487	2341002	6600845	17032
523		492	2052461	6629040	27390

NOTE: TEST STOPPED PREMATURELY DUE TO PLUGGED FILTER.



18-Aug-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827 PLUS 12 mg/l JFA-5

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS ON THE THREE STREAMS

	NITROGEN	OXYGEN
	AREA	AREA
STREAM 1	6313066	2515018
STREAM 2	5666419	2452416
STREAM 3	6703978	2955422

TEMPERATURES - K

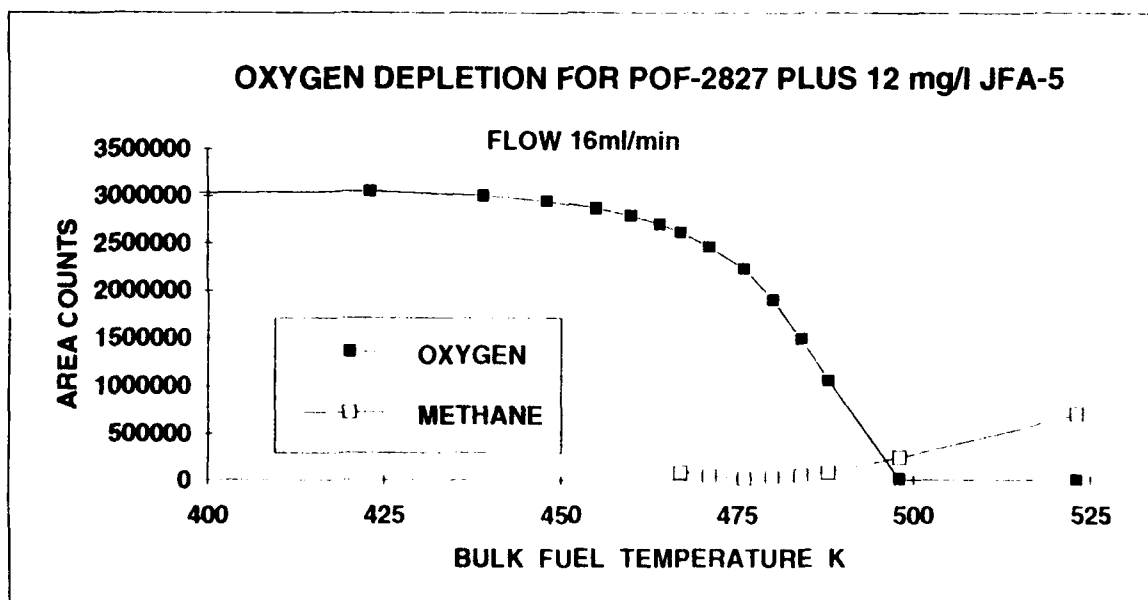
BLOCK	INLET	OUTLET
TC5	TC15	TC16

273	273	296
453	296	423
472	298	439
482	299	448
492	300	455
497	300	460
502	300	464
507	305	467
512	305	471
517	305	476
522	305	480
527	305	484
532	305	488
543	305	498
572	305	523

STREAM 3

OXYGEN	METHANE
AREA	AREA

2955422	
3044640	
3000990	
2941086	
2863222	
2783032	
2699072	
2614461	88600
2454542	47319
2224475	23954
1899251	37538
1483960	56665
1051553	85365
12906	240620
0	697019



O3JVA2.XLS

27-Aug-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827 PLUS 50 mg/l JFA-5

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS ON THE THREE STREAMS

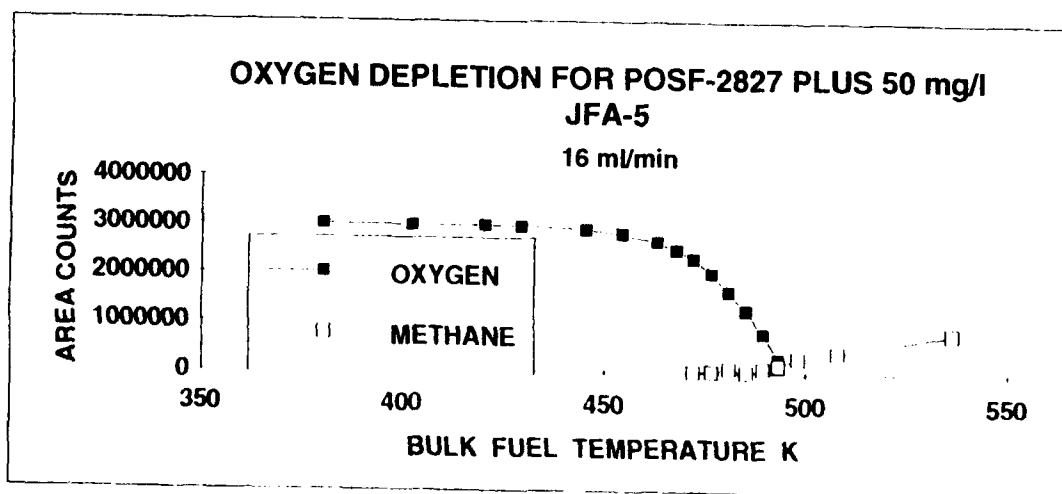
	AREA COUNTS	
	NITROGEN	OXYGEN
STREAM 1	6222400	2695621
STREAM 2	5684976	2494029
STREAM 3	6702698	2961741

TEMPERATURES K

BLOCK	INLET	OUTLET
TC5	TC15	TC16
397	299	380
422	299	402
442	300	420
453	300	429
472	301	445
482	302	454
492	302	463
497	301	468
502	301	472
507	301	477
512	301	481
517	301	485
522	301	489
527	301	493
532	302	498
543	302	508
572	300	536

STREAM 3

OXYGEN	METHANE
AREA	AREA
3010264	
2999440	
2987920	
2976608	
2918901	
2822061	
2665077	
2512530	
2326469	17374
2038338	25877
1666999	95040
1280530	16270
811221	89473
294564	155567
	310938
	425769
	817491



O3MVA1.XLS

23-Jan-92

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

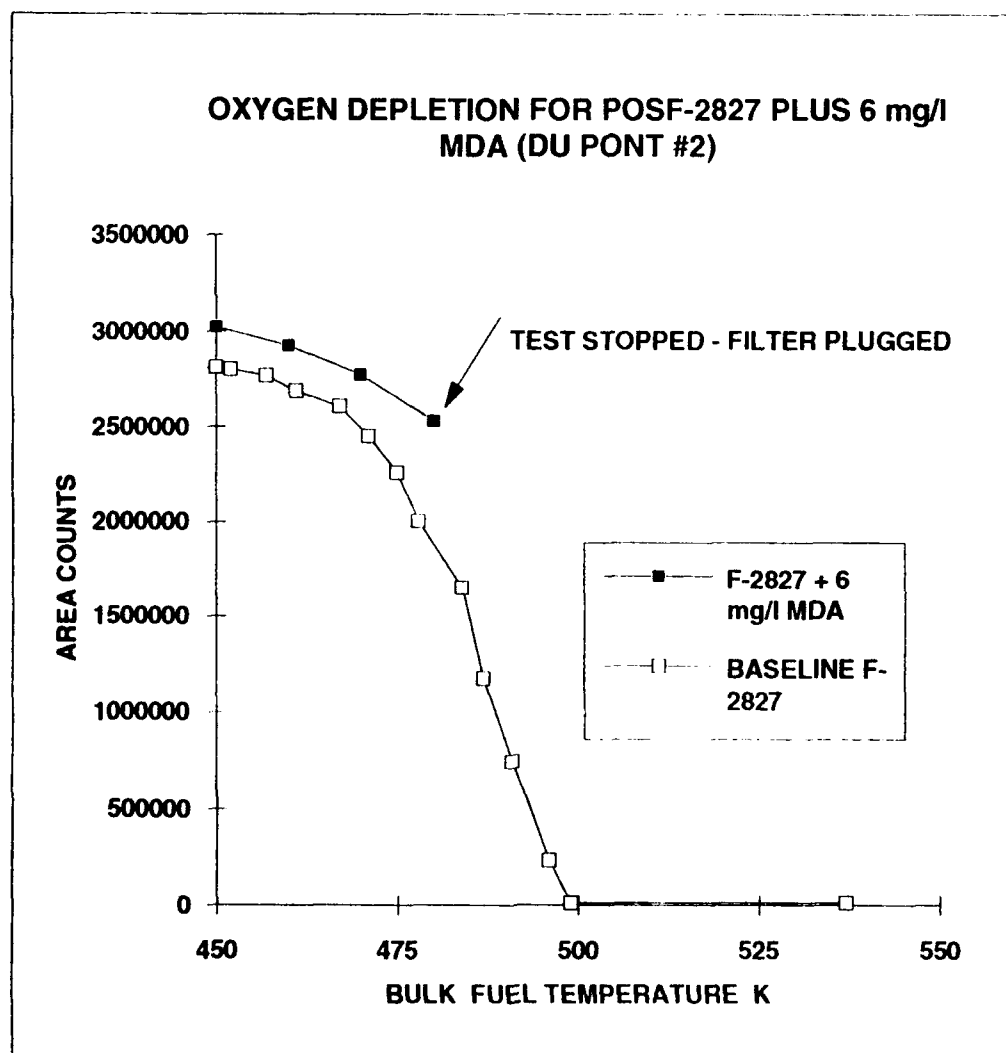
POSF-2827 PLUS 6 mg/l MDA*

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS.

* N,N'-disalicylidene-1,2,-propanediamine

TEMP. K		AREA COUNTS	
BLOCK	OUTLET	OXYGEN	NITROGEN
TC5	T16		
200	450	3023120	6971808
210	460	2927614	7119741
220	470	2773837	7095437
230	480	2531589	7063021

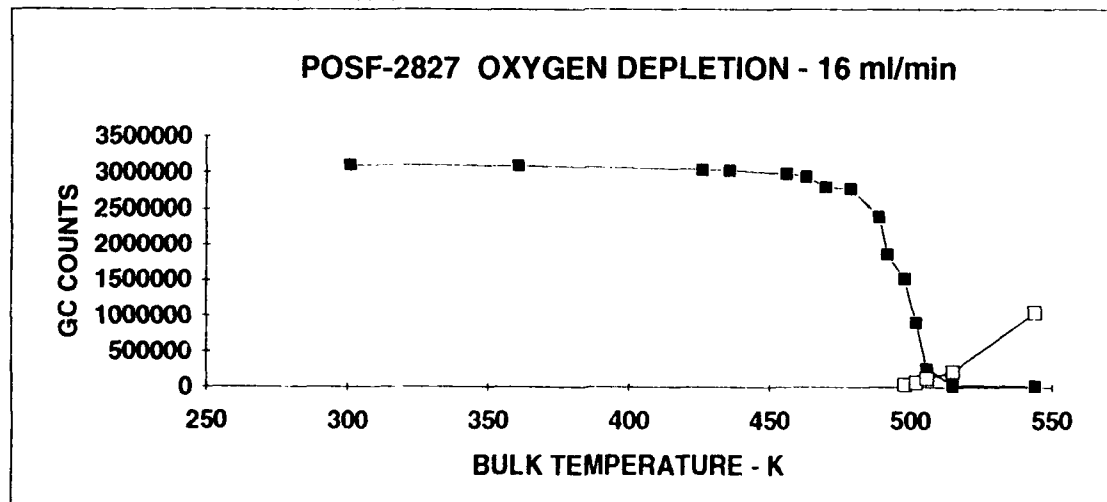


5-May-92 OXYGEN CONSUMPTION TEST BASELINE
 JET FUEL POSF-2827
 INPUT OF NITROGEN & OXYGEN INTO SUPPLY TANK
 900 CCM N2 & 237 CCM OF O2 THROUGH TANK FOR 15 HRS
 FLOW 16ml/min
 AMBIENT READINGS ON THE THREE STREAMS

		AREA	AREA PERCENT
STREAM 1	O2	2626944	30.58
	N2	5961440	69.42
STREAM 2	O2	2628469	30.56
	N2	5972282	69.44
STREAM 3	O2	3096714	30.42
	N2	7082618	69.58

TEMPERATURES (K)			GAS CHROM. AREA COUNTS		
BLOCK	INLET	OUTLET	OXYGEN	METHANE	NITROGEN
AMBIENT	301	301	3096714		7082618
373	301	361	3086445		7233699
443	301	426	3036912		6939395
453	301	436	3029002		6962925
473	301	456	2982414		6975203
483	301	463	2940382		6985523
493	301	470	2801704		7051552
503	301	479	2783720		7008883
513	301	489	2396274		7047690
518	301	492	1862473		7104867
523	301	498	1518561	41995	6907027
528	301	502	905194	69732	7175533
533	301	506	259294	124006	7202570
543	301	515	25133	220488	7247296
573	301	544	12840	1041385	7509040

NOTE : LINE FOUND TO BE FOULED BETWEEN SYSTEM AND GC
 LINE REPLACED AFTER THIS TEST

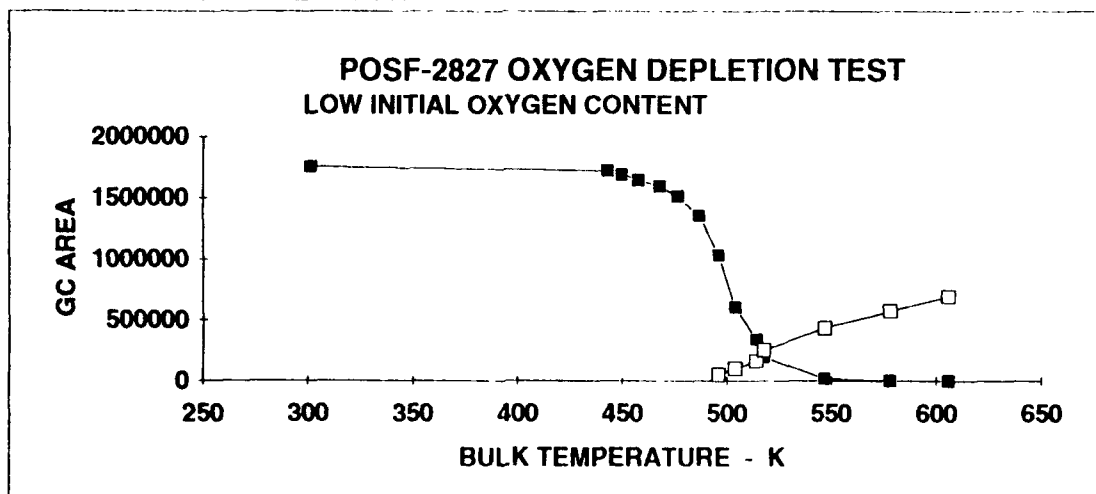


7-May-92 OXYGEN CONSUMPTION TEST
 JET FUEL POSF-2827
 INPUT OF NITROGEN & OXYGEN INTO SUPPLY TANK
 900 CCM N2 & 118.5 CCM OF O2 PUT THROUGH TANK FOR 15 HRS
 FLOW 16ml/min
 AMBIENT READINGS ON THE THREE STREAMS

		AREA	AREA PERCENT
STREAM 1	O2	1552332	18.95
	N2	6637248	81.05
STREAM 2	O2	1505333	18.05
	N2	6835165	81.95
STREAM 3	O2	1749938	18.34
	N2	7791162	81.66

	TEMPERATURES K		GAS CHROM. AREA COUNTS		
BLOCK	INLET	OUTLET	OXYGEN	METHANE	NITROGEN
AMBIENT	301	301	1749938		7791162
458	301	443	1721249		7832778
468	301	450	1691584		7749629
478	301	458	1642958		7778586
488	301	468	1593001		7733578
498	301	477	1507802		7708509
508	301	487	1355667		7674768
518	301	496	1030495	46040	7733059
528	301	504	601588	99469	7793536
538	301	514	338333	161530	7719066
543	301	518	194876	250908	7639952
573	301	547	18833	433123	7621168
608	301	578	0	573763	7590387
633	301	606	0	692899	7521504

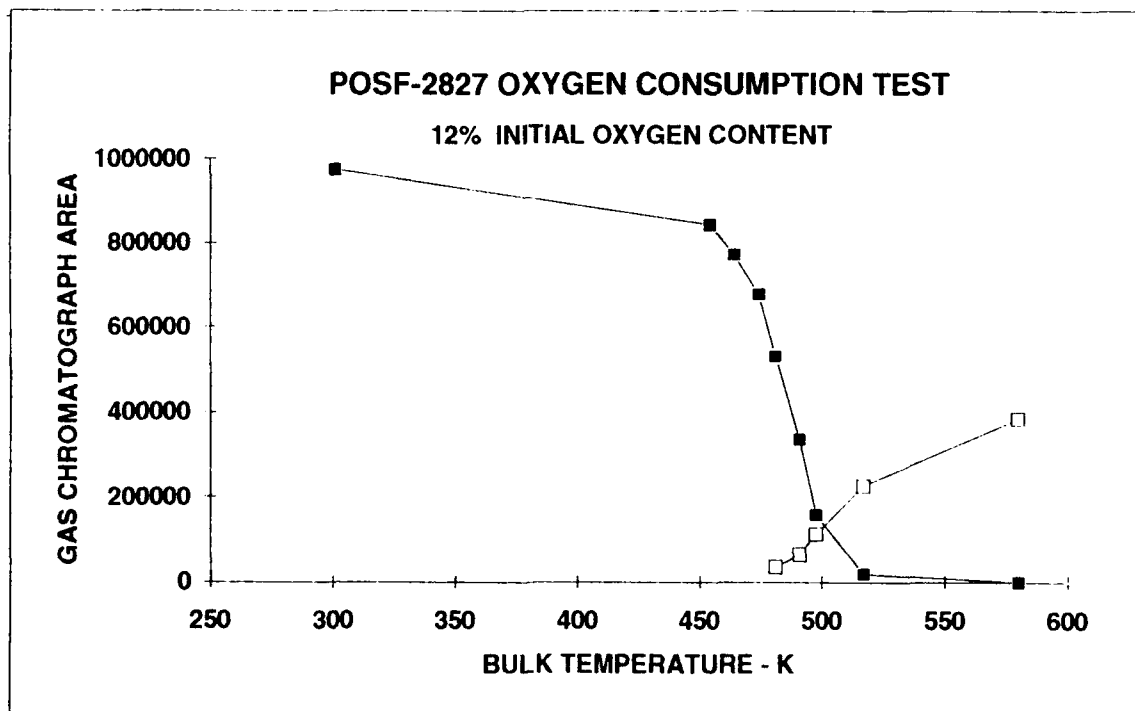
NOTES: LOW OXYGEN TEST.



11-May-92 OXYGEN CONSUMPTION TEST
 JET FUEL POSF-2827
 INPUT OF NITROGEN & OXYGEN INTO SUPPLY TANK
 900 CCM N2 & 59.25 CCM OF O2 THROUGH TANK FOR 15 HRS
 FLOW 16ml/min
 AMBIENT READINGS ON THE THREE STREAMS

		AREA	AREA PERCENT
STREAM 1	O2	848907	10.73
	N2	7066189	89.27
STREAM 2	O2	866948	10.76
	N2	7191344	89.24
STREAM 3	O2	973480	10.64
	N2	8172621	89.36

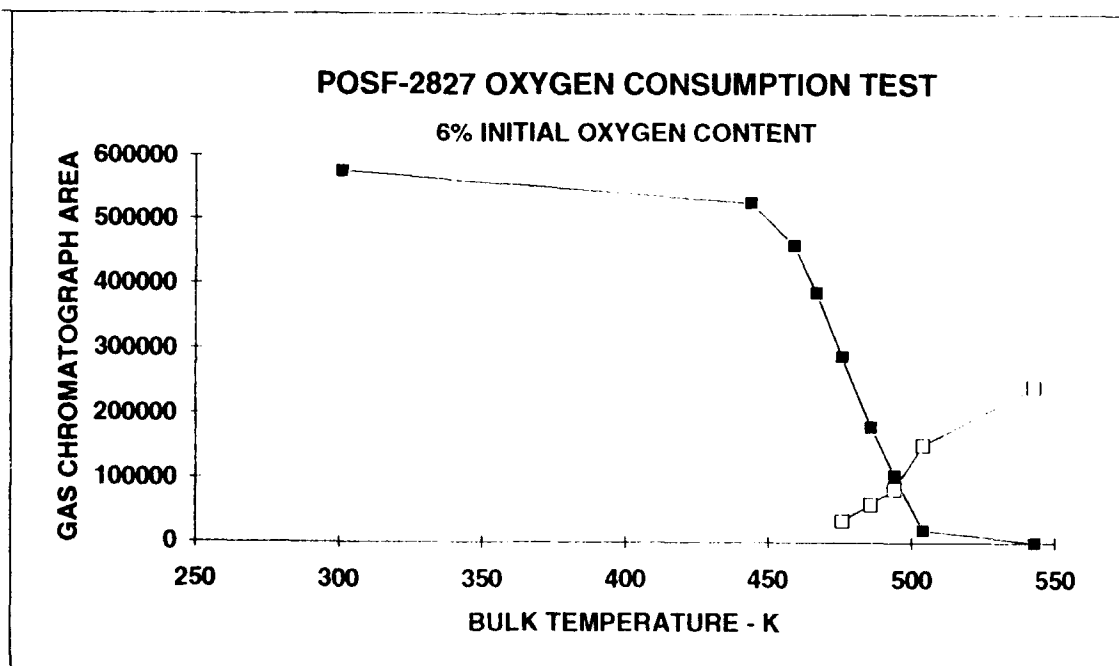
BLOCK	INLET	OUTLET	OXYGEN AREA	METHANE AREA	NITROGEN AREA
AMBIENT	301	301	973480		8172621
473	301	454	843918		8214877
483	301	464	772559		8101696
493	301	474	678429		8131677
503	301	481	532224	34791	8130448
513	301	491	336659	65615	8114032
523	301	498	158355	112076	8094333
543	301	517	18133	226299	8220387
608	301	580	0	385432	8165898



10-Jun-92 OXYGEN CONSUMPTION TEST
 JET FUEL POSF-2827
 INPUT OF NITROGEN & OXYGEN INTO SUPPLY TANK
 900 CCM N2 & 30 CCM OF O2 PUT THROUGH TANK FOR 15 HRS
 FLOW 16ml/min
 AMBIENT READINGS ON THE THREE STREAMS

		AREA	AREA PERCENT
STREAM 1	O2	476165	6.58
	N2	6759773	93.42
STREAM 2	O2	485487	6.7
	N2	6753946	93.29
STREAM 3	O2	575335	6.62
	N2	8119482	93.38

TEMPERATURE K			GAS CHROM. AREA COUNTS		
BLOCK	INLET	OUTLET	OXYGEN	METHANE	NITROGEN
AMBIENT	301	301	575335		8119482
463	301	444	525893		8098733
478	301	459	460042		8066179
488	301	467	385725		8000701
498	301	476	288091	33528	8035114
508	301	486	180176	59539	8071949
518	301	494	104591	83692	8036973
528	301	504	19766	151770	8003661
573	301	543	0	242080	8132397



O3NVA1.XLS

17-Jul-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827

16 ml/min

SEE BELOW

AMBIENT READINGS ON SAMPLE STREAMS - NATURAL DIFFUSION OF OXYGEN

AREA COUNTS

NITROGEN OXYGEN

STREAM 1 5265546 2459085

STREAM 2 5289123 2483640

STREAM 3 6345651 2958288

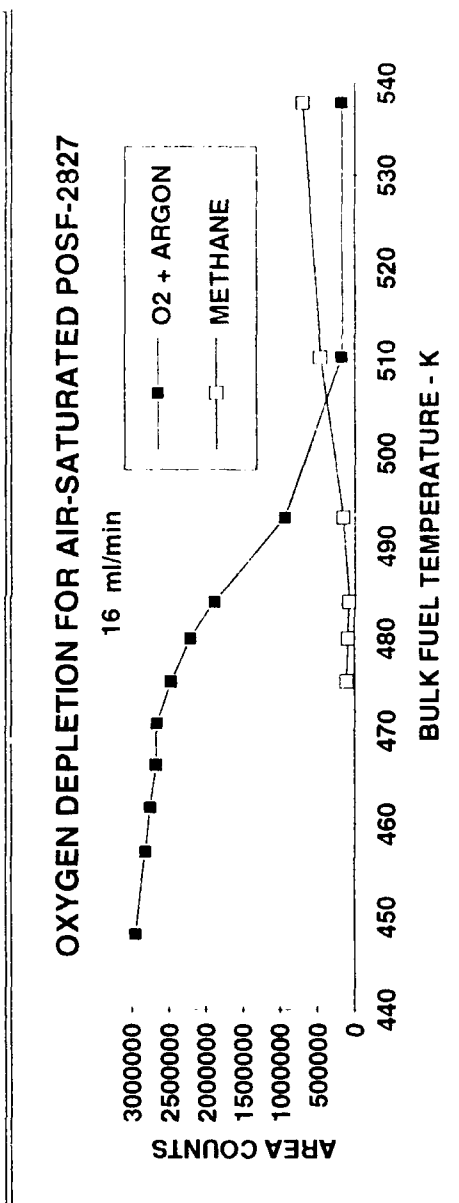
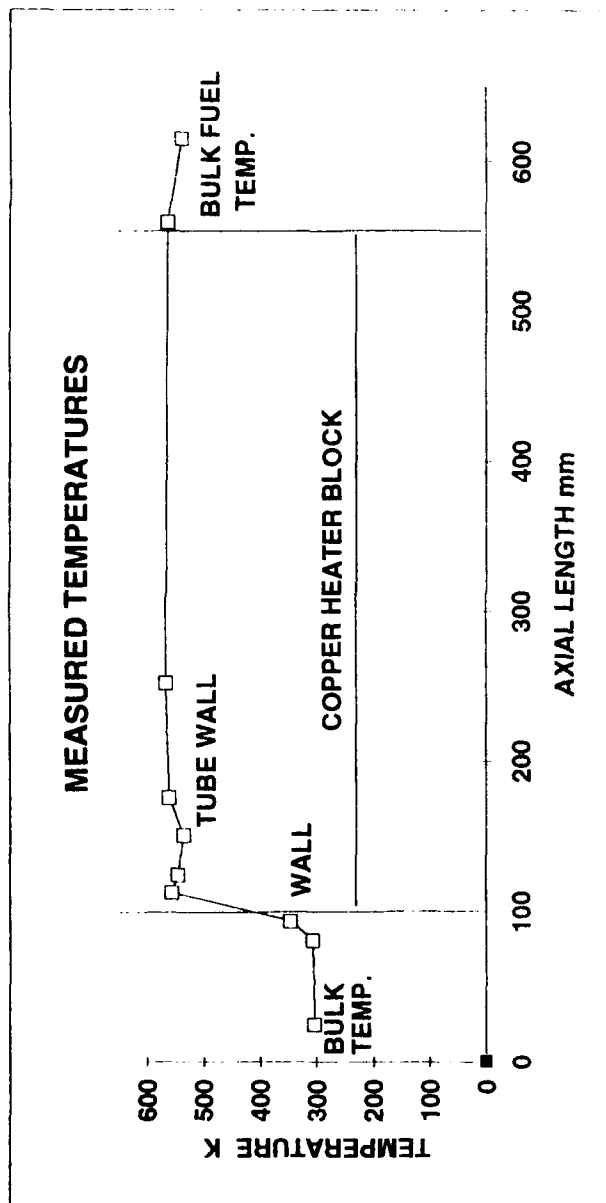
THERMOCOUPLES WELDED TO WALL AT SPECIFIED DISTANCES

HEATER BLOCK	UPSTREAM		LENGTH WITHIN COPPER BLOCK				DOWN STREAM		STREAM 3																																																										
	75 mm	19mm	6 mm	13 mm	25 mm	51 m	76 mm	152 mm		2.5 mm	58 mm																																																								
BULK	TC5 472 482 487 492 497 502 507 512 522 543 572	TUBE WALL			TC8 461 471 475 480 485 490 495 500 508 528 556	TC9 456 465 469 474 479 483 487 493 500 518 545	TC10 450 460 464 469 473 477 481 486 493 510 536	TC11 464 473 478 483 488 493 498 504 512 532 561	TC12 468 478 482 487 493 497 502 510 517 537 568	TUBE		AREA COUNTS																																																							
		TC15 302 302 302 302 302 302 303 302 303 302 303	TC6 305 304 304 304 304 305 306 306 306 306 307	TC13 464 474 479 484 489 493 499 505 513 533 563						TC16 448 457 462 466 471 475 480 484 493 498 504 512 532 561	OXYGEN		METHANE																																																						
														302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483																																																
																				302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483																																										
																										302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483																																				
																																302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483																														
																																						302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483																								
																																												302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483																		
																																																		302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483												
																																																								302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483						
																																																														302 302 302 302 302 302 303 302 303 302 303	305 304 304 304 304 305 306 306 306 306 307	464 473 478 483 488 493 498 504 512 532 561	468 478 482 487 493 497 502 510 517 537 568	464 474 479 484 489 493 499 505 513 533 563	2955741 2820678 2755046 2667680 2655328 2459901 2201402 1882744 947147 178559 179483

TC 13 IS DOWN STREAM OF BLOCK BY AMOUNT SHOWN

TC 6&7 ARE UPSTREAM OF BLOCK BY AMOUNT SHOWN

TC 8 TO 12 ARE INSIDE HEATER BLOCK



O3NVA2.XLS

7-Jul-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS OF THE THREE STREAMS

	AREA COUNTS	
	NITROGEN	OXYGEN
STREAM 1	5649539	2434053
STREAM 2	5674253	2476440
STREAM 3	6570912	2937994

TEMPERATURES K

BLOCK INLET OUTLET

TC5 TC15 TC16

AMBIENT 301

472 300 446

482 301 457

487 301 461

492 302 466

497 302 470

502 302 475

507 303 479

512 303 484

522 303 493

543 303 511

572 305 538

STREAM 3

AREA COUNTS

OXYGEN METHANE

2937994

2898141

2756448

2692378

2613898

2486229 16596

2316706 22329

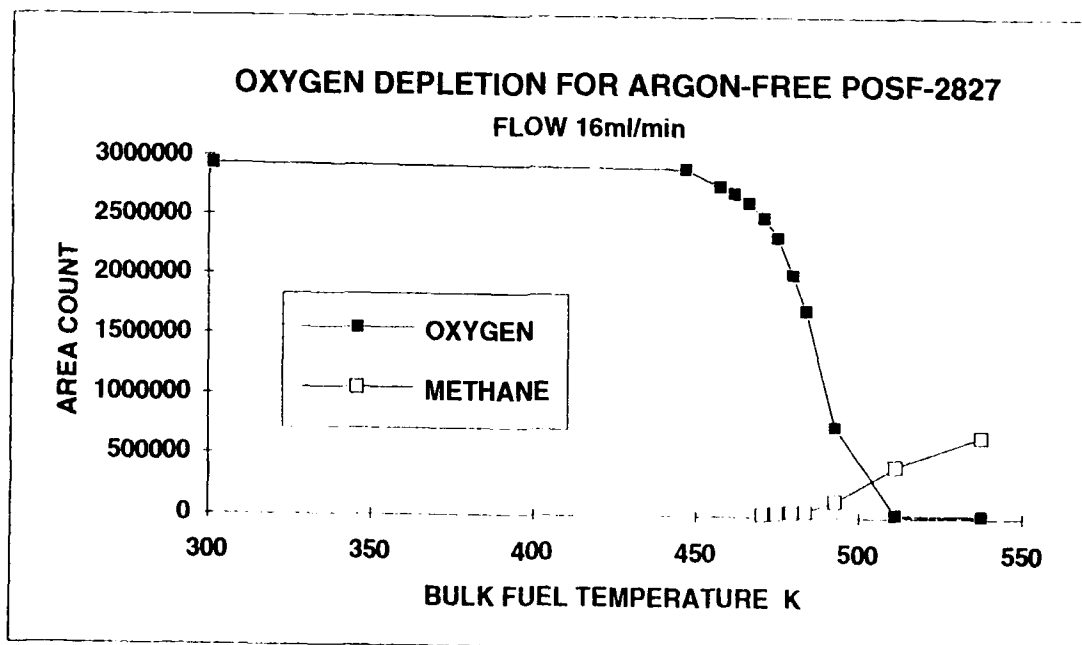
2007373 41983

1706823 45312

746151 126485

17141 417255

16469 666372



O3NVA3.XLS

13-Nov-91

OXYGEN CONSUMPTION TEST

FUEL

POSF-2827

FLOW RATE

16 ml/min

SPARGE GAS

N2 @ 900 CCM AND O2 @ 237 FOR 15 HOURS

NOTES:

(1) SUSPECTED DATA BIAS DUE TO PLUGGED SAMPLE LINE

(2) CONFIGURATION # 2 COPPER BLOCK HEATER

AMBIENT READINGS ON THE THREE STREAMS

	AREA COUNTS	
	NITROGEN	OXYGEN
STREAM 1	5579898	2503474
STREAM 2	5602771	2521880
STREAM 3	7009667	3064448

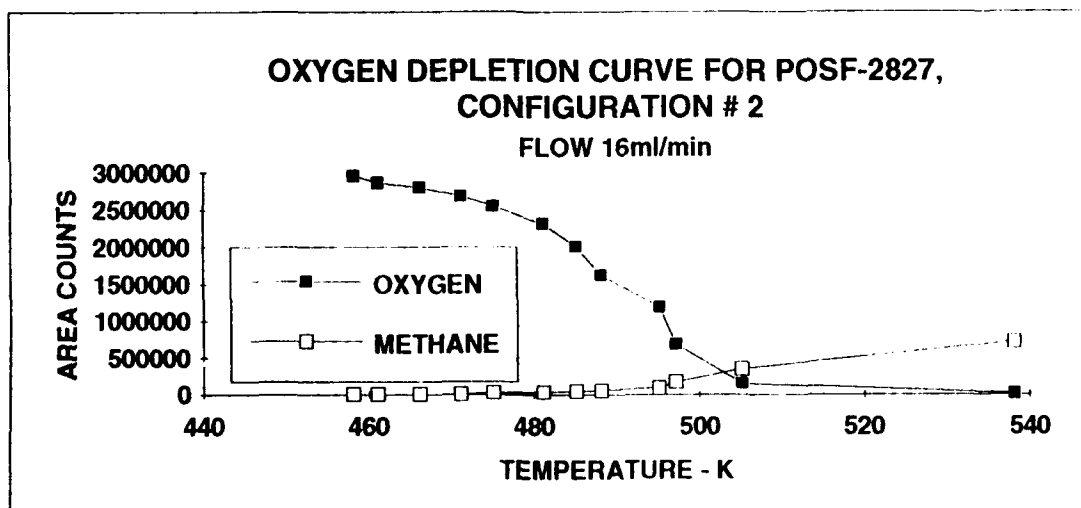
TEMPERATURES K

BLOCK OUTLET
TC5 TC16 C

STREAM 3

OXYGEN METHANE
AREA AREA

		3064448	
473	450	3063160	
483	458	2958784	
488	461	2858638	
493	466	2805094	
498	471	2687160	
503	475	2551816	20618
508	481	2314813	28532
513	485	2013146	41339
518	488	1626774	59202
523	495	1191270	89833
528	497	685391	164516
533	505	150971	353955
573	538	10845	721103



13-Dec-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827

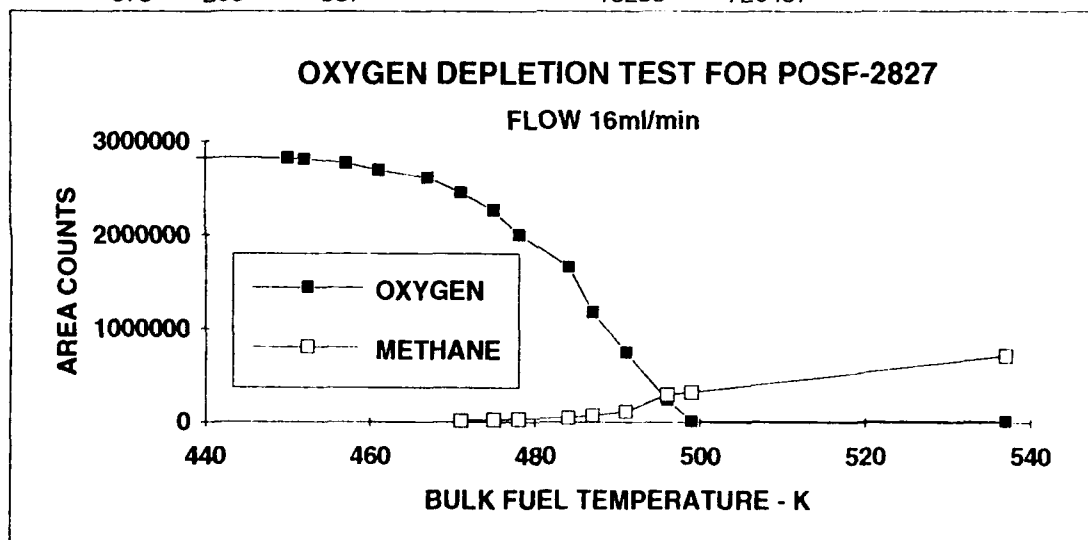
16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS

	AREA NITROGEN	AREA OXYGEN
STREAM 1	5333875	2362366
STREAM 2	5345619	2386968
STREAM 3	6412416	2894045

BLOCK	INLET	OUTLET	OXYGEN	METHANE
TC5	TC15	TC16 K	AREA	AREA
298	298	298	2894045	
473	298	450	2815317	
478	298	452	2804842	
483	298	457	2768210	
488	298	461	2688534	
493	298	467	2606918	
498	298	471	2452557	15594
503	298	475	2258048	21548
508	298	478	2004306	32229
513	298	484	1653032	48866
518	298	487	1172931	74587
523	298	491	742283	116379
528	298	496	234643	296545
533	298	499	12391	324085
573	298	537	13255	720457



BACK PRESSURE DEVICE CHANGED FLOW ON STREAM THREE FROM
1.3 ML/HR TO 5 ML/HR.

JET FUEL POSF-2827 OXYGEN CONSUMPTION TEST FOLLOWING INSTALLATION
OF NICKLE PLATED COPPER BLOCK

O3NVAV.XLS

OXYGEN CONSUMPTION TESTS

FUEL: POSF-2827

SETUP: GC SYSTEM SET UP WITH DOUBLE METERING VALVES
ON OUTLET.

SPARGE GAS: OXYGEN/NITROGEN FOR FLOW RATES OF 4, 8, & 16 ml/min
AIR (ARGON PRESENT) FOR FLOW RATES OF 32, 50, & 100 ml/min

DATE: 8-Apr-92 for 4, 8, & 16 ml/min

FLOW RATE: 4 ml/min

BLOCK	BULK	OXY %	OXYGEN	NITROGEN	METHANE
TEMPERATURE K			AREA COUNTS		
AMBIENT	303		3032533	6833802	
323	323	100.00	3032533	6833802	
423	409	98.99	3003582	6376944	
448	429	98.48	2988901	6405056	
453	431	99.55	3019698	6580435	
463	434	98.71	2995568	6526240	
473	448	96.12	2921330	6558768	
483	456	89.38	2728554	6444813	
488	460	83.17	2550750	6457341	19334
493	465	74.13	2291952	6414784	17815
498	470	60.47	1900892	6413584	32825
503	474	41.53	1358444	6396640	58649
508	478	20.39	753257	6384250	107120
513	485	2.88	251967	6378490	265994
518	489	0.02	169995	6350797	356508
573	530	0	169518	6332560	883322

FLOW RATE: 8 ml/min

BLOCK	BULK	OXY %	OXYGEN	NITROGEN	METHANE
323	323	99.96092	3031414	6560672	
473	458	98.08426	2977685	6503902	
483	467	94.90383	2886629	6586627	
488	470	92.43347	2815902	6482608	
493	477	89.30247	2726261	6584144	
498	480	83.9647	2573440	6589386	
503	485	76.75971	2367160	6868013	
508	489	65.77014	2052527	6519824	30628
513	492	51.06023	1631380	6485066	52035
518	499	35.87075	1196503	6515453	82734
523	502	20.07789	744351	6456253	216376
528	508	2.713608	247209	6519155	285450
573	549	0	169518	6469731	738259

(continued)

O3NVAV.XLS

FLOW RATE: 16 ml/min

BLOCK	BULK	OXY %	OXYGEN	NITROGEN	METHANE
AMBIENT	303		3161776	6885648	
AMBIENT	303		3128590	6832160	
AMBIENT	303		3113150	6638912	
	323	100	3113150	6655546	
	423	101.1963	3148366	6861933	
	448	100.2394	3120198	6805923	
	473	96.79009	3018662	6643258	
	483	94.40854	2948558	6577965	
	488	92.65041	2896805	6571117	
	493	91.61526	2866334	6576531	
	498	88.37361	2770912	6578234	
	503	86.20487	2707072	6573459	22017
	508	81.21029	2560050	6552973	16801
	513	76.20083	2412590	6531789	22973
	518	67.99298	2170981	6531971	34068
	523	59.33374	1916085	6538477	49389
	528	46.50921	1538578	6515840	74924
	533	34.15138	1174809	6527885	171563
	538	18.78346	722434	6504381	175630
	543	9.892575	460719	6499459	255399
	548	2.763729	250872	6474410	306825
	553	0.022421	170178	6453008	470370
	573	0.022421	164382	6481779	596411

DATE: Jun-92 for 32, 50, and 100 ml/min

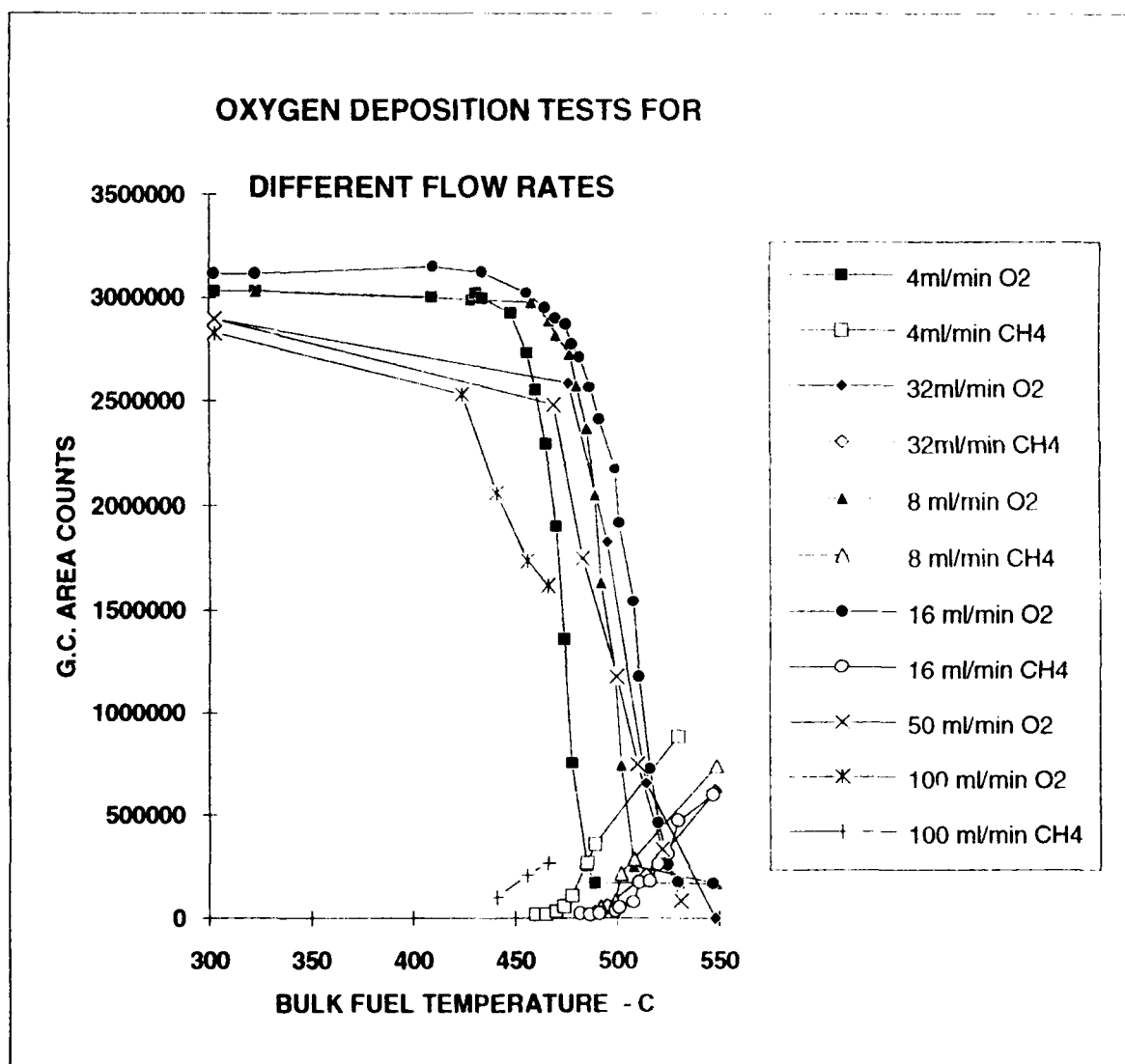
FLOW RATE: 32 ml/min

BLOCK	BULK	OXY %	OXYGEN	NITROGEN	METHANE
AMBIENT	303		2894829	6546413	
	523	476	2582498	6624333	
	548	495	1827385	6622163	60907
	573	514	653481	6515888	207974
	608	548	0	6487866	613613

FLOW RATE: 50 ml/min

BLOCK	BULK	OXY %	OXYGEN	NITROGEN	METHANE
AMBIENT	303		2894829	6546413	
	553	469	2481414	6491552	
	573	483	1748863	6391165	
	593	500	1176940	6396877	
	608	510	745987	6394797	
	623	522	332256	6387309	
	638	531	82865	6382435	

FLOW RATE:		100 ml/min			
BLOCK	BULK	OXY %	OXYGEN	NITROGEN	METHANE
AMBIENT	303		2828104	6432595	
573	424		2528504	6601005	
608	441		2058168	6572781	102676
638	456		1736499	6585869	207741
653	466		1619549	6557053	264734



O3OVAL.XLS

27-Nov-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

OSF-2827 PLUS 25 mg/l ANTIOXIDANT "B"

16 ml/min

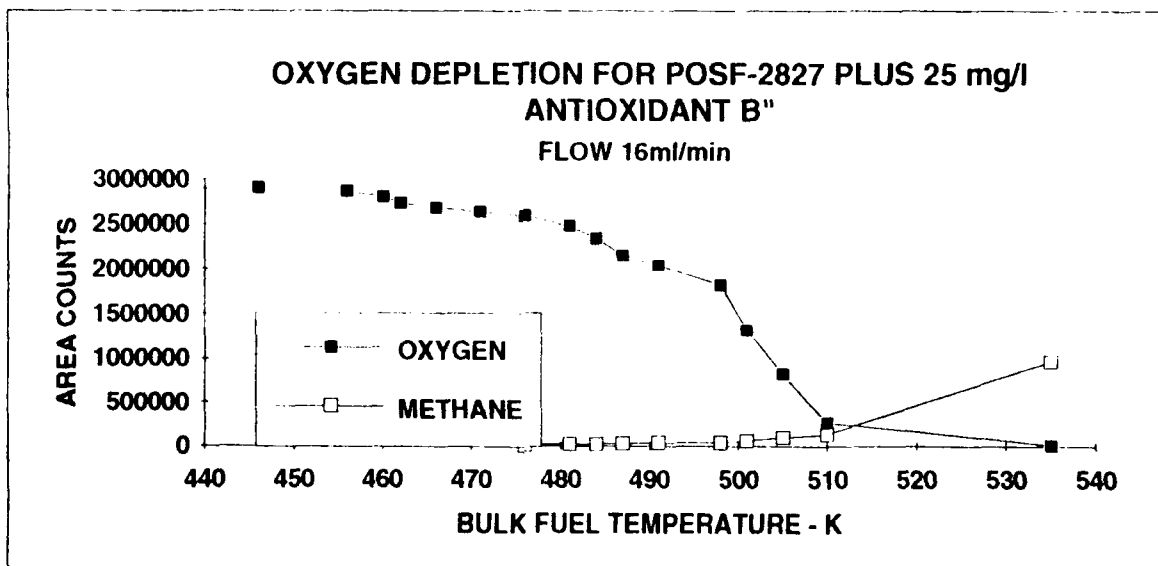
N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

AMBIENT READINGS ON THE THREE STREAMS

	OXYGEN	NITROGEN
STREAM 1	2671234	6019248
STREAM 2	2442694	5496896
STREAM 3	2928701	6643514

TEST WITH CONFIGURATION # 2 COPPER BLOCK

TEMPERATURE - K		AREA COUNTS	
BLOCK TC5	INLET OUTLET	OXYGEN	METHANE
292	292	2928701	
473	446	2897446	
483	456	2865790	
488	460	2808046	
493	462	2734432	
498	466	2683430	
503	471	2640022	
508	476	2595414	14966
513	481	2478805	18664
518	484	2345338	22200
523	487	2152589	28956
528	491	2046560	33848
533	498	1832537	41361
538	501	1317747	62120
543	505	826507	93787
548	510	265485	129243
573	535	14548	968360



O3TVA1.XLS

13-Sep-91

FUEL

FLOW RATE

SPARGE GAS

OXYGEN CONSUMPTION TEST

POSF-2827 PLUS 100 mg/l ANTIOXIDANT "A"

16 ml/min

N2 @ 900 CCM AND O2 @ 237 CCM FOR 15 HOURS

SAMPLE STREAM

AMBIENT READINGS

STREAM 1

STREAM 2

STREAM 3

AREA COUNTS

OXYGEN NITROGEN

2477118 5620157

2506854 5660778

2951928 6868176

TEST WITH CONFIGURATION # 1 COPPER BLOCK HEATER

TEMPERATURE - K

AREA COUNTS

BLOCK TC5 OUTLET TC16 OXYGEN METHANE

372 345 3005606

397 363 3028698

422 381 3037389

447 399 3021749

462 406 3009981

472 441 2985682

482 450 2917405

492 459 2818944

497 463 2758430

502 468 2652029

507 472 2527554

512 477 2324365

517 481 2083836

522 485 1737214 6707

527 490 1371724 20640

532 494 932573 51338

537 498 474810 99625

543 503 24749 215690

572 529 16091 550026

