MASTER

STUDY OF HYDROCARBON - SHALE INTERACTION

PROGRESS REPORT #11

October 1 - December 31, 1978

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Huntingdon, Pennsylvania 16652

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QUARTERLY PROGRESS REPORT

October 1 - December 31, 1978

Contract No. EY-76-S-05-5197

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1. Executive Summary.

Work was directed at collecting data, building the high pressure isotherm-degasibility apparatus, and modifying our earlier diffusion model for well production to include explicitly the effect of fracture resistance.

2. Technical Progress.

2.1 Task 1 - High Pressure

2.1.1 Current Status. Construction complete (January 3). Specifically:

- a) Valve-computer interface complete and checked out.
- b) Components mounted on heat exchanger plate.
- c) Plate mounted on an insulated backing attached to an equipment rack.
- d) Vacuum, gas, thermostatted water connections made.
- e) Transducer power supply and valve/computer interface installed.
- f) Insulation delayed until initial checkout complete.
- g) Initial checkout in progress.
- h) Software adaptation to be accomplished.

2.1.2 Problem Areas. Non-major. We are somewhat concerned that the solenoid valves may leak.

2.1.3 Plans

- a) Complete checkout.
- b) Adapt software.
- c) Make initial run.

2.2 Task 2 - Low Pressure Data.

2.2.1 Current Status. 219 data points submitted in Appendix B of this report. G.C. data on NY#1 and IND#3 submitted in Appendix E.

2.2.2 Problem Areas. None.

2.2.3 Continue data gathering at present rate, according to following priority scheme,

a) Complete prepared samples of 20403 well (~ 7).

b) IND#2 (3 samples) and NY#1 (33 samples).

2.3 Task 3 - Productivity Calculations.

2.3.1 Current Status. Report on two step model presented in Appendix C.

2.3.2 Problem Areas. None.

2.3.3 Plans. Continue work on 2 step model to include effects of fracture branching and effects of transient pressure testing.

2.4 Task 4 - Interpretation in Terms of Other Laboratory Data.

2.4.1 Current Status. Report on correlations of specific degasibilities and isotherm measurements with radioactivity data of Columbia Gas enclosed (Appendix D).

2.4.2 Problem Areas. None.

2.4.3 Plans. During summer of 1979 it is planned to continue some infrared work and possibly X-ray diffraction work with some samples which have been shown to exhibit unusual degasibility and isotherm parameters.

3. Financial Progress

(Note: This informal report will be superseded by formal monthly reports issued by our business office. The period of this report will be completely covered by January 31, 1979.)

Faculty Salaries

Paul Schettler	\$3,225.00
Dale Wampler	<u>600.00</u>

\$3,825.00

Student Salaries

235.61

Supplies and Equipment

1,320.62

Travel to DOE Symposia (Morgantown & Tulsa)

445.69

Indirect Costs @ 91.2% of Faculty Salaries

3,488.40

TOTAL \$9,315.32

APPENDICES

A. WORK SCHEDULES	A1
B. DATA SUMMARY	B1-B226
C. A TWO STEP MODEL FOR GAS PRODUCTION FROM LOW PERMEABILITY SHALES.	C1-C16
D. CORRELATION OF SPECIFIC DEGASIBILITIES AND ISOTHERM MEASUREMENTS WITH OTHER DATA	
E. GAS CHROMATOGRAPHIC ANALYSIS OF OFF-GASSING FROM NY#1 AND IND#3 WELLS	
F. REPORT ON EFFECT OF WATER AND AIR ON SPECIFIC DEGASIBILITIES AND ISOTHERM PARAMETERS.	

WORK SCHEDULES

Juniata College
Huntingdon, Pennsylvania 16652

WORK SCHEDULES

The data here is definitive from 1 October to 31 December, 1978.

Faculty

Paul Schettler

1/2 time academic year

full time for 1-1/2 weeks during Christmas and Thanksgiving breaks

Dale Wampler

full time for 1 week during Christmas and Thanksgiving break
(part-time as part of unreimbursed sabbatical activity)

Students

104 hours, plus about 60 hours by Jay Nelson as a Research Course (i.e., no pay)

DATA SUMMARY

Juniata College
Huntingdon, Pennsylvania 16652

Data Tables Explanation

Sample ID

This is ordinarily the identification on the can as received.

Gas

The gas used in the sorption experiment (methane, helium, or nitrogen).

Initials, Book, Page

Location of original data and sample description at Juniata.

Weight

Weighings are made on a Mettler H20 balance (sensitivity .01 mg) whose calibration is checked biennially.

Density

Determined by displacement of toluene using a pycnometer and the balance mentioned above.

Sample Temperature

0°C is regulated by an ice bath. The temperature for BET's is calculated from the variation of the boiling point of N₂ with barometric pressure.

Particle Size

Mean diameter as determined by sieving, e.g., .06 means 500-700 μ mesh.

Slope of Isotherm

This is determined by a least squares fit of a straight line through the data for several different units.

% Slope Uncertainty

Relative standard error associated with the slope as calculated from least squares.

Detailed Data (Isotherm and BET)

Pressure: Determined by Datametrics Barocel.

Adsorbed Gas: Method of obtaining described in ORO-1 and ORO-8.

Uncertainty %: Approximate percentage uncertainty to be associated with each point.

Flag: This parameter expresses the criteria for determining equilibrium.

0 - assumed value (after degassing).

1 - Final equilibrium reading constant. Uncertainty in reading less than .02 torr and drift observed less than uncertainty in drift (nominally 1 minute readings).

2 - Equilibrium reading shows drift in pressure of opposite sign to previous reading. This change in slope (pressure vs. time) is usually due to (minor) temperature fluctuation ($\sim \pm 0.001^\circ\text{C}$).

3 - point took more than 4 hours to obtain.

Flag Parameter: 0 if flag = 0 or 1. Pressure drift in torr/hr if flag = 2 or 3.

P_{initial}

Initial equilibrium pressure before the step change in pressure expressed in torr.

P_{equilibrium}

Final equilibrium pressure after the step change in pressure and after equilibrium has been reestablished (torr).

P₀

Pressure after the pressure jump but before diffusion occurs (torr).

Specific Degasibility

Amount of gas (volume STP) degassed from the sample per area of rock per torr of pressure per (sec)^{1/2}. $\text{cm}^3 \text{ gas/cm}^2 \text{ rock area/torr/(sec)}^{1/2}$.

Uncertainty in Specific Degasibility

Least squares estimate of error.

System d moles/dP

An apparatus parameter. The number of moles of gas necessary to change the system pressure by one torr.

Notes

Pages B27-B30 missing. A valve stuck, creating data of uncertain value.
The sample was rerun (file 23-2:16).

BET and N₂ diffusion data missing on COLGAS:WV12 due to operator error.

Page B172 missing. Bad data.

Pages B181-191 contain a double run on the same sample.

Conversions of COLGAS designations as follows (in order of presentation):

COLGAS:MK5	20336:2459
COLGAS:MK6	20336:3349
COLGAS:MK7	20336:2449
COLGAS:MK8	20336:3029
COLGAS:CN23	WARN:2675
COLGAS:CN24	WARN:2630
COLGAS:WV12	20338:5221
COLGAS:CN25	WARN:2660
COLGAS:WV9	20338:5451
COLGAS:WV10	20338:4921
COLGAS:WV11	20338:4971
COLGAS:CN26	WARN:1517

20336 Well - Martin Co., Ky.
20338 Well - Wise Co., W. Va.
Warn Well - Chatauqua Co., N.Y.

Date 10/ 2/1978

Sample ID : C336:2579

Gas : Methane

Initials : SAK

Book : 1

Page : 74

SAMPLE DATA

Weight : 4.8325 (grams)

Density : 2.644 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

4.60565E-04 Vol Gas/Vol Rock/Torr

2.38181E-02 Vol Gas/Vol rock/PSI

.350029 Vol Gas/Vol Rock/ATM

7.77145E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : .47114 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
232.046	1.89363E-06	1.49454	1	0
518.261	4.03003E-06	.995706	1	0
812.855	6.28587E-06	.783874	1	0
882.23	6.79557E-06	.838465	1	0

Date 10/ 2/1978

Sample ID : C336-2579

Gas : Helium

Initials : SAK

Book : 1

Page : 74

SAMPLE DATA

Weight : 4.8325 (grams)

Density : 2.644 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

5.90443E-05 Vol Gas/Vol Rock/Torr
3.05347E-03 Vol Gas/Vol rock/PSI
4.48736E-02 Vol Gas/Vol Rock/ATM
9.96298E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 3.55033 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS. GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
271.871	1.48202E-07	19.0751	1	0
536.766	4.53616E-07	8.82693	1	0
824.076	9.47222E-07	5.18558	1	0
889.628	9.79791E-07	5.79401	1	0

Date 10/ 2/1978

Sample ID : C336:2579

Gas : Nitrogen

Initials : SAK

Book : 1

Page : 74

SAMPLE DATA

Weight : 4.8325 (grams)

Density : 2.644 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 236.844

P equilibrium : 58.3926

P o : 34.6691

SPECIFIC DEGASIBILITY 1.58075E-05

UNCERTAINTY .205632 %

System d Moles/ dP 8.29609E-06

Date 10/ 2/1978

Sample ID : C336:2579

Gas : Methane

Initials : SAK

Book : 1

Page : 74

SAMPLE DATA

Weight : 4.8325 (grams)

Density : 2.644 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 882.243

P equilibrium : 207.09

P o : 204.678

SPECIFIC DEGASIBILITY $1.81586E-07$

UNCERTAINTY 2.93926 %

System d Moles/ dP $2.02353E-06$

Date 10/ 2/1978

Sample ID : C336-2579

Gas : Nitrogen

Initials : SAK

Book : 1

Page : 74

SAMPLE DATA

Weight : 4.8325 (grams)

Density : 2.644 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

1.52714E-04	Moles/Gram
5.77588E-05	Moles/ml.
9.0446	ml. gas/ml. rock
14.5308	Specific Area (sq. meters/gram)

UNCERTAINTY : 6.37236E-02 %

C : 722.016

UNCERTAINTY IN C : 6.37665E-02 %

BAROMETRIC PRESSURE 744.112 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
719493	6.32125E-05	.206513	1	0
44.3017	1.47563E-04	.125119	1	0
124.556	1.84096E-04	.122843	1	0
184.503	2.08192E-04	.125442	1	0
237.887	2.29024E-04	.127504	1	0

Date 10/ 3/1978

Sample ID : WV#5-EGSP:3030

Gas : Methane

Initials : PDS

Book : 1

Page : 75

SAMPLE DATA

Weight : 4.9754 (grams)

Density : 2.4289 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.10461E-04 Vol Gas/Vol Rock/Torr

.010884 Vol Gas/Vol rock/PSI

.15995 Vol Gas/Vol Rock/ATM

3.86576E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : .906194 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
240.016	8.2633E-07	3.31715	1	0
527.333	1.95323E-06	1.98978	1	0
821.811	3.26236E-06	1.46286	1	0
885.671	3.53172E-06	1.56259	1	0

Date 10/ 3/1978

Sample ID : WU#5-EGSP:3030

Gas : Helium

Initials : PDS

Book : 1

Page : 75

SAMPLE DATA

Weight : 4.9754 (grams)

Density : 2.4289 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.52565E-05 Vol Gas/Vol Rock/Torr
1.30614E-03 Vol Gas/Vol rock/PSI
1.91949E-02 Vol Gas/Vol Rock/ATM
4.63912E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 7.4641 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
243.382	-4.94169E-08	55.3792	1	0
534.275	1.09784E-07	35.3141	1	0
827.449	5.12935E-07	9.2729	1	0
890.462	5.98479E-07	9.18567	1	0

Date 10/ 3/1978

Sample ID : WV#5-EGSP:3030

Gas : Nitrogen

Initials : PDS

Book : 1

Page : 75

SAMPLE DATA

Weight : 4.9754 (grams)

Density : 2.4289 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 247.345

P equilibrium : 27.4383

P o : 27.2861

SPECIFIC DEGASIBILITY 1.05435E-07

UNCERTAINTY 6.61648 %

System d Moles/ dP 8.19429E-06

Date 10/3/1978

Sample ID : WV#5-EGSP:3030

Gas : Methane

Initials : PDS

Book : 1

Page : 75

SAMPLE DATA

Weight : 4.9754 (grams)

Density : 2.4289 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 884.698

P equilibrium : 189.484

P o : 185.267

SPECIFIC DEGASIBILITY 1.25516E-07

UNCERTAINTY .23855 %

System d Moles/ dP 1.98841E-06

Date 10/ 3/1978

Sample ID : WV#5-EGSP:3030

Gas : Nitrogen

Initials : PDS

Book : 1

Page : 75

SAMPLE DATA

Weight : 4.9754 (grams)

Density : 2.4289 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

2.25578E-05	Moles/Gram
9.28725E-06	Moles/ml.
1.22731	ml. gas/ml. rock
2.14637	Specific Area (sq.meters/gram)

UNCERTAINTY : 10.3265 %

C : 7.20938

 UNCERTAINTY IN C : 63.286 %
 BAROMETRIC PRESSURE 741.833 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
35.5194	6.6836E-06	1.89702	1	0
95.3202	1.26076E-05	1.42236	1	0
146.952	1.75106E-05	1.25438	1	0
196.007	2.21776E-05	1.14372	1	0
247.313	2.71396E-05	1.04502	1	0

Date 10/ 5/1978

Sample ID : 20403:3616.3

Gas : Methane

Initials : DLW

Book : 3

Page : 1

SAMPLE DATA

Weight : 5.48775 (grams)

Density : 2.684 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

1.83194E-04 Vol Gas/Vol Rock/Torr

9.47388E-03 Vol Gas/Vol rock/PSI

.139228 Vol Gas/Vol Rock/ATM

3.04511E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 1.05383 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
236.404	6.99924E-07	3.562	1	0
522.683	1.515E-06	2.33329	1	0
815.765	2.52413E-06	1.71963	1	0
882.759	2.75175E-06	1.82402	1	0

Date 10/ 5/1978

Sample ID : 20403.3616.3

Gas : Helium

Initials : DLW

Book : 3

Page : 1

SAMPLE DATA

Weight : 5.48775 (grams)

Density : 2.684 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

7.74563E-05 Vol Gas/Vol Rock/Torr

4.00565E-03 Vol Gas/Vol rock/PSI

5.88668E-02 Vol Gas/Vol Rock/ATM

1.2875E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 2.46285 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
242.513	2.86851E-07	8.67789	1	0
529.665	6.05565E-07	5.82319	1	0
820.038	1.12E-06	3.86261	1	0
887.02	1.18245E-06	4.22855	1	0

Date 10/ 5/1978

Sample ID : 20403:3616.3

Gas : Nitrogen

Initials : DLW

Book : 3

Page : 1

SAMPLE DATA

Weight : 5.48775 (grams)

Density : 2.684 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 243.1

P equilibrium : 38.619

P o : 32.2082

SPECIFIC DEGASIBILITY 1.68691E-06

UNCERTAINTY .106955 %

System d Moles/ dP 8.30956E-06

Date 10/ 5/1978

Sample ID : 20403:3616.3

Gas : Methane

Initials : DLW

Book : 3

Page : 1

SAMPLE DATA

Weight : 5.48775 (grams)

Density : 2.684 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 881.562

P equilibrium : 202.921

P o : 199.263

SPECIFIC DEGASIBILITY 1.17252E-07

UNCERTAINTY .373298 %

System d Moles/ dP 2.02889E-06

Date 10/ 5/1978

Sample ID : 20403:3616.3

Gas : Nitrogen

Initials : DLW

Book : 3

Page : 1

SAMPLE DATA

Weight : 5.48775 (grams)

Density : 2.684 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

4.06267E-05	Moles/Gram
1.51366E-05	Moles/ml.
2.44254	ml. gas/ml. rock
3.86563	Specific Area (sq.meters/gram)

UNCERTAINTY : .42788 %

C : 20.696

UNCERTAINTY IN C : 2.66665 %
BAROMETRIC PRESSURE 741.148 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
26.3528	1.90051E-05	.604814	1	0
89.8792	3.13194E-05	.519086	1	0
142.531	4.04282E-05	.492556	1	0
192.669	4.88706E-05	.470544	1	0
243.693	5.76421E-05	.446069	1	0

Date 10/ 5/1978

Sample ID : 20403:3321.3

Gas : Methane

Initials : PDS

Book : 3

Page : 2

SAMPLE DATA

Weight : 4.36125 (grams)

Density : 2.6527 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

1.19612E-04 Vol Gas/Vol Rock/Torr
6.18574E-03 Vol Gas/Vol rock/PSI
9.09053E-02 Vol Gas/Vol Rock/ATM
2.01169E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 2.0139 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
235.099	5.5575E-08	56.4718	1	0
519.595	7.94493E-07	5.60081	1	0
813.617	1.92356E-06	2.84057	1	0
882.482	2.17004E-06	2.91166	1	0

Date 10/ 5/1978

Sample ID : 20403:3321.3

Gas : Helium

Initials : PDS

Book : 3

Page : 2

SAMPLE DATA

Weight : 4.36125 (grams)

Density : 2.6527 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

1.74046E-05 Vol Gas/Vol Rock/Torr
9.00079E-04 Vol Gas/Vol rock/PSI
1.32275E-02 Vol Gas/Vol Rock/ATM
2.92718E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 13.6398 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
238.02	-4.85281E-08	64.5706	1	0
533.909	1.26525E-08	350.855	1	0
820.148	3.59396E-07	15.1533	1	0
886.093	4.13956E-07	15.2055	1	0

Date 10/ 5/1978

Sample ID : 20403:3321.3

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 2

SAMPLE DATA

Weight : 4.36125 (grams)

Density : 2.6527 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 212.855

P equilibrium : 88.4001

P o : 85.4731

SPECIFIC DEGASIBILITY 1.44601E-06

UNCERTAINTY 5.35628E-02 %

System d Moles/ dP 8.37863E-06

Date 10/ 5/1978

Sample ID : 20403:3321.3

Gas : Methane

Initials : PDS

Book : 3

Page : 2

SAMPLE DATA

Weight : 4.36125 (grams)

Density : 2.6527 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 881.362

P equilibrium : 202.194

P o : 199.714

SPECIFIC DEGASIBILITY 6.33568E-08

UNCERTAINTY .176503 %

System d Moles/ dP 2.03469E-06

Date 10/ 5/1978

Sample ID : 20403:3321.3

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 2

SAMPLE DATA

Weight : 4.36125 (grams)

Density : 2.6527 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

2.47651E-04 Moles/Gram
9.33592E-05 Moles/ml.
14.7156 ml. gas/ml. rock
23.564 Specific Area (sq.meters/gram)

UNCERTAINTY : .159626 %

C : 9.79277

UNCERTAINTY IN C : .170888 %
BAROMETRIC PRESSURE 737.902 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
14.0685	4.79406E-05	.301709	1	0
62.4501	.000113	.181038	1	0
113.771	1.74592E-04	.143518	1	0
165.665	2.35899E-04	.122663	1	0
216.028	2.93877E-04	.110094	1	0

Date 10/ 7/1978

Sample ID : 20403:3976.3

Gas : Methane

Initials : PDS

Book : 3

Page : 3

SAMPLE DATA

Weight : 3.73493 (grams)

Density : 2.50635 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

7.90721E-05 Vol Gas/Vol Rock/Torr
4.08921E-03 Vol Gas/Vol rock/PSI
6.00948E-02 Vol Gas/Vol Rock/ATM
1.40752E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 3.344 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
235.901	2.41438E-07	15.1788	1	0
525.365	6.13911E-07	8.46421	1	0
817.762	1.22003E-06	5.22985	2	2.74887
883.784	1.40705E-06	5.24377	1	0

Date 10/ 7/1978

Sample ID : 20403:3976.3

Gas : Helium

Initials : PDS

Book : 3

Page : 3

SAMPLE DATA

Weight : 3.73493 (grams)

Density : 2.50635 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.12363E-05 Vol Gas/Vol Rock/Torr
1.09823E-03 Vol Gas/Vol rock/PSI
1.61396E-02 Vol Gas/Vol Rock/ATM
3.78016E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 12.3367 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
240.696	9.10145E-09	402.029	1	0
529.847	4.59436E-08	112.823	1	0
820.66	4.12619E-07	15.4118	1	0
886.607	4.83686E-07	15.1955	1	0

Date 10/ 7/1978

Sample ID : 20403:3976.3

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 3

SAMPLE DATA

Weight : 3.73493 (grams)

Density : 2.50635 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 247.476

P equilibrium : 31.3332

P o : 31.1148

SPECIFIC DEGASIBILITY 1.47937E-07

UNCERTAINTY 1.10862 %

System d Moles/ dP 8.34659E-06

Date 10/ 7/1978

Sample ID : 20403:3976.3

Gas : Methane

Initials : PDS

Book : 3

Page : 3

SAMPLE DATA

Weight : 3.73493 (grams)

Density : 2.50635 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 881.468

P equilibrium : 201.149

P o : 200.068

SPECIFIC DEGASIBILITY 2.58939E-08

UNCERTAINTY .255614 %

System d Moles/ dP 2.03469E-06

Date 10/ 7/1978

Sample ID : 20403:3976.3

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 3

SAMPLE DATA

Weight : 3.73493 (grams)

Density : 2.50635 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

3.99228E-05 Moles/Gram
1.59287E-05 Moles/ml.
2.24136 ml. gas/ml. rock
3.79866 Specific Area (sq.meters/gram)

UNCERTAINTY : 10.1334 %

C : 5.19152

UNCERTAINTY IN C : 41.8645 %
BAROMETRIC PRESSURE 740.319 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
35.4959	9.18654E-06	1.83852	1	0
93.3225	1.88088E-05	1.27004	1	0
144.544	2.71172E-05	1.07899	1	0
196.437	3.55512E-05	.950427	1	0
246.816	4.38067E-05	.862433	1	0

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Date 10/ 9/1978

Sample ID : COLGAS MK5

Gas : Methane

Initials : PDS

Book : 3

Page : 5

SAMPLE DATA

Weight : 4.52096 (grams)

Density : 2.4538 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.2679E-04 Vol Gas/Vol Rock/Torr

1.17284E-02 Vol Gas/Vol rock/PSI

.172361 Vol Gas/Vol Rock/ATM

4.12342E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : .940733 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
238.567	9.61201E-07	3.14584	1	0
527.107	2.05836E-06	2.08292	1	0
816.647	3.407E-06	1.54519	1	0
883.338	3.75653E-06	1.62054	1	0

Date 10/ 9/1978

Sample ID : COLGAS MK5

Gas : Helium

Initials : PDS

Book : 3

Page : 5

SAMPLE DATA

Weight : 4.52096 (grams)

Density : 2.4538 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

6.48499E-05 Vol Gas/Vol Rock/Torr
3.35371E-03 Vol Gas/Vol rock/PSI
4.92859E-02 Vol Gas/Vol Rock/ATM
1.17908E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 3.25162 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
240.24	2.07083E-07	14.5781	1	0
534.75	5.10265E-07	8.38154	1	0
823.105	1.07218E-06	4.8936	1	0
888.263	1.15016E-06	5.27253	1	0

Date 10/ 9/1978

Sample ID : COLGAS:MK5

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 5

SAMPLE DATA

Weight : 4.52096 (grams)

Density : 2.4538 (gm/cc)

Sample/Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 244.795

P equilibrium : 30.1365

P o : 30.0241

SPECIFIC DEGASIBILITY 7.3683E-08

UNCERTAINTY 2.95179 %

System d Moles/ dP 8.28432E-06

Date 10/ 9/1978

Sample ID : COLGAS MK5

Gas : Methane

Initials : PDS

Book : 3

Page : 5

SAMPLE DATA

Weight : 4.52096 (grams)

Density : 2.4538 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 875.522

P equilibrium : 198.327

P o : 194.373

SPECIFIC DEGASIBILITY 8.22581E-08

UNCERTAINTY 6.81704E-02 %

System d Moles/ dP 2.01908E-06

Date 10/ 9/1978

Sample ID : COLGAS MK5

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 5

SAMPLE DATA

Weight : 4.52096 (grams)

Density : 2.4538 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

2.98492E-05 Moles/Gram

1.21645E-05 Moles/ml.

1.64067 ml. gas/ml. rock

2.84015 Specific Area (sq.meters/gram)

UNCERTAINTY : 8.72086 %

C : 6.22465

UNCERTAINTY IN C : 44.7716 %

BAROMETRIC PRESSURE 749.802 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
35.1697	7.81826E-06	1.78463	1	0
94.0224	1.52628E-05	1.29296	1	0
145.223	2.15913E-05	1.1195	1	0
195.813	2.786E-05	1.00191	1	0
244.786	3.39841E-05	.918393	1	0

Date 10/11/1978

Sample ID : 20403-2916.3-1

Gas : Methane

Initials : PDS

Book : 3

Page : 9

SAMPLE DATA

Weight : 5.00745 (grams)

Density : 2.69668 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.09164E-04 Vol Gas/Vol Rock/Torr

1.08169E-02 Vol Gas/Vol rock/PSI

.158965 Vol Gas/Vol Rock/ATM

3.46043E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 1.01127 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
236.555	7.64315E-07	3.57072	1	0
524.997	1.7845E-06	2.16849	1	0
819.737	2.8981E-06	1.63959	1	0
885.627	3.08586E-06	1.78062	1	0

Date 10/11/1978

Sample ID : 20403-2916.3-I

Gas : Helium

Initials : PDS

Book : 3

Page : 9

SAMPLE DATA

Weight : 5.00745 (grams)

Density : 2.69668 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

5.27683E-05 Vol Gas/Vol Rock/Torr
2.72891E-03 Vol Gas/Vol rock/PSI
4.01039E-02 Vol Gas/Vol Rock/ATM
8.73005E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 3.95985 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
243.004	1.80826E-07	15.0694	1	0
533.425	3.65744E-07	10.5546	1	0
824.268	7.88726E-07	6.00447	1	0
888.314	8.45034E-07	6.47744	1	0

Date 10/11/1978

Sample ID : 20403:2916.3-I

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 9

SAMPLE DATA

Weight : 5.00745 (grams)

Density : 2.69668 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 244.029

P equilibrium : 39.0976

P o : 34.0112

SPECIFIC DEGASIBILITY 2.84047E-06

UNCERTAINTY .578692 %

System d Moles/ dP 8.27311E-06

Date 10/11/1978

Sample ID : 20403:2916.3-I

Gas : Methane

Initials : PDS

Book : 3

Page : 9

SAMPLE DATA

Weight : 5.00745 (grams)

Density : 2.69668 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 885.515

P equilibrium : 197.894

P o : 195.346

SPECIFIC DEGASIBILITY 1.84342E-07

UNCERTAINTY 1.62881 %

System d Moles/ dP 2.01311E-06

Date 10/11/1978

Sample ID : 20403:2916.3-1

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 9

SAMPLE DATA

Weight : 5.00745 (grams)

Density : 2.69668 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

5.59072E-05	Moles/Gram
2.07319E-05	Moles/ml.
3.37711	ml. gas/ml. rock
5.31957	Specific Area (sq.meters/gram)

UNCERTAINTY : .206392 %

C : 81.4211

 UNCERTAINTY IN C : .550491 %
 BAROMETRIC PRESSURE 742.673 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
16.4856	3.7523E-05	.335812	1	0
86.8529	5.43381E-05	.327983	1	0
143.023	6.51386E-05	.335124	1	0
192.972	7.46458E-05	.337714	1	0
244.245	8.41766E-05	.334855	1	0

Date 10/12/1978

Sample ID : COLGAS:MK6

Gas : Methane

Initials : PDS

Book : 3

Page : 6

SAMPLE DATA

Weight : 4.84144 (grams)

Density : 2.5539 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

3.02883E-04 Vol Gas/Vol Rock/Torr

1.56636E-02 Vol Gas/Vol rock/PSI

.230191 Vol Gas/Vol Rock/ATM

5.29108E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : .692749 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
235.993	8.42221E-07	3.36143	1	0
516.553	2.58077E-06	1.5553	1	0
810.145	4.53408E-06	1.08702	1	0
881.132	4.97903E-06	1.14466	1	0

Date 10/12/1978

Sample ID : COLGAS:MK6

Gas : Helium

Initials : PDS

Book : 3

Page : 6

SAMPLE DATA

Weight : 4.84144 (grams)

Density : 2.5539 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

5.68739E-05 Vol Gas/Vol Rock/Torr
2.94123E-03 Vol Gas/Vol rock/PSI
4.32242E-02 Vol Gas/Vol Rock/ATM
9.93533E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 3.62852 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
241.225	2.06456E-07	13.6912	1	0
528.397	4.24404E-07	9.43488	1	0
819.19	8.89062E-07	5.52534	1	0
887.579	9.45954E-07	6.00203	1	0

Date 10/12/1978

Sample ID : COLGAS MK6

Gas : Methane

Initials : PDS

Book : 3

Page : 6

SAMPLE DATA

Weight : 4.84144 (grams)

Density : 2.5539 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 980.28

P equilibrium : 210.12

P o : 204.373

SPECIFIC DEGASIBILITY 1.84061E-07

UNCERTAINTY .301617 %

System d Moles/ dP 2.04633E-06

Date 10/13/1978

Sample ID : COLGAS MK7

Gas : Methane

Initials : PDS

Book : 3

Page : 7

SAMPLE DATA

Weight : 4.67097 (grams)

Density : 2.42382 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

1.85325E-04 Vol Gas/Vol Rock/Torr

9.58408E-03 Vol Gas/Vol rock/PSI

.140847 Vol Gas/Vol Rock/ATM

3.4112E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 1.1045 %

DETAILED DATA 4 POINTS TAKEN.

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
237.601	6.80253E-07	4.30729	1	0
522.547	1.63601E-06	2.53933	1	0
816.643	2.84842E-06	1.79089	1	0
883.269	3.25227E-06	1.81376	1	0

Date 10/13/1978

Sample ID : COLGAS:MK7

Gas : Helium

Initials : PDS

Book : 3

Page : 7

SAMPLE DATA

Weight : 4.67097 (grams)

Density : 2.42382 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

3.73628E-05 Vol Gas/Vol Rock/Torr
1.93221E-03 Vol Gas/Vol rock/PSI
2.83957E-02 Vol Gas/Vol Rock/ATM
6.8772E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 5.42412 %

DETAILED DATA 4 PRINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
238.543	9.5356E-08	30.6775	1	0
528.06	2.37119E-07	17.4768	1	0
821.803	6.68489E-07	7.60532	1	0
888.249	7.08266E-07	8.2965	1	0

Date 10/13/1978

Sample ID : COLGAS MK7

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 7

SAMPLE DATA

Weight : 4.67097 (grams)

Density : 2.42382 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 246.261

P equilibrium : 30.5431

P o : 30.4477

SPECIFIC DEGASIBILITY 5.3041E-08

UNCERTAINTY 35.1559 %

System d Moles/ dP 7.87979E-06

Date 10/13/1978

Sample ID : COLGAS MK7

Gas : Methane

Initials : PDS

Book : 3

Page : 7

SAMPLE DATA

Weight : 4.67097 (grams)

Density : 2.42382 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 874.57

P equilibrium : 201.73

P o : 196.629

SPECIFIC DEGASIBILITY 7.01948E-08

UNCERTAINTY 9.21021E-02 %

System d Moles/ dP 2.02873E-06

Date 10/13/1978

Sample ID : COLGAS:MK7

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 7

SAMPLE DATA

Weight : 4.67097 (grams)

Density : 2.42382 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

2.89058E-05	Moles/Gram
1.19257E-05	Moles/ml.
1.5694	ml. gas/ml. rock
2.75038	Specific Area (sq.meters/gram)

UNCERTAINTY : 9.4826 %

C : 6.00063

UNCERTAINTY IN C : 46.6982 %

BAROMETRIC PRESSURE 739.884 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
34.9933	7.37576E-06	1.8318	1	0
93.9795	1.47463E-05	1.29587	1	0
145.389	2.09171E-05	1.119	1	0
195.411	2.68978E-05	1.0049	1	0
246.305	3.30543E-05	.91433	1	0

Date 10/24/1978

Sample ID : COLGAS MK8

Gas : Methane

Initials : PDS

Book : 3

Page : 8

SAMPLE DATA

Weight : 5.89214 (grams)

Density : 2.4918 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

1.36552E-04 Vol Gas/Vol Rock/Torr

7.06178E-03 Vol Gas/Vol rock/PSI

.10378 Vol Gas/Vol Rock/ATM

2.44488E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 1.25762 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
225.697	2.85736E-07	8.19857	1	0
508.771	1.12485E-06	2.9528	1	0
799.897	2.10471E-06	1.9377	1	0
876.737	2.37851E-06	1.98276	1	0

Date 10/24/1978

Sample ID : COLGAS:MKS

Gas : Helium

Initials : PDS

Book : 3

Page : 8

SAMPLE DATA

Weight : 5.89214 (grams)

Density : 2.4918 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.84731E-05 Vol Gas/Vol Rock/Torr
1.47248E-03 Vol Gas/Vol rock/PSI
2.16396E-02 Vol Gas/Vol Rock/ATM
5.09794E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 5.96433 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
230.527	4.12541E-08	56.6986	1	0
514.565	1.45812E-07	22.7239	1	0
804.392	4.82879E-07	8.41783	1	0
881.094	5.77676E-07	8.13262	1	0

Date 10/24/1978

Sample ID : COLGAS:MK8

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 8

SAMPLE DATA

Weight : 5.89214 (grams)

Density : 2.4918 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 243.978

P equilibrium : 38.4839

P o : 38.3255

SPECIFIC DEGASIBILITY 6.44059E-08

UNCERTAINTY 1.75162 %

System d Moles/ dP 8.66386E-06

Date 10/24/1978

Sample ID : COLGAS MK8

Gas : Methane

Initials : PDS

Book : 3

Page : 8

SAMPLE DATA

Weight : 5.89214 (grams)

Density : 2.4918 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 875.679

P equilibrium : 227.65

P o : 225.24

SPECIFIC DEGASIBILITY 5.65379E-08

UNCERTAINTY .246051 %

System d Moles/ dP 2.11895E-06

Date 10/24/1978

Sample ID : COLGAS MK8

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 8

SAMPLE DATA

Weight : 5.89214 (grams)

Density : 2.4918 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

3.36104E-05	Moles/Gram
1.34884E-05	Moles/ml.
1.87601	ml gas/ml. rock
3.19803	Specific Area (sq. meters/gram)

UNCERTAINTY : 4.79775 %

C : 5.11179

UNCERTAINTY IN C : 18.9395 %
BAROMETRIC PRESSURE 741.865 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
33.7103	7.30815E-06	1.4666	1	0
92.0499	1.54924E-05	.978502	1	0
143.892	2.25676E-05	.822774	1	0
193.099	2.92933E-05	.731989	1	0
244.433	3.63218E-05	.660084	1	0

Date 10/19/1978

Sample ID : 20403:3876.3

Gas : Methane

Initials : PDS

Book : 3

Page : 14

SAMPLE DATA

Weight : 4.2758 (grams)

Density : 2.71456 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.06015E-04 Vol Gas/Vol Rock/Torr

.010654 Vol Gas/Vol rock/PSI

.156571 Vol Gas/Vol Rock/ATM

3.38588E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 1.21194 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
239.262	5.24002E-07	6.10034	1	0
523.959	1.64661E-06	2.7525	1	0
817.624	2.94014E-06	1.89286	1	0
883.231	3.24448E-06	1.98351	1	0

Date 10/19/1978

Sample ID : 20403:3876.3

Gas : Helium

Initials : PDS

Book : 3

Page : 14

SAMPLE DATA

Weight : 4.2758 (grams)

Density : 2.71456 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

4.90079E-05 Vol Gas/Vol Rock/Torr

2.53444E-03 Vol Gas/Vol rock/PSI

.037246 Vol Gas/Vol Rock/ATM

8.05452E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 5.03725 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
240.129	5.98984E-10	5327.99	1	0
532.684	2.72974E-07	16.5626	1	0
823.411	8.02312E-07	6.91334	1	0
887.541	9.41331E-07	6.81031	1	0

Date 10/19/1978

Sample ID : 20403:3876.3

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 14

SAMPLE DATA

Weight : 4.2758 (grams)

Density : 2.71456 (gm/cc)

Sample Temp : -196 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 239.906

P equilibrium : 46.4906

P o : 31.9728

SPECIFIC DEGASIBILITY 1.3483E-05

UNCERTAINTY .332408 %

System d Moles/ dP 8.29355E-06

Date 10/19/1978

Sample ID : 20403:3876.3

Gas : Methane

Initials : PDS

Book : 3

Page : 14

SAMPLE DATA

Weight : 4.2758 (grams)

Density : 2.71456 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

P initial : 882.645

P equilibrium : 197.802

P o : 197.314

SPECIFIC DEGASIBILITY 2.30703E-08

UNCERTAINTY 1.26639 %

System d Moles/ dP 2.01455E-06

Date 10/19/1978

Sample ID : 20403:3876.3

Gas : Nitrogen

Initials : PDS

Book : 3

Page : 14

SAMPLE DATA

Weight : 4.2758 (grams)

Density : 2.71456 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

INTERNAL AREA

8.8728E-05	Moles/Gram
3.2686E-05	Moles/ml.
5.39521	ml. gas/ml. rock
8.44247	Specific Area (sq.meters/gram)

UNCERTAINTY : .136174 %

C : 139.48

UNCERTAINTY IN C : .172394 %

BAROMETRIC PRESSURE 743.195 mm Hg

DETAILED DATA 5 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
8.6986	5.64505E-05	.261392	1	0
81.0554	8.69739E-05	.239958	1	0
139.632	1.04461E-04	.244713	1	0
191.483	1.20085E-04	.245829	1	0
240.532	1.35638E-04	.243353	1	0

Date 10/21/1978

Sample ID : COLGAS:CN23

Gas : Methane

Initials : PDS

Book : 3

Page : 15

SAMPLE DATA

Weight : 5.73476 (grams)

Density : 2.6773 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

1.72939E-04 Vol Gas/Vol Rock/Torr

8.94355E-03 Vol Gas/Vol rock/PSI

.131434 Vol Gas/Vol Rock/ATM

2.88184E-09 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 1.05694 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
238.597	6.38961E-07	3.72639	1	0
526.308	1.4305E-06	2.36003	1	0
821.311	2.41249E-06	1.71837	1	0
886.379	2.65422E-06	1.8061	1	0

Date 10/21/1978

Sample ID : COLGAS:CN23

Gas : Helium

Initials : PDS

Book : 3

Page : 15

SAMPLE DATA

Weight : 5.73476 (grams)

Density : 2.6773 (gm/cc)

Sample Temp : 0 (cent)

Particle Size : .085 (cm)

DATA COLLECTED

SLOPE OF ISOTHERM

2.93532E-05 Vol Gas/Vol Rock/Torr

.001518 Vol Gas/Vol rock/PSI

2.23085E-02 Vol Gas/Vol Rock/ATM

4.89138E-10 Moles Gas/Gram Rock/Torr

UNCERTAINTY : 6.12916 %

DETAILED DATA 4 POINTS TAKEN

PRESSURE Torr	ADS GAS Moles/Gram	UNCERTAINTY %	FLAG	FLAG Parameter
0	0	0	0	0
243.404	7.81142E-08	30.4333	1	0
541.622	1.87571E-07	17.9555	1	0
827.867	4.62392E-07	8.93579	1	0
890.448	5.03966E-07	9.47583	1	0