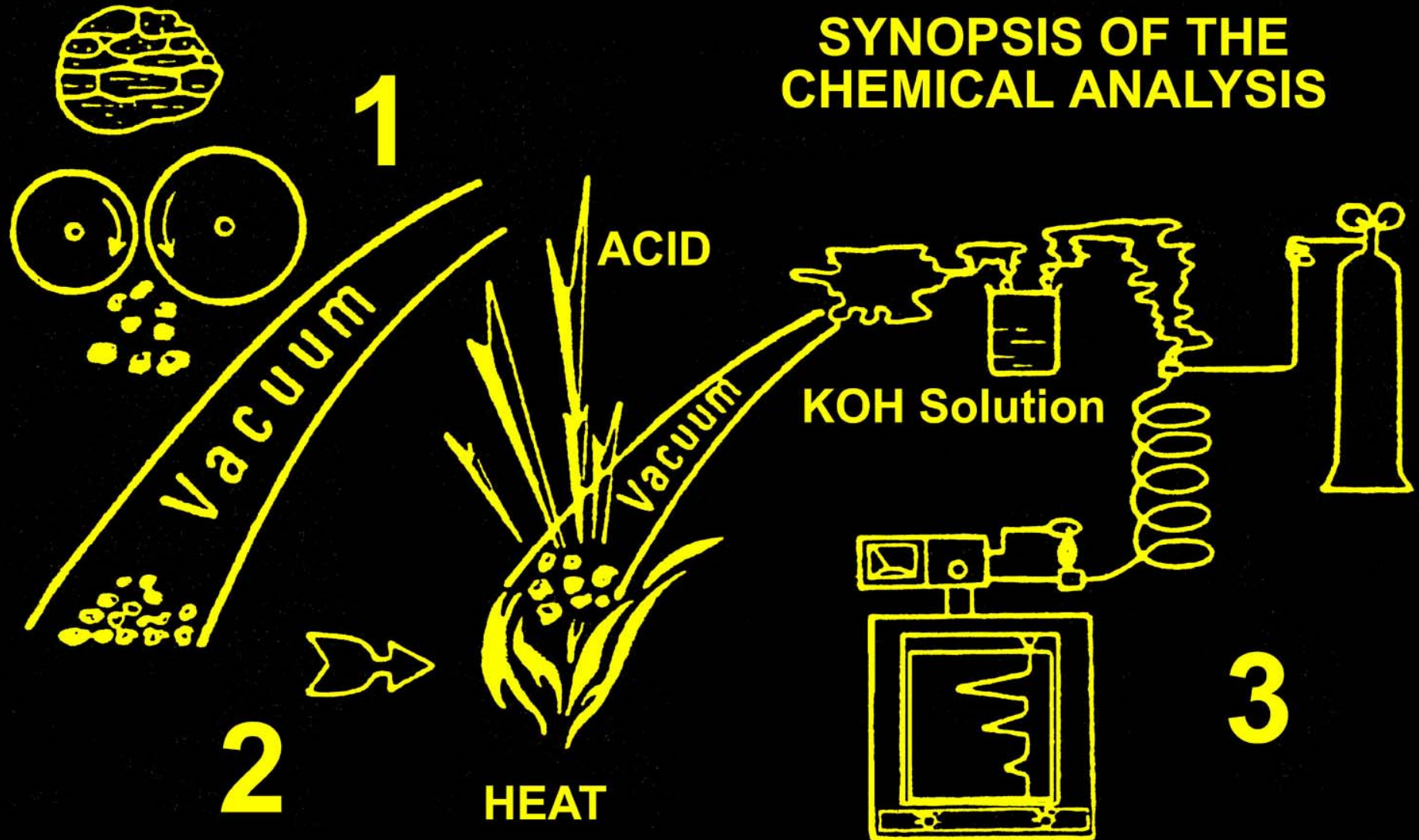


SYNOPSIS OF THE CHEMICAL ANALYSIS



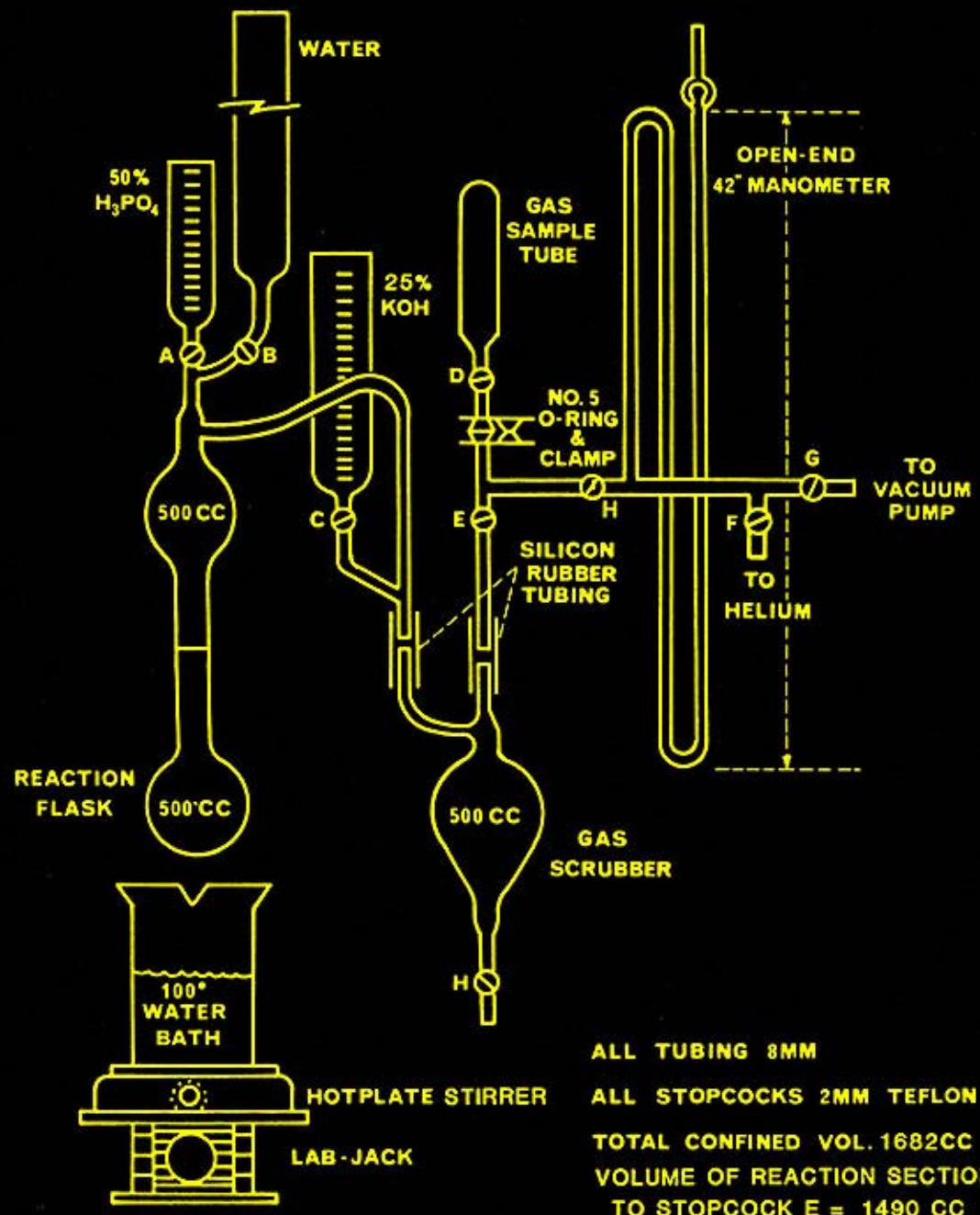
1. SLIGHT CRUSHING AND VACUUM REMOVES FREE GAS FROM THE PORES;
2. ACID + HEAT + VACUUM EXTRACTS THE RETAINED GAS FROM THE SEDIMENT COMPONENTS (DESORPTION);
3. GAS IS ANALYZED WITH A FLAME-IONIZATION CHROMATOGRAPH

Free Gases (In-Situ)

Interstitial (Headspace)

**Disaggregation (Blender)
(Ball Mill)**

Acid-Extraction (Horvitz)



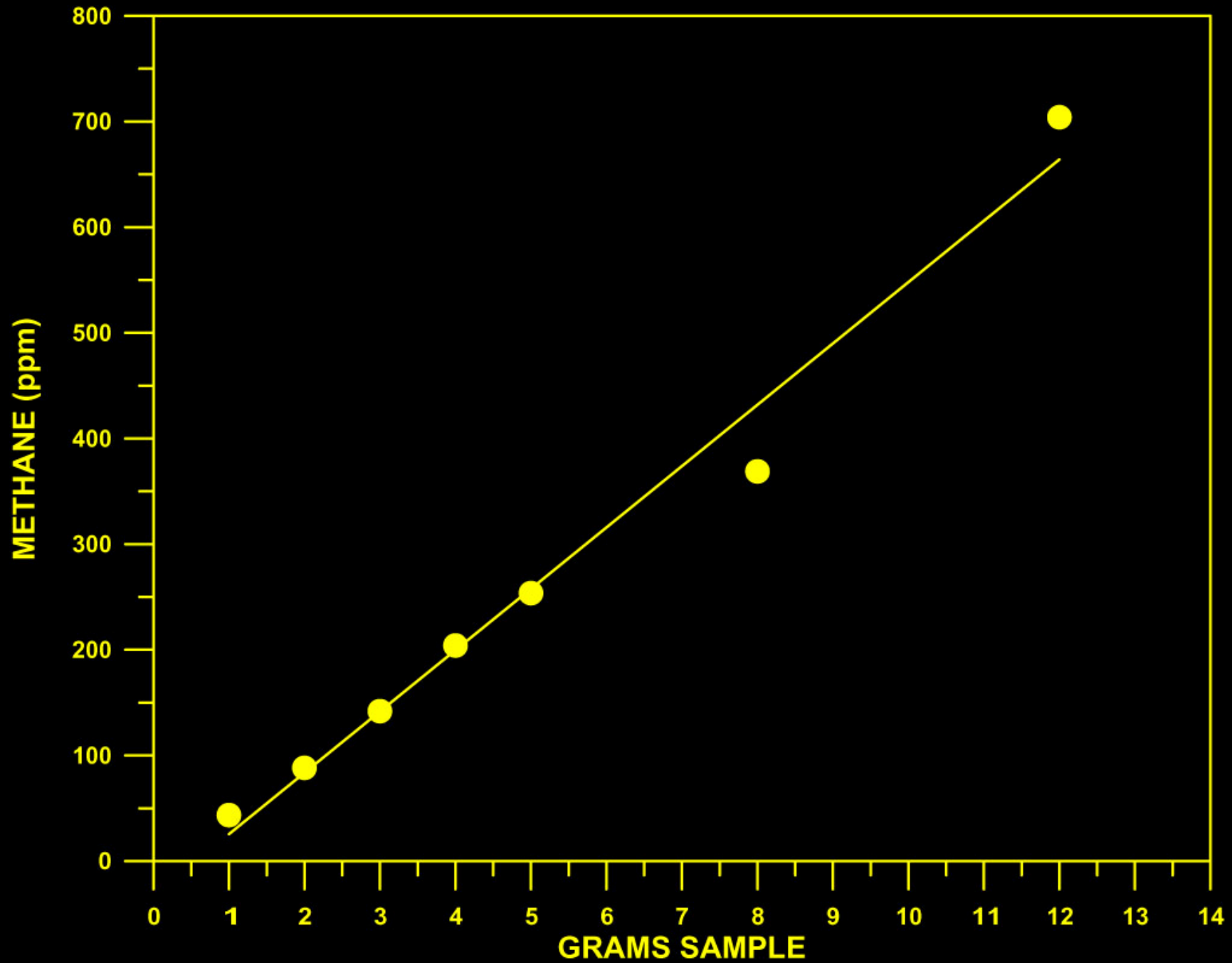
ADSORBED GAS ANALYSIS

FUNCTIONAL RELATIONSHIP BETWEEN AMOUNT OF SAMPLE TAKEN FOR ANALYSIS AND MEASURED MAGNITUDE OF ADSORBED GASES

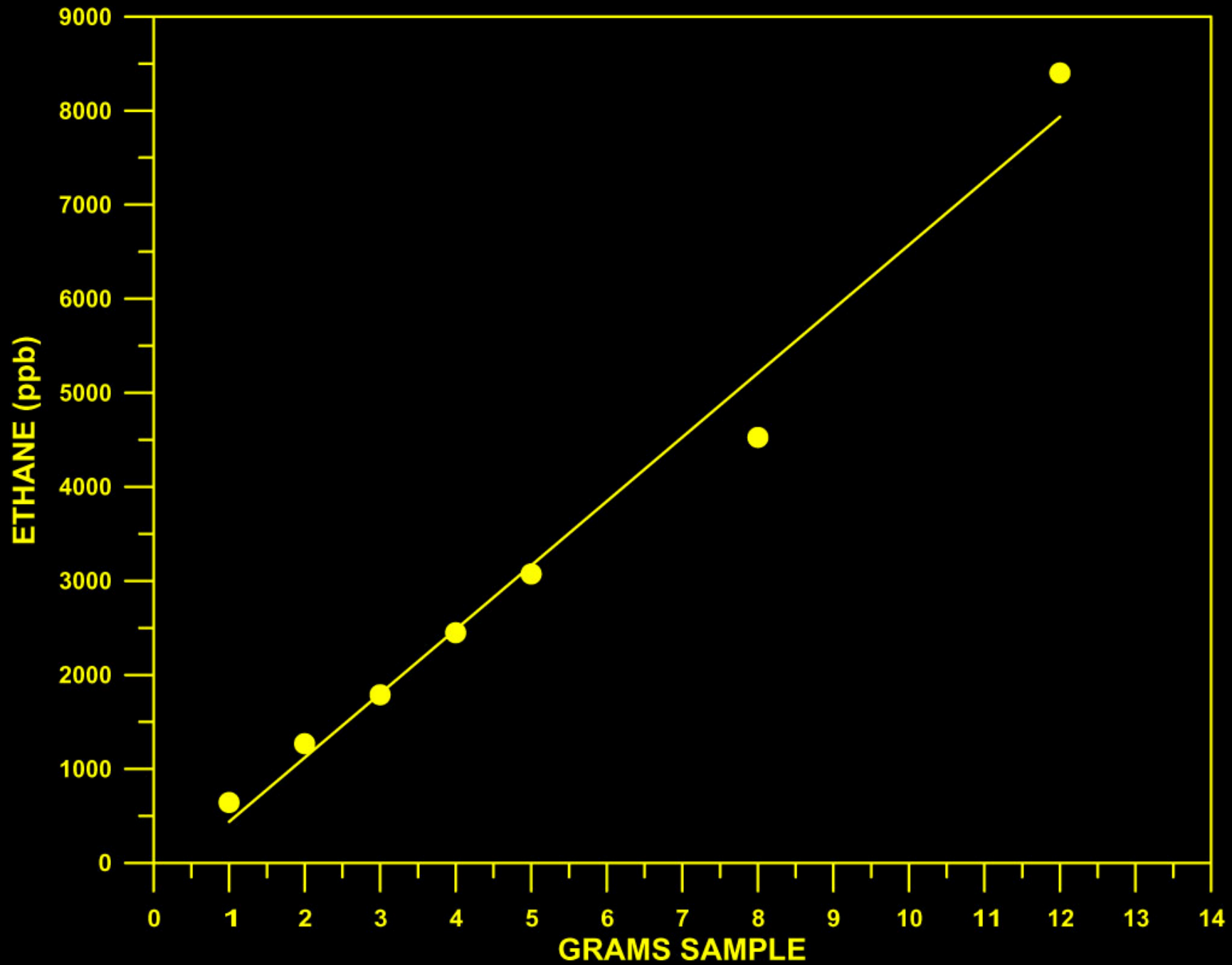
(SAMPLE AMOUNT IN GRAMS, MAGNITUDE OF GASES IN PPM, MICROLITER/LITER)

SAMPLE WEIGHT	C1	C2	C3	IC4	NC4
1 g	43.500	0.643	0.296	0.080	0.230
2 g	88.200	1.268	0.698	0.244	0.512
3 g	141.900	1.789	0.722	0.232	0.531
4 g	204.000	2.449	1.099	0.393	0.833
5 g	253.600	3.074	1.316	0.442	0.809
8 g	368.900	4.525	1.697	0.583	1.173
12 g	704.000	8.401	3.513	1.226	1.693

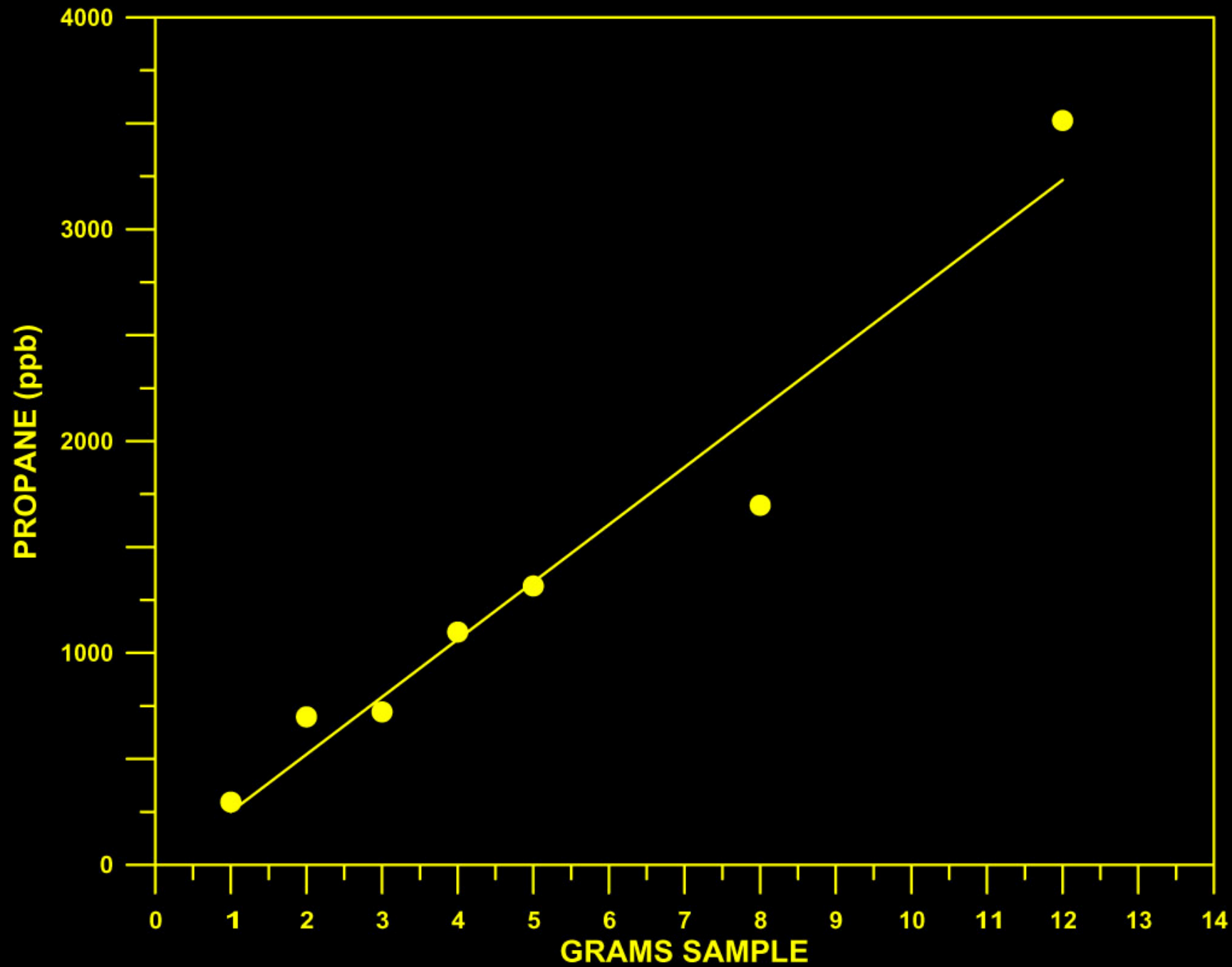
ADSORBED GAS ANALYSIS CALIBRATION CURVE



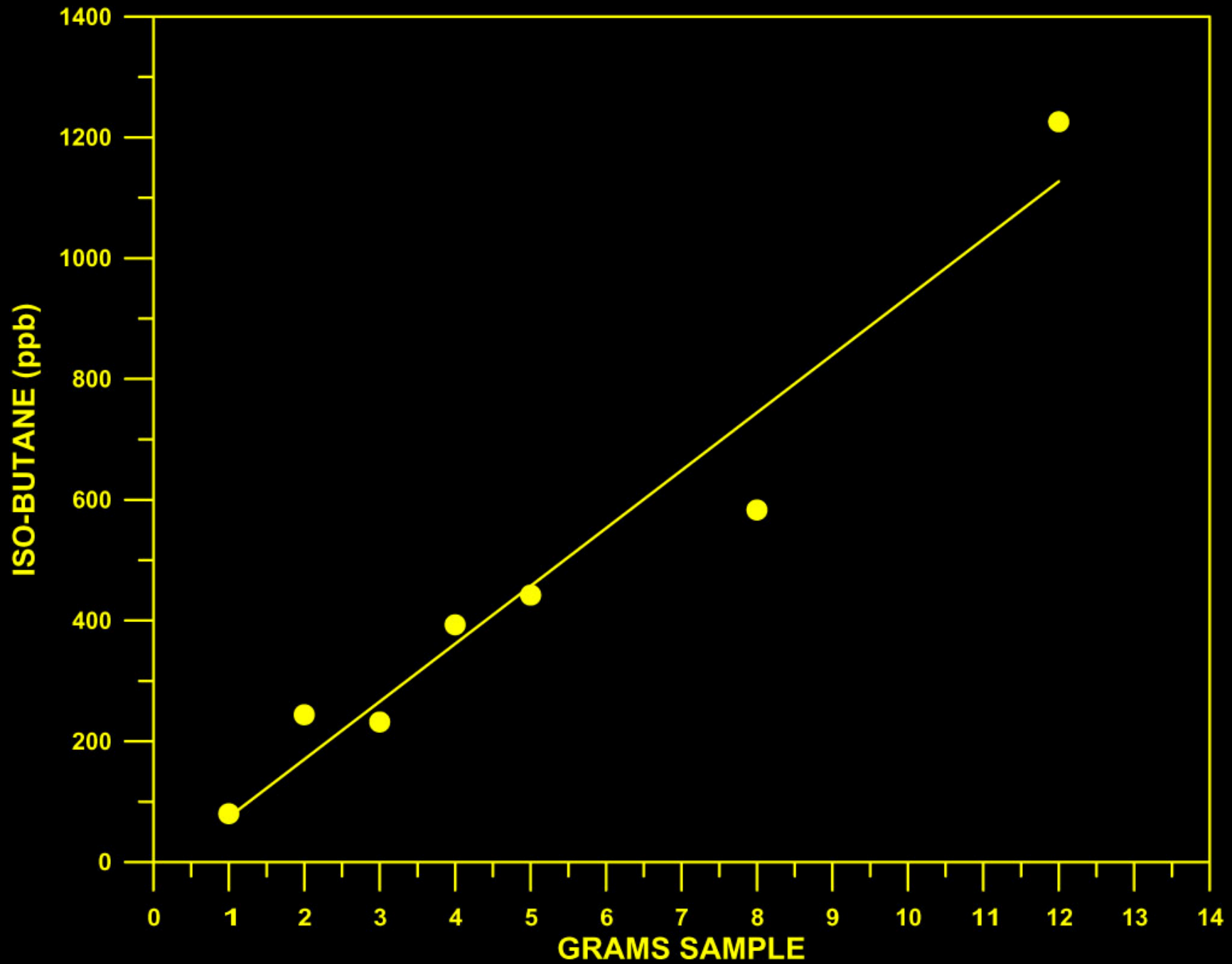
ADSORBED GAS ANALYSIS CALIBRATION CURVE



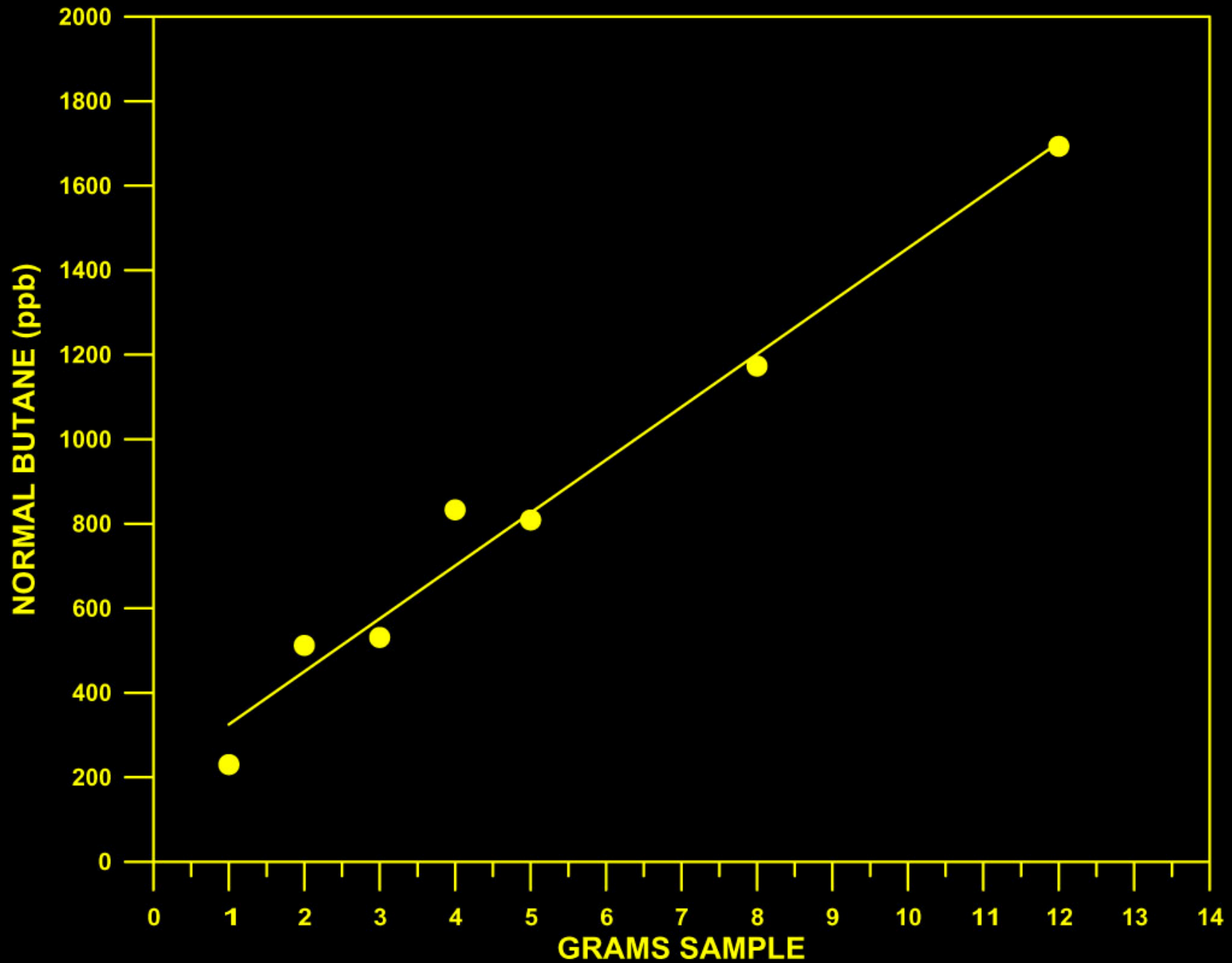
ADSORBED GAS ANALYSIS CALIBRATION CURVE



ADSORBED GAS ANALYSIS CALIBRATION CURVE



ADSORBED GAS ANALYSIS CALIBRATION CURVE



ADSORBED GAS ANALYSIS OF BLANK SAMPLES

SAMPLE	C1	C2	C3	IC4	NC4
Blank 1	2.600	0.210	0.072	0.152	0.375
Blank 2	2.400	0.054	0.049	0.068	0.114

**ADSORBED GAS ANALYSIS - TEST SAMPLES
ALL DATA IN PPB (WT. GAS/WT. WET SEDIMENT)**

SITE	METHANE	ETHANE	PROPANE	I-BUTANE	N-BUTANE
A01	812.349	21.010	8.853	4.201	7.182
A01A	742.847	17.007	7.280	4.851	5.785
A02	831.563	19.762	8.430	3.990	6.880
A02A	1276.010	22.986	8.555	4.412	6.361
A03	521.620	32.524	31.312	14.364	30.455
A03A	504.174	26.639	23.192	10.933	21.517
A04	1254.184	21.514	9.693	4.531	8.014
A04A	1234.161	16.744	8.706	4.127	7.507
A05	1114.245	21.774	9.792	4.178	7.319
A05A	823.641	17.558	7.698	4.600	6.492
A06	785.826	19.650	14.908	7.142	12.928
A06A	595.162	14.543	10.141	5.757	9.223

**COMPARISON OF ADSORBED GAS ANALYSIS BETWEEN
WCO AND ETI METHODS
(VALUES REPORTED AS PPB BY WEIGHT)**

SAMPLE No.	C1	C2	C3	IC4	NC4
1					
ETI	387.6	70.2	52.9	12.0	22.4
WCO	330.0	66.4	48.4	16.0	25.4
6					
ETI	176.3	37.5	33.4	8.0	15.6
WCO	202.8	38.9	29.3	9.9	16.6

**RESULTS OF ADSORBED GAS COMPARISONS BETWEEN WCO AND HORVITZ METHODS:
VALUES REPORTED AS PPB BY WEIGHT**

Sample		C ₁	C ₂ =	C ₂	C ₃ =	C ₃	iC ₄	nC ₄	Sum C ₂ to C ₄ (Saturates)
A68	WCO	191.0	0.8	26.3	0.0	16.2	4.5	8.3	55.3
	Horvitz	112.4	-	15.0	-	7.8	2.0	3.0	27.8
A104	WCO	229.3	0.7	35.9	0.0	27.6	11.1	13.7	88.3
	Horvitz	309.1	-	49.7	-	34.1	11.2	18.7	113.7
A62	WCO	146.4	0.5	20.1	0.0	13.3	3.6	5.2	42.2
	Horvitz	194.0	-	25.2	-	14.2	4.0	7.8	51.2
A94	WCO	160.1	0.5	34.0	0.0	23.1	12.4	11.4	80.9
	Horvitz	138.9	-	26.4	-	14.8	5.9	8.3	55.4
A60	WCO	140.2	0.0	19.3	0.0	11.4	3.6	5.5	39.8
	Horvitz	158.2	-	20.1	-	11.6	2.9	5.9	40.5
A75	WCO	86.5	0.8	11.0	0.0	9.0	2.3	3.9	26.2
	Horvitz	110.1	-	14.6	-	8.8	3.3	2.7	29.4
A82	WCO	32.6	0.5	5.1	0.0	4.7	1.3	2.7	13.8
	Horvitz	47.3	-	4.3	-	3.7	1.1	2.6	11.7
M2	WCO	460.8	1.1	61.1	1.0	35.9	10.9	16.6	124.5
	Horvitz	602.0	-	79.6	-	40.4	10.9	18.8	149.7
M4	WCO	291.8	0.8	41.0	1.0	24.0	7.3	12.0	84.3
	Horvitz	425.1	-	56.1	-	29.3	7.9	12.9	106.2
M5	WCO	165.5	0.7	23.5	1.1	13.5	4.2	7.0	48.2
	Horvitz	272.1	-	35.6	-	18.4	4.6	8.4	67.0
M18	WCO	340.8	0.7	48.5	0.8	29.0	9.1	13.5	100.1
	Horvitz	479.4	-	62.8	-	33.0	9.6	15.5	120.9
M23	WCO	250.8	2.6	33.9	1.2	20.4	6.0	9.1	69.4
	Horvitz	366.7	-	46.6	-	24.1	6.8	10.2	87.7
M24	WCO	191.6	2.2	26.3	1.1	16.1	5.0	7.0	54.4
	Horvitz	265.6	-	35.1	-	18.3	4.6	7.0	65.0
M33	WCO	217.1	0.8	31.0	1.0	18.5	5.5	8.8	63.8
	Horvitz	378.5	-	49.6	-	25.4	6.9	11.8	93.7
M35	WCO	202.5	0.9	29.0	1.0	16.9	5.2	8.6	59.7
	Horvitz	312.4	-	41.4	-	21.3	4.9	9.3	76.9
M41	WCO	16.1	0.7	1.7	1.2	1.8	0.5	1.3	5.3
	Horvitz	32.0	-	3.2	-	1.4	0.2	0.7	5.5
M46	WCO	456.5	0.5	64.4	0.6	39.6	11.4	18.9	134.3
	Horvitz	610.6	-	78.9	-	43.2	11.9	21.1	155.1
M50	WCO	259.8	0.3	36.9	0.4	22.9	6.2	11.2	77.2
	Horvitz	383.8	-	49.8	-	27.4	6.7	12.9	96.8
M51	WCO	2.4	0.5	0.3	1.1	0.4	0.5	0.5	1.7
	Horvitz	4.5	-	0.8	-	0.0	0.0	0.0	0.8

Blender

Too Many Variables

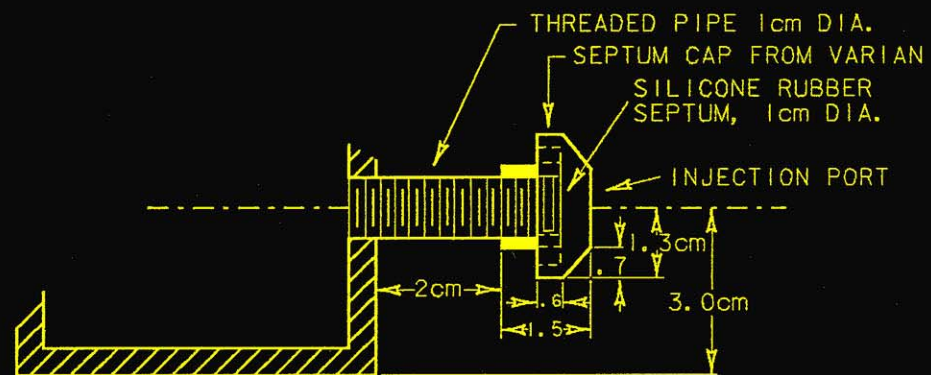
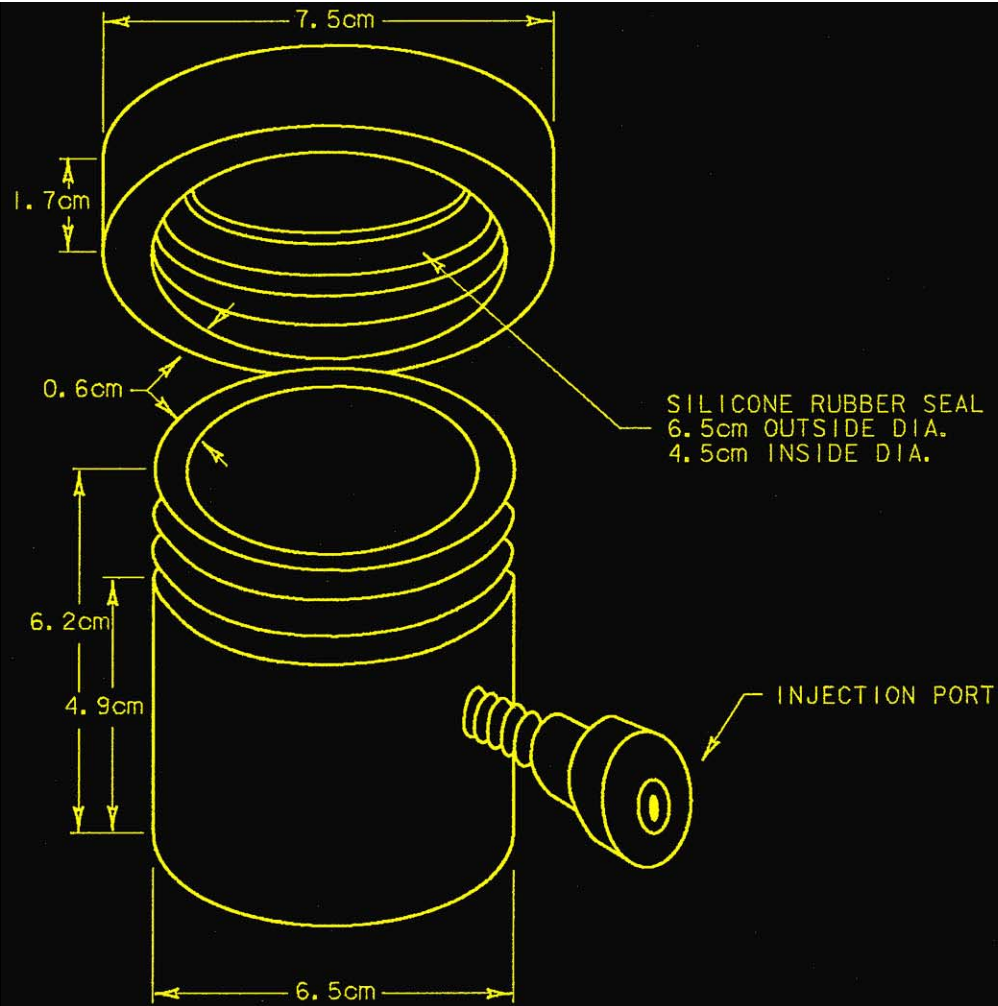
Time

Grinding Speed

Matrix

Volume (Size)

Dilution



Ball Mill Solves Blender Problems

Volume Dilutions are constant

5 ml	Sediment
16 ml	H₂O
4 ml	Ceramic Balls (2)
10 ml	Headspace
<hr/>	
35 ml	Total Volume

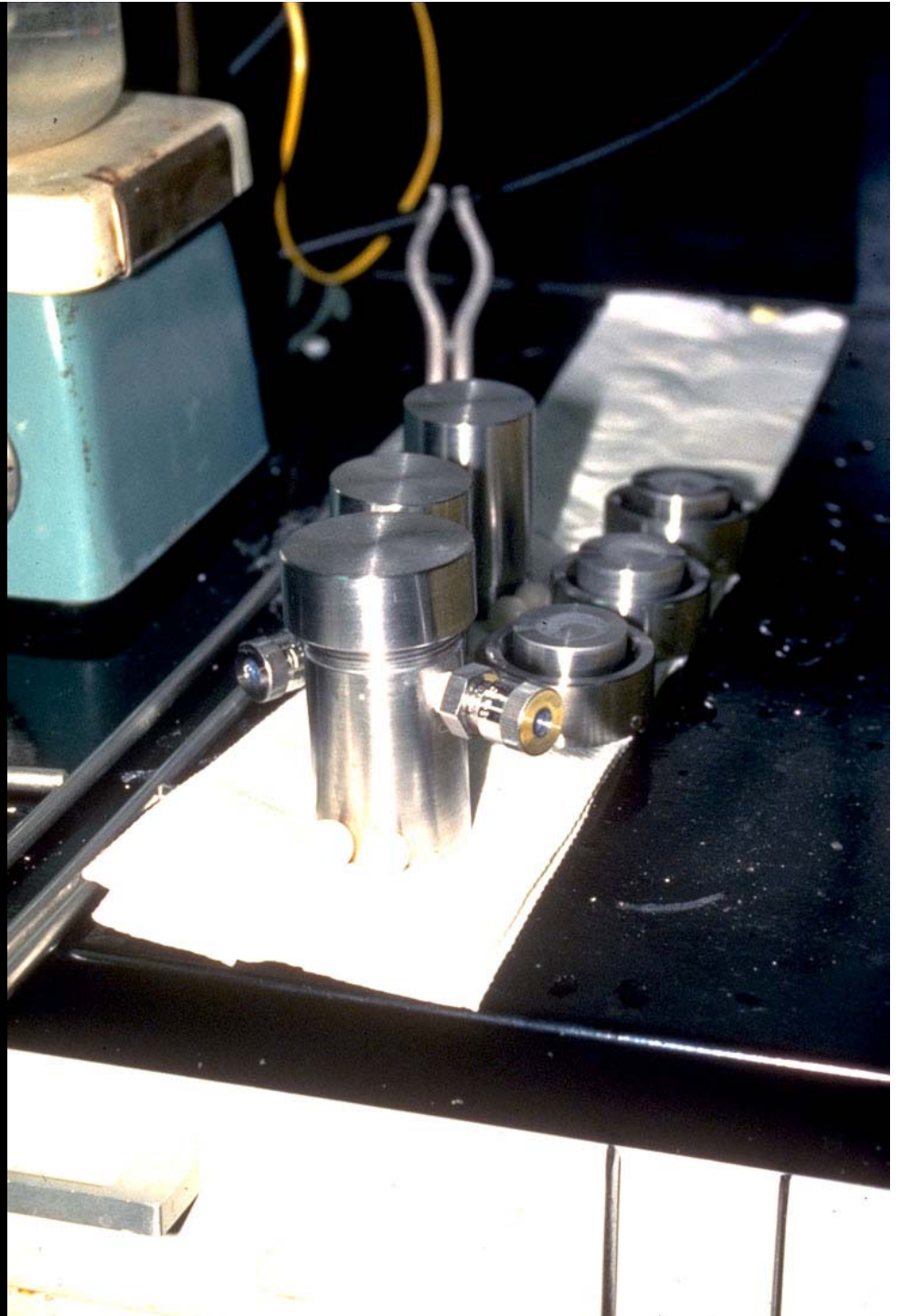
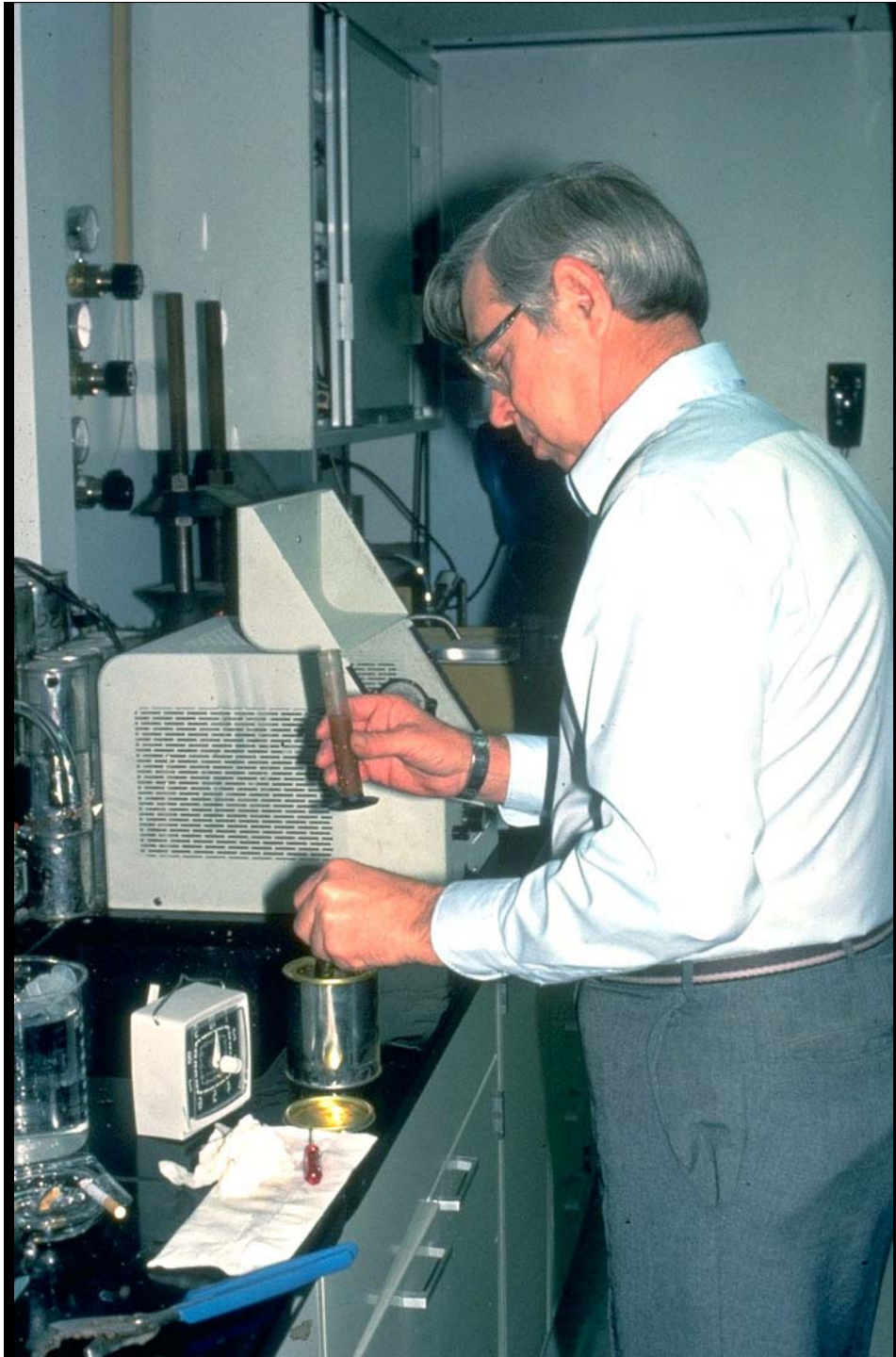
Grind 5 min. Spex Shaker

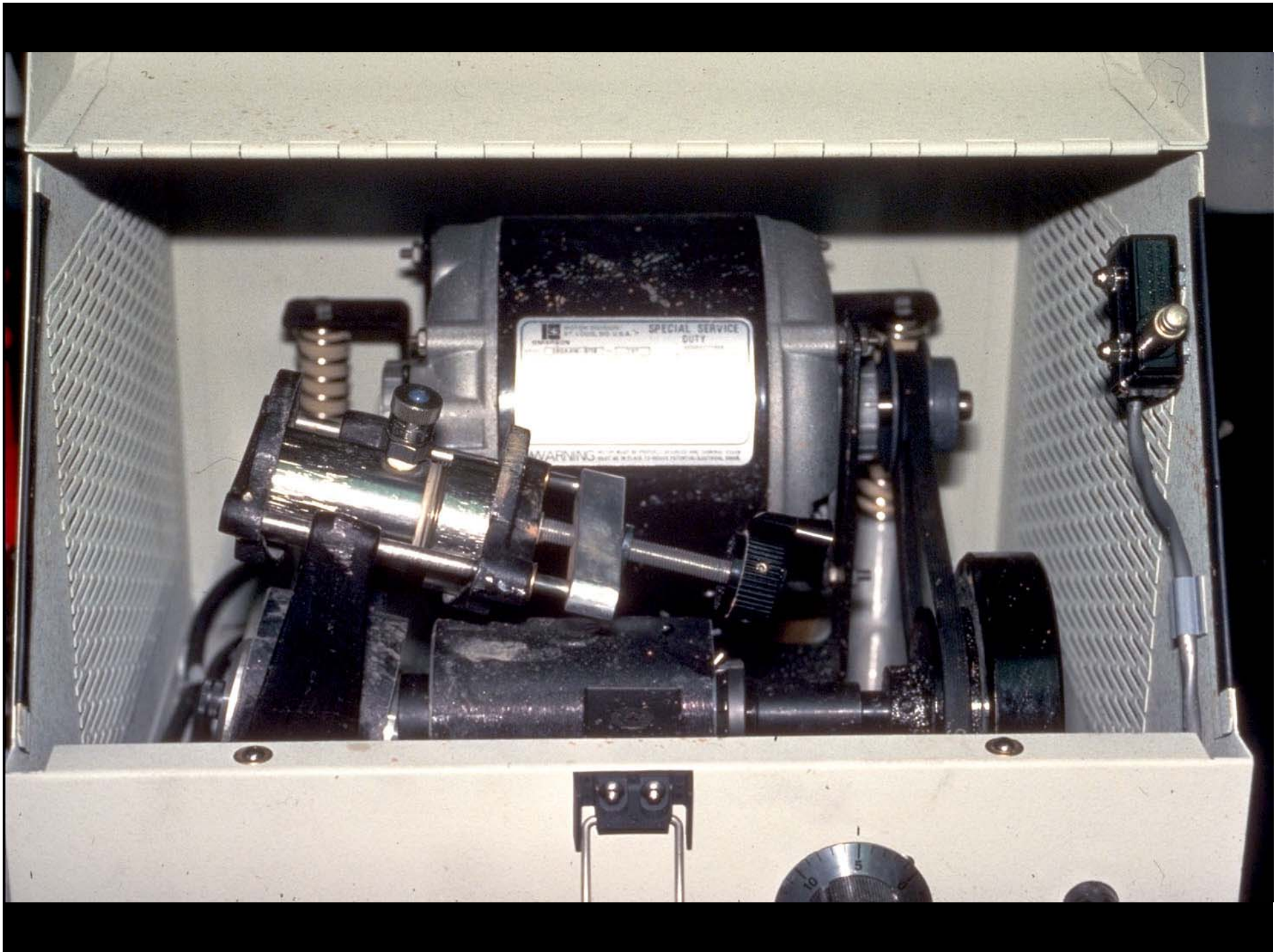
90° C water bath 3 min.

Multiply by 10 to obtain total volume

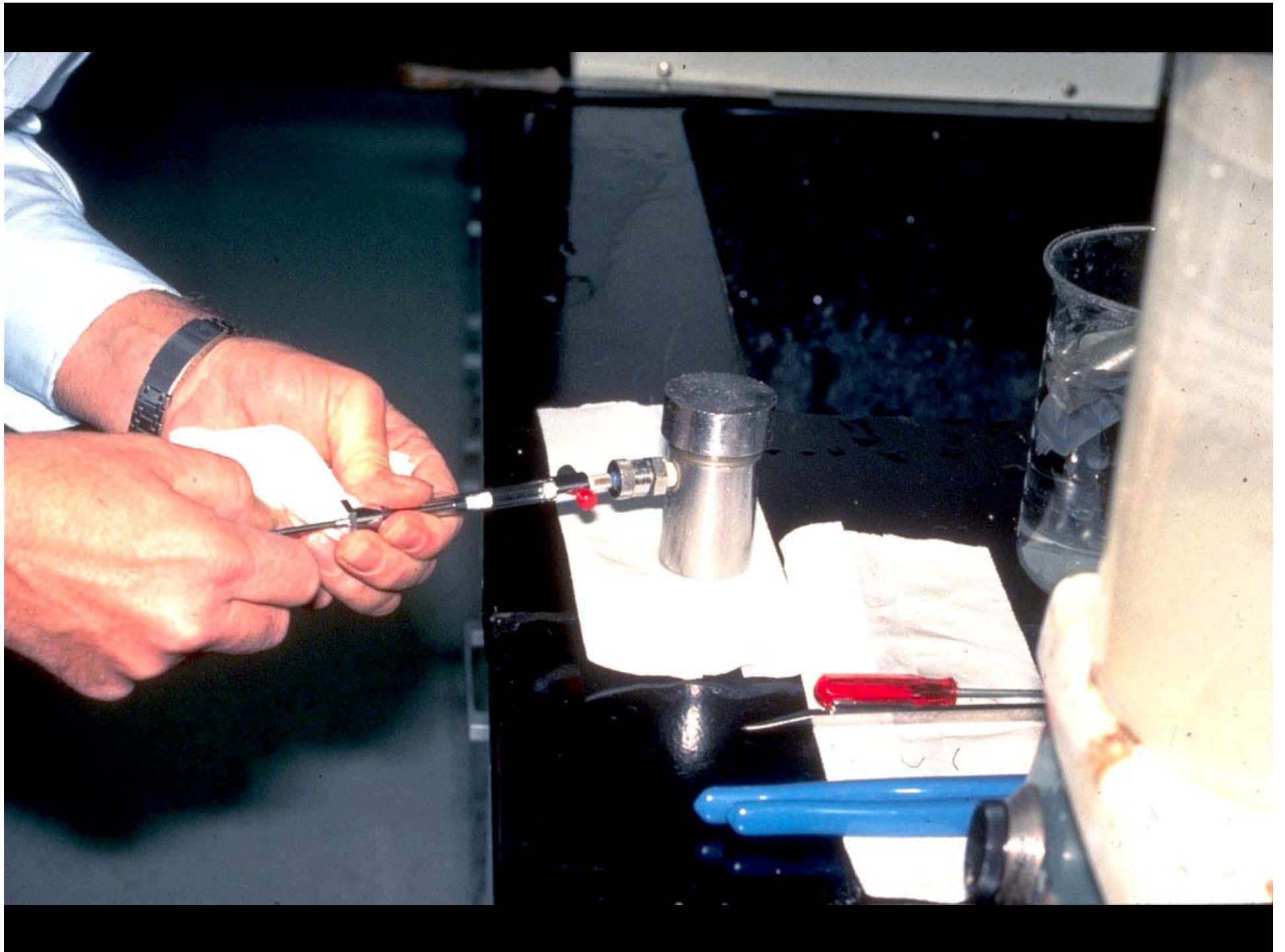
Divide by 5 to obtain result/grams

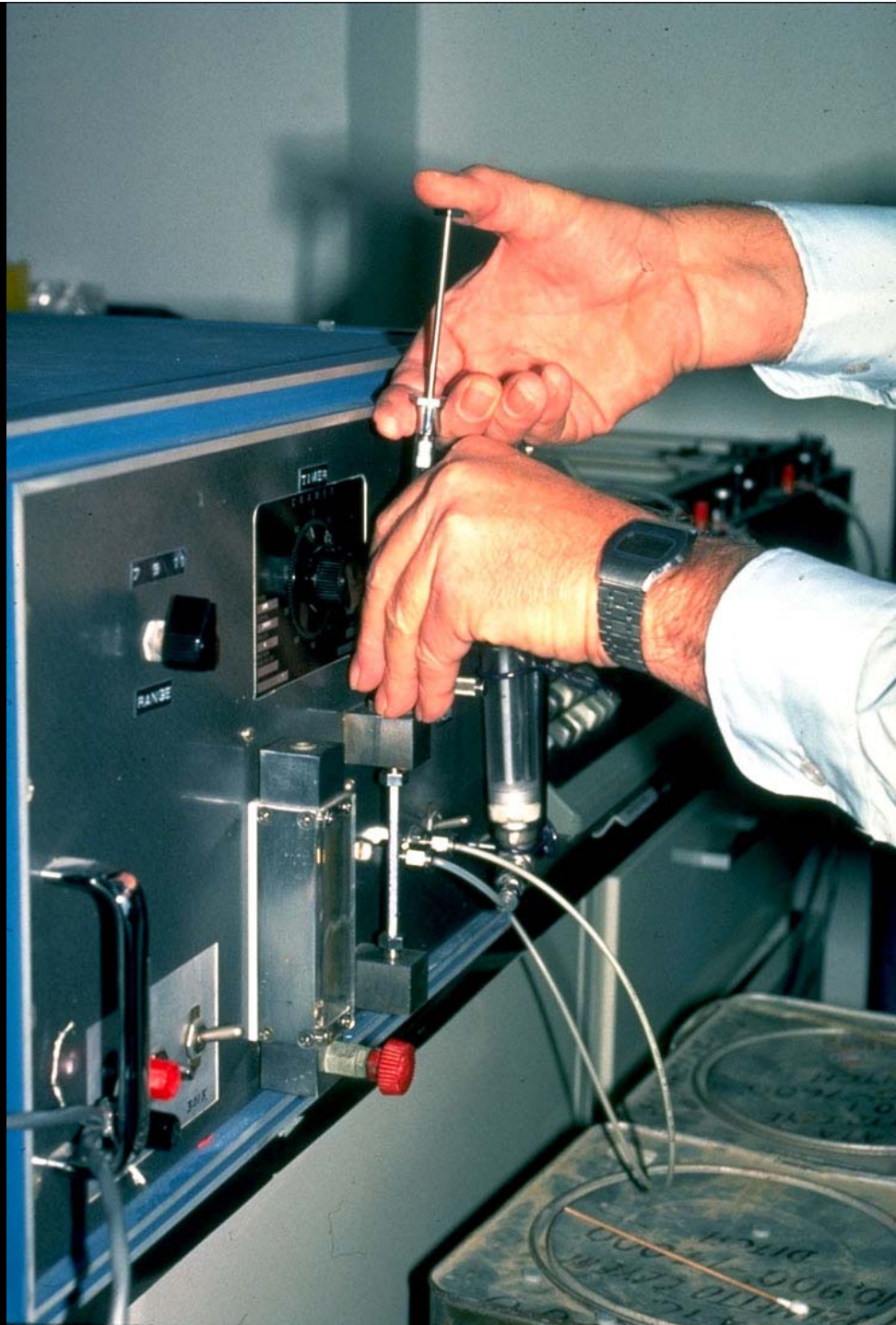
Correct for temperature variation









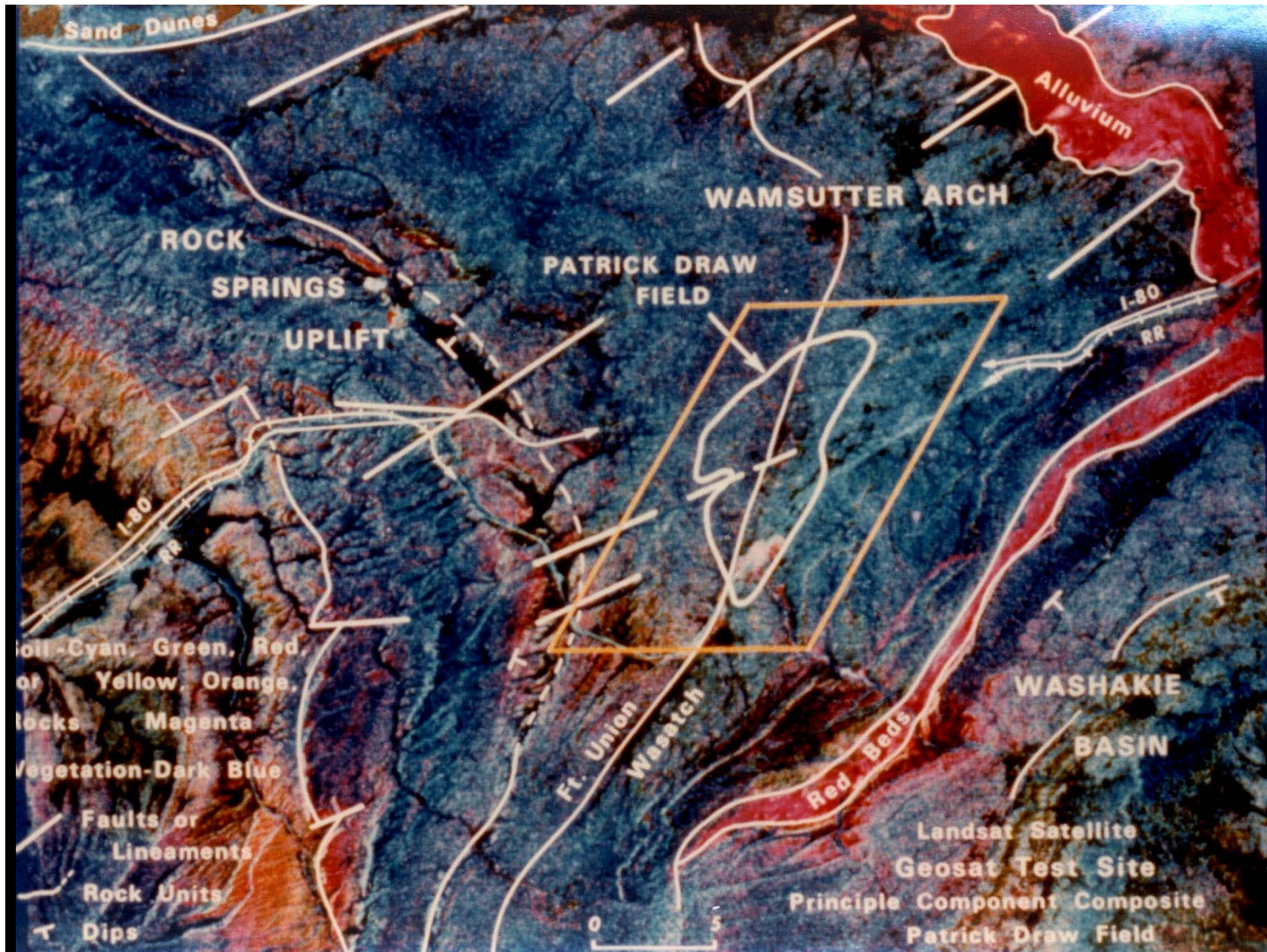


**COMPARISON OF RESULTS OF FREE SOIL GAS AND
DISAGGREGATED SOIL GAS SURVEYS, ROSEHILL, VIRGINIA
(RICHERS, 1984)**

Survey method	No. of sites	% methane	C1/C2	1000 x C3/C1
Free soil gas	145	72	7	110
Disaggregated gas	128	70	7	117

**DIAGNOSTIC SOIL GAS RATIOS AT THE GULF RESEARCH
FACILITY, PITTSBURGH, PA
DEVONIAN GAS AREA**

Survey method	No. of sites	% methane	C1/C2	1000 x C3/C1
Free soil gas	73	89	18	21
Disaggregated gas	38	91	25	22



TMS-31 August 79
Principle Component Composite
Blue V1 Green V2 Red V3
(Aircraft Flown)

Soil-Magenta, Yellow,
Yellow Green

Alluvium-Dark Blue & Cyan

Vegetation-Dark Blue Black

Shadows-Red

Blight
Area

Gas

Oil

Water

US-80

T
19
N

— Surface Faults

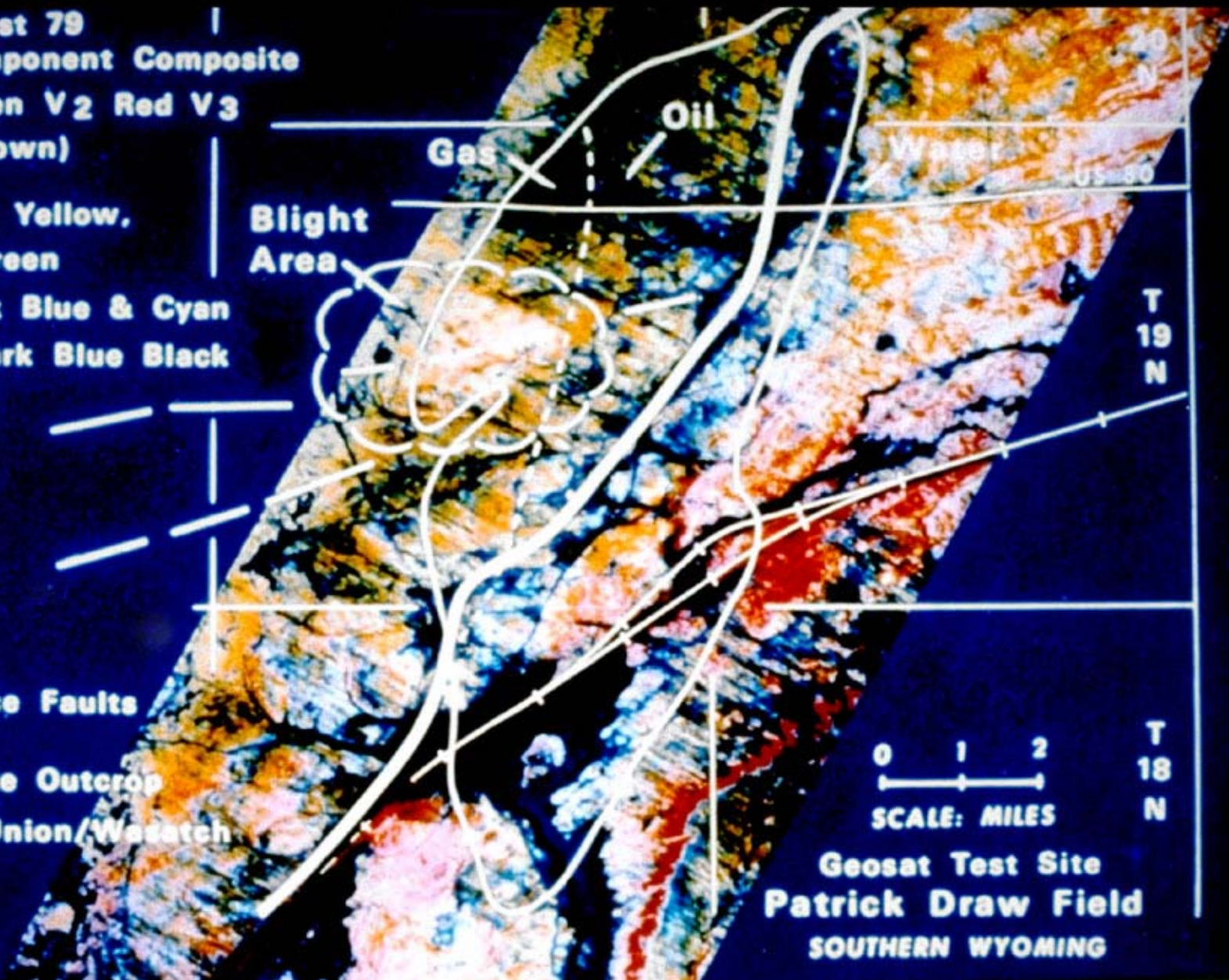
— Surface Outcrop

Ft. Union/Wasatch

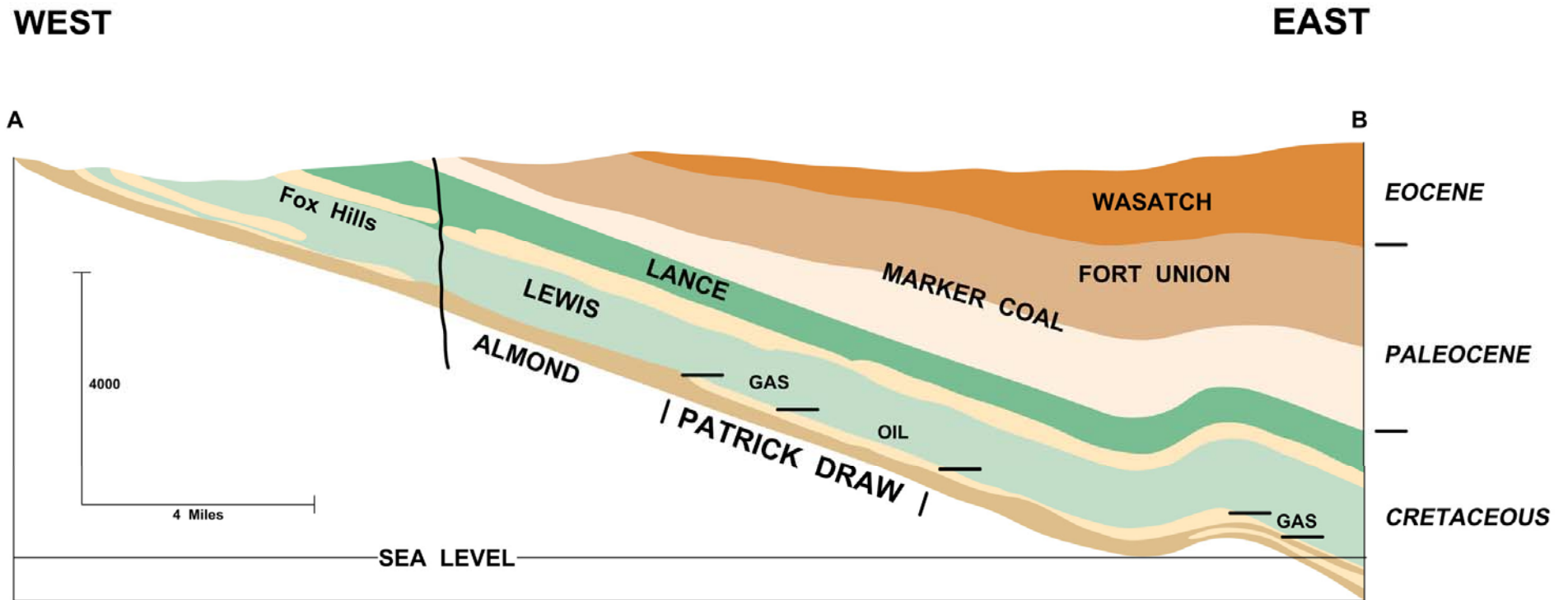
0 1 2
SCALE: MILES

T
18
N

Geosat Test Site
Patrick Draw Field
SOUTHERN WYOMING

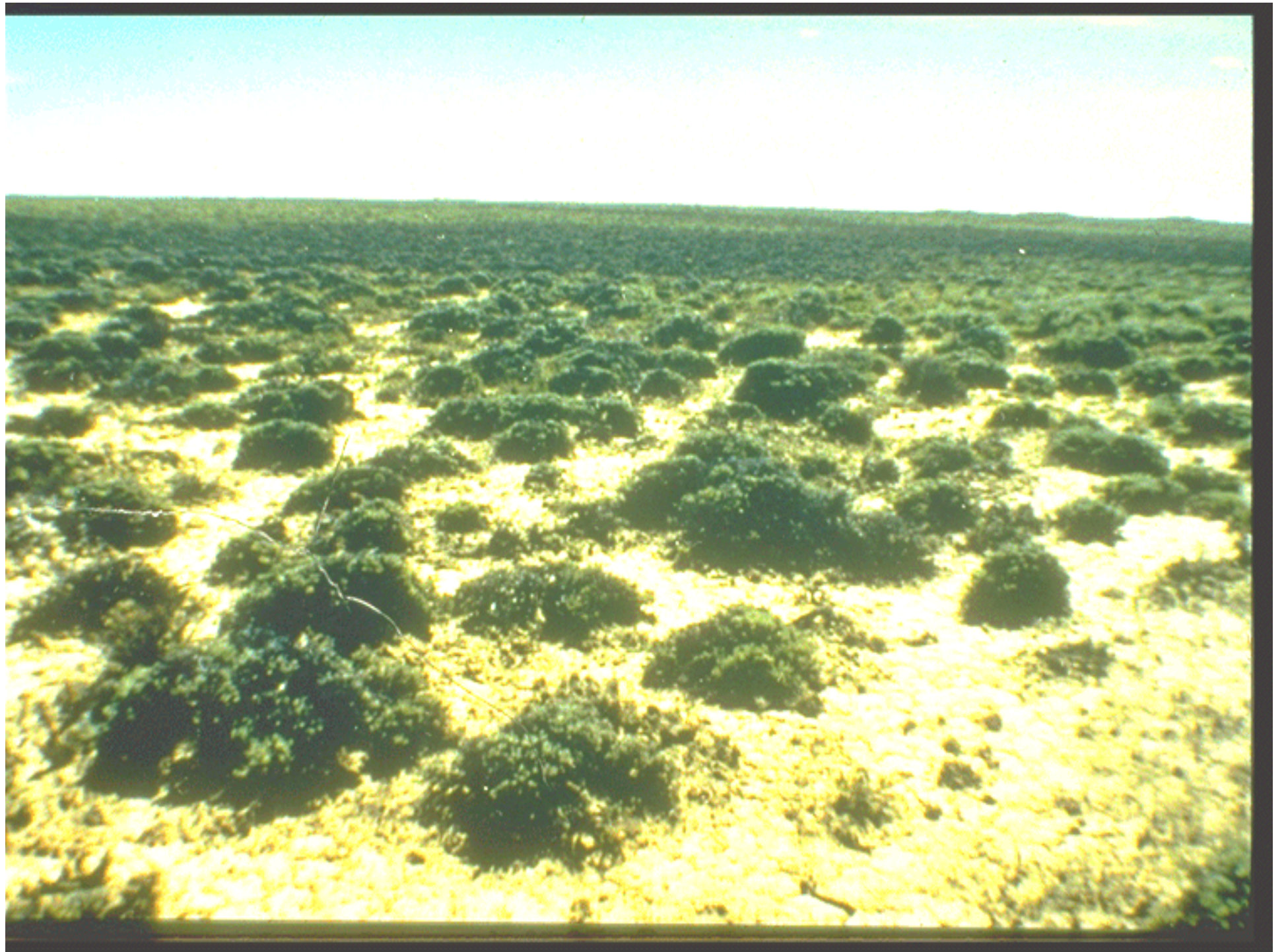


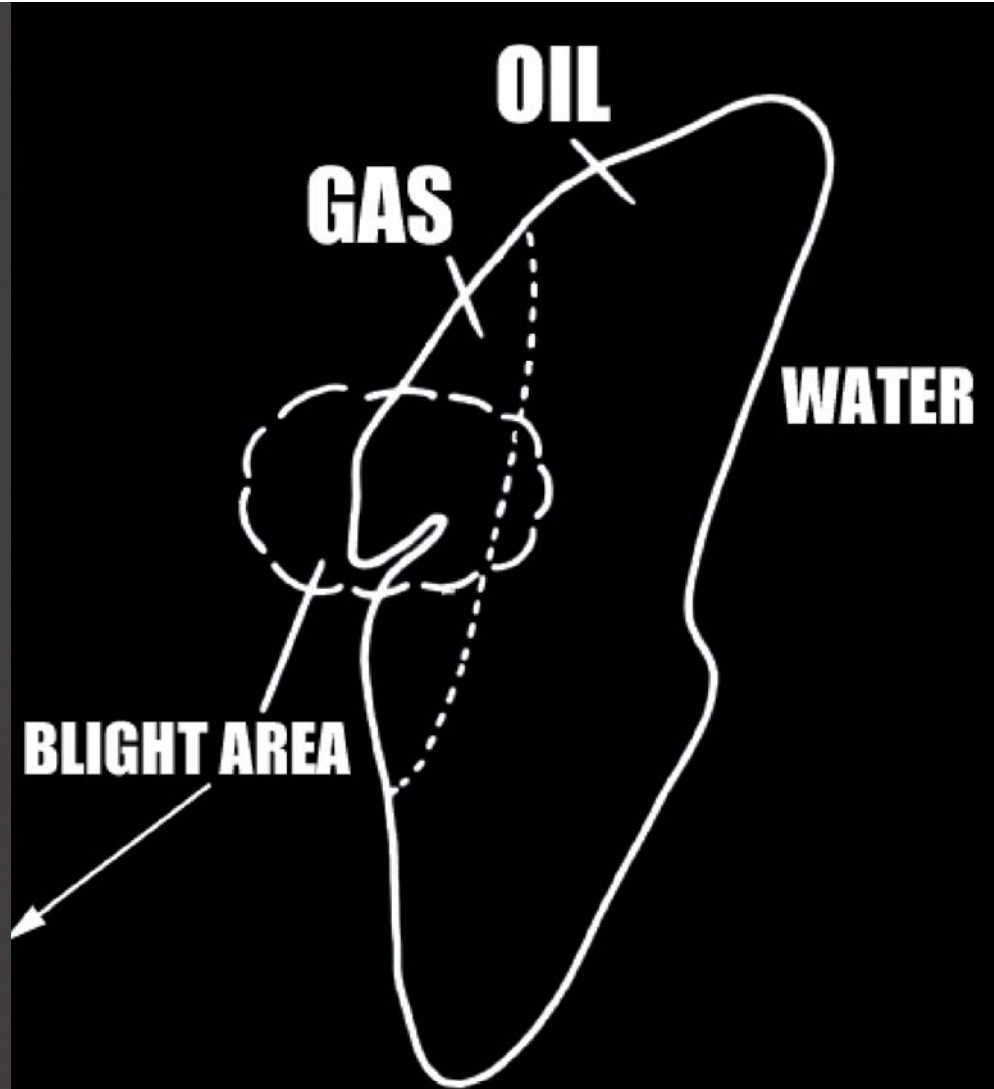
CROSS SECTION THROUGH PATRICK DRAW FIELD from Rock Springs Uplift to Table Rock Field



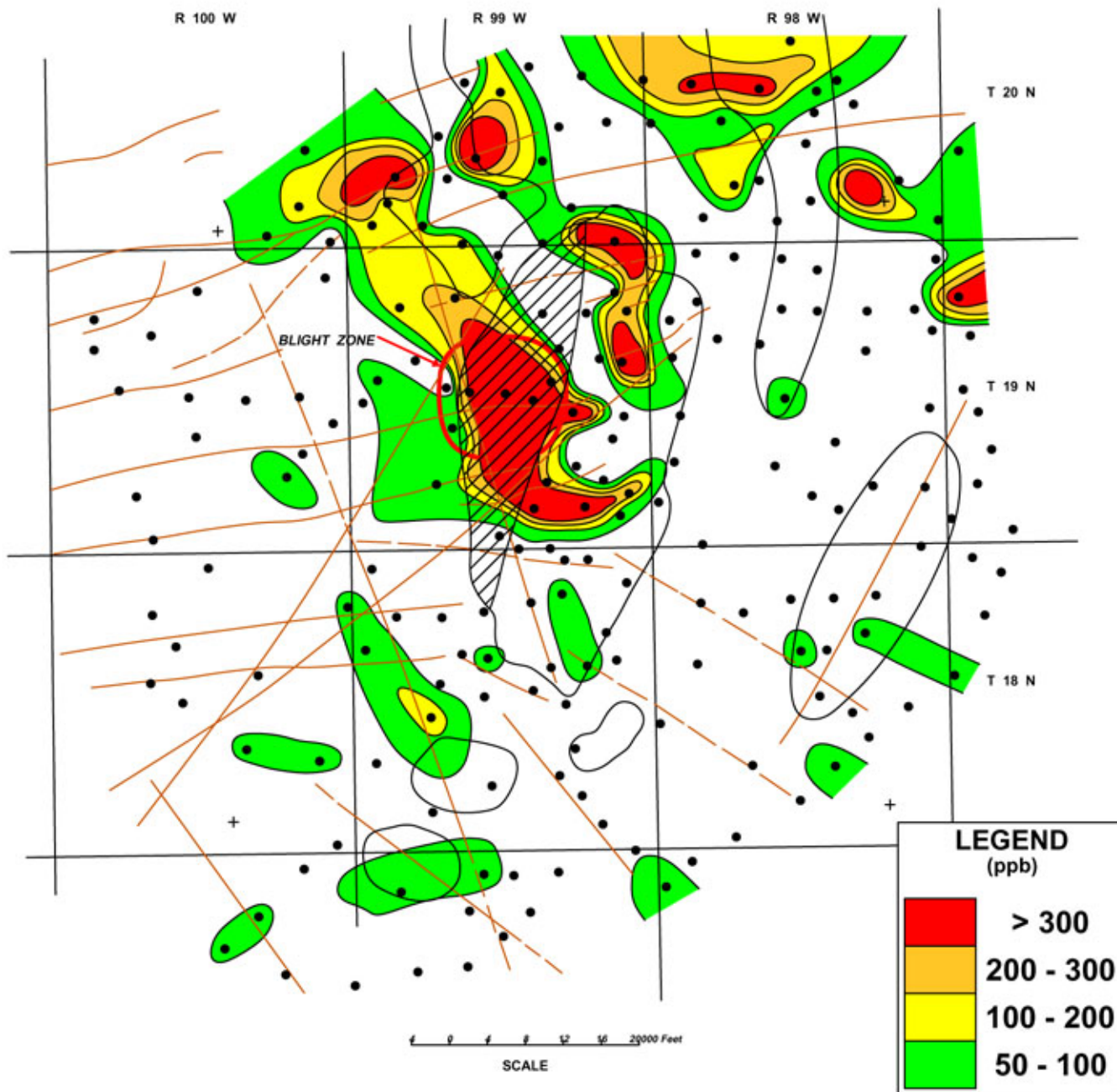
Cross Section of Patrick Draw area (after Weimer, 1966)



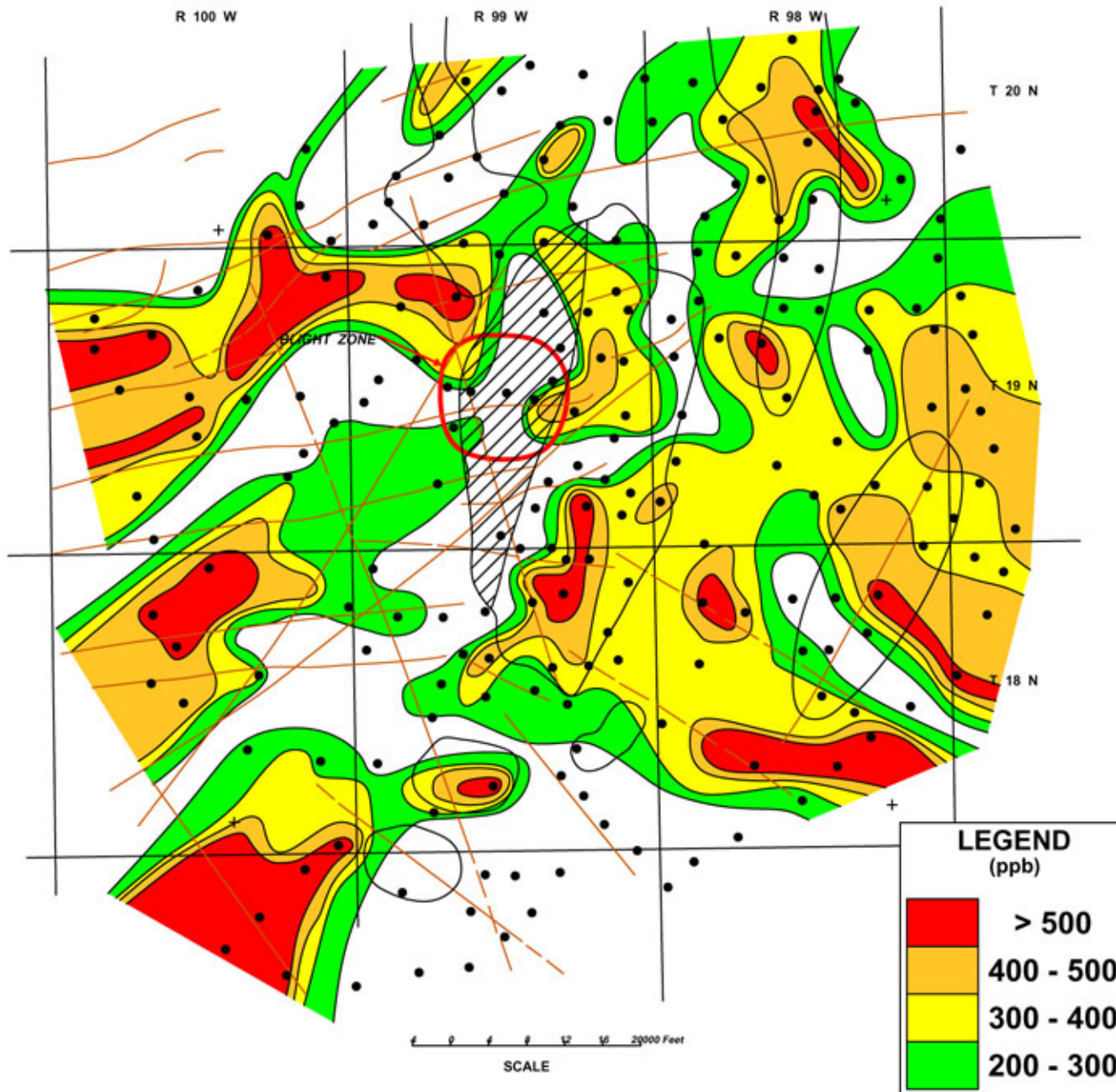




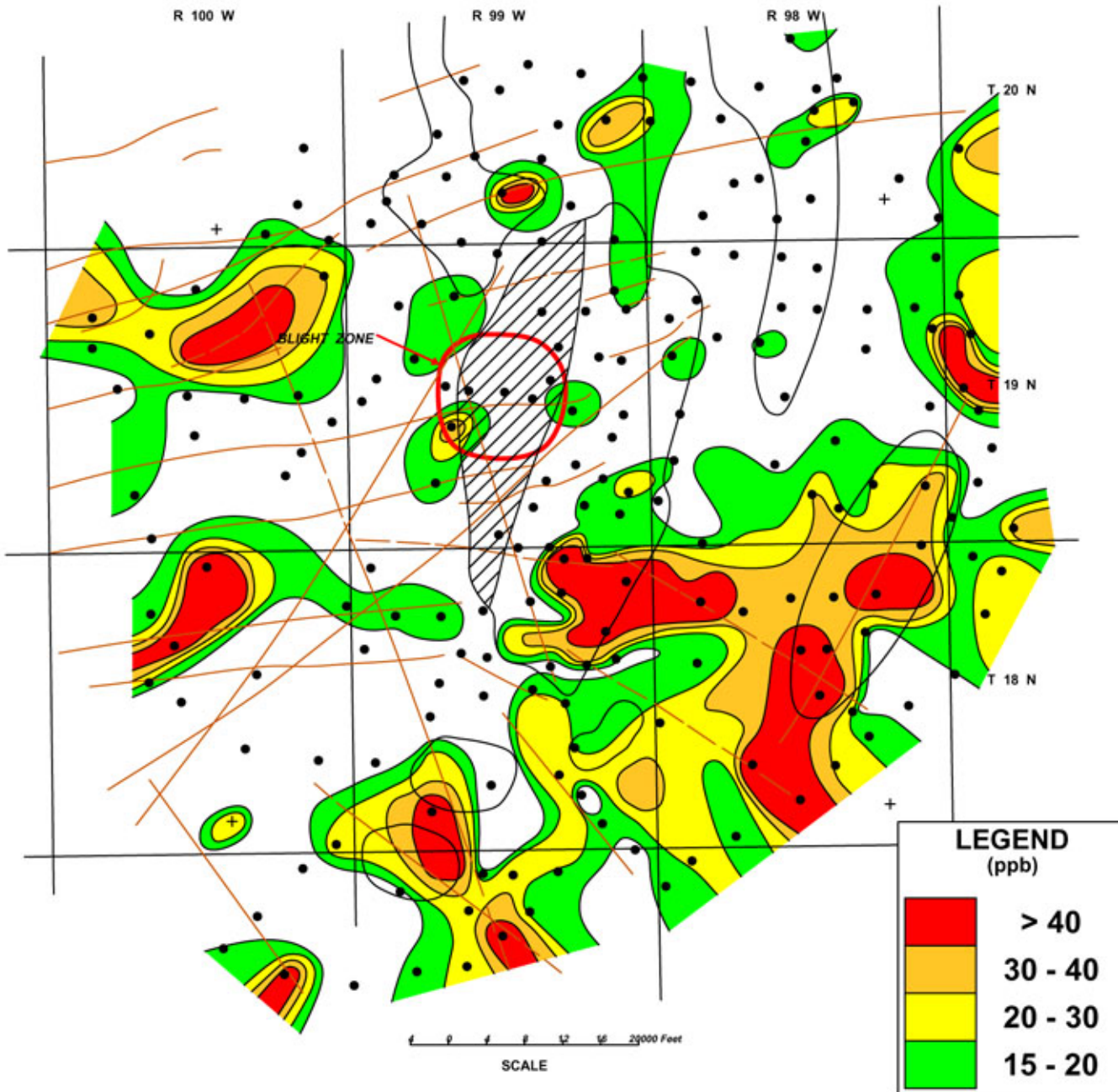
**GEOSAT TEST SITE
PATRICK DRAW FIELD
SOUTHERN WYOMING**



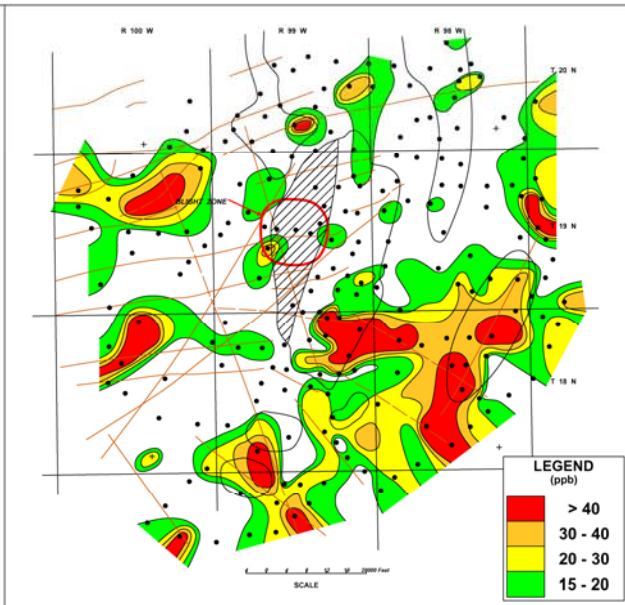
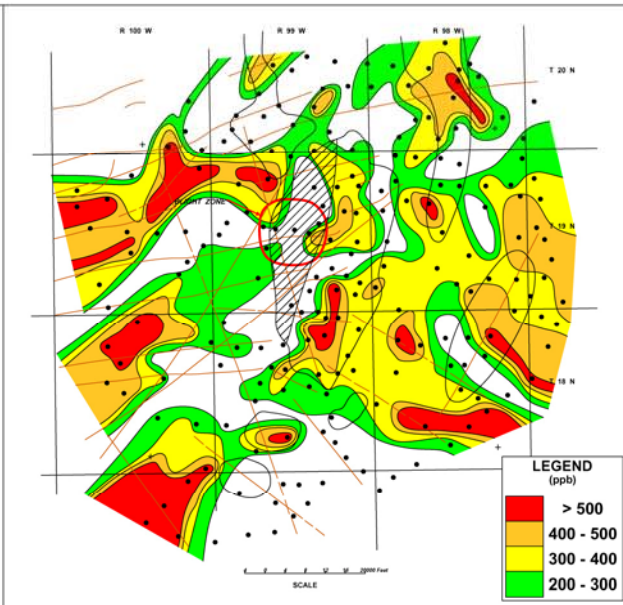
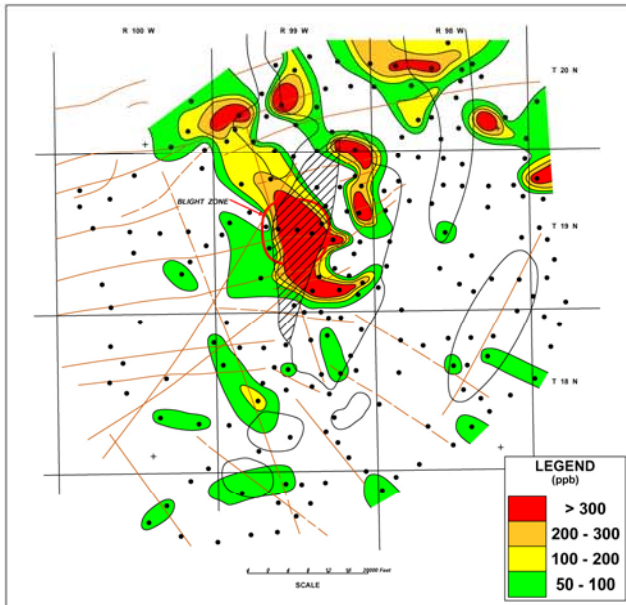
Soil Gas Propane
4' Probes



Disaggregation Propane
4' Soil Cores

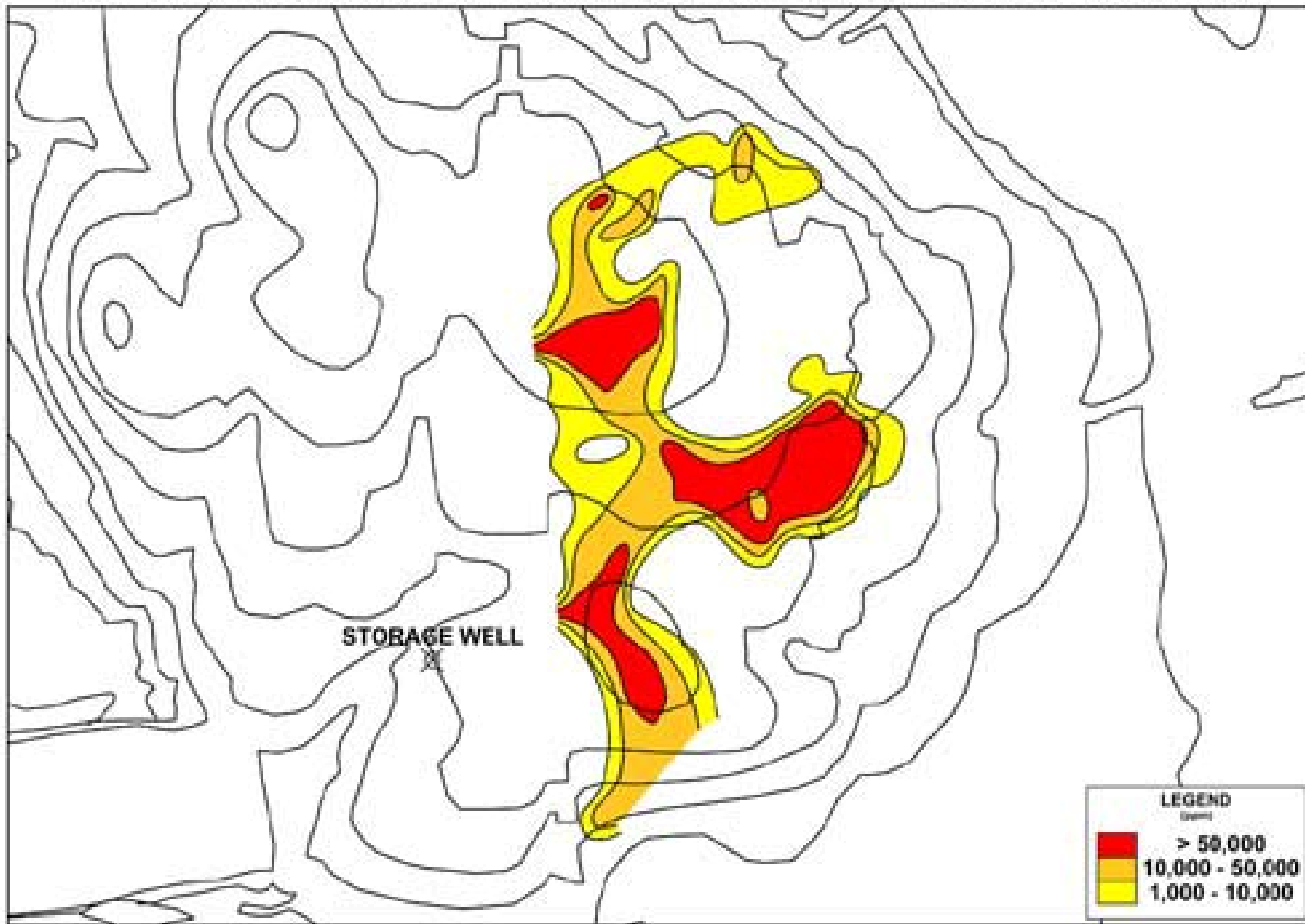


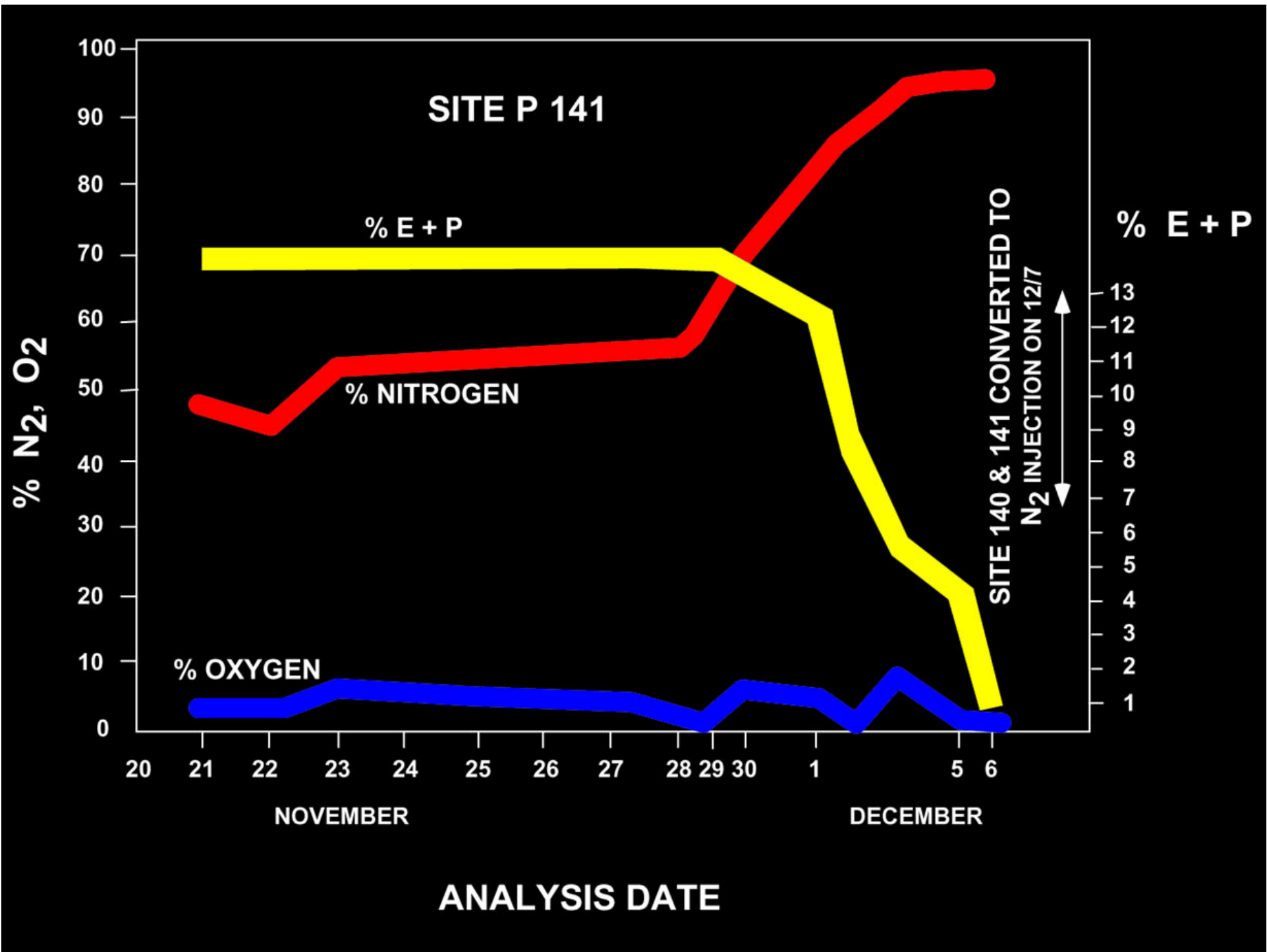
**Acid Extraction Propane
4' Soil Cores**



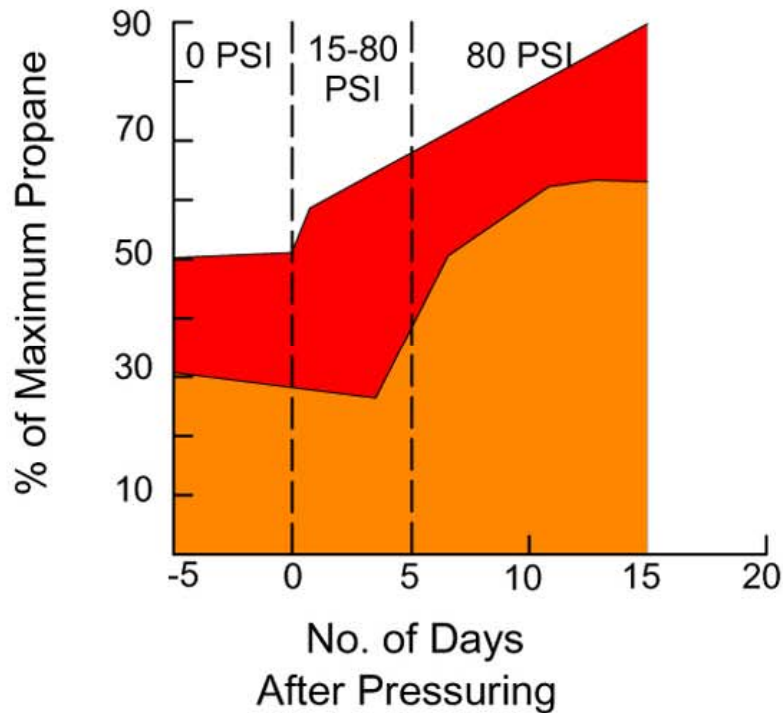


ETHANE/PROPANE LEAKAGE FROM SALT DOME STORAGE WELL





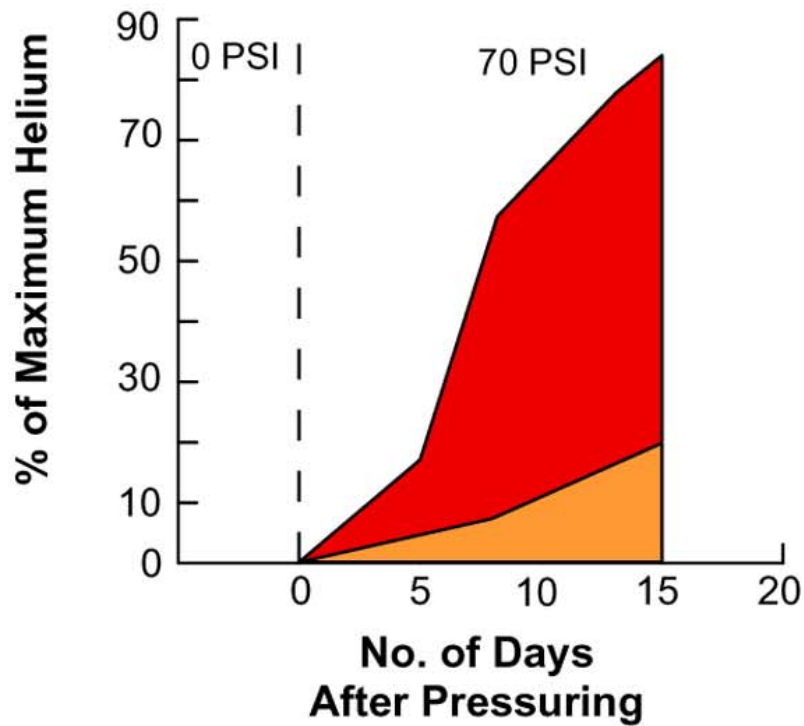
PROPANE RECHARGE ABOVE PROPANE STORAGE CAVERN OCTOBER 1981



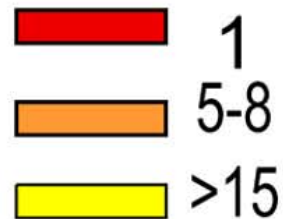
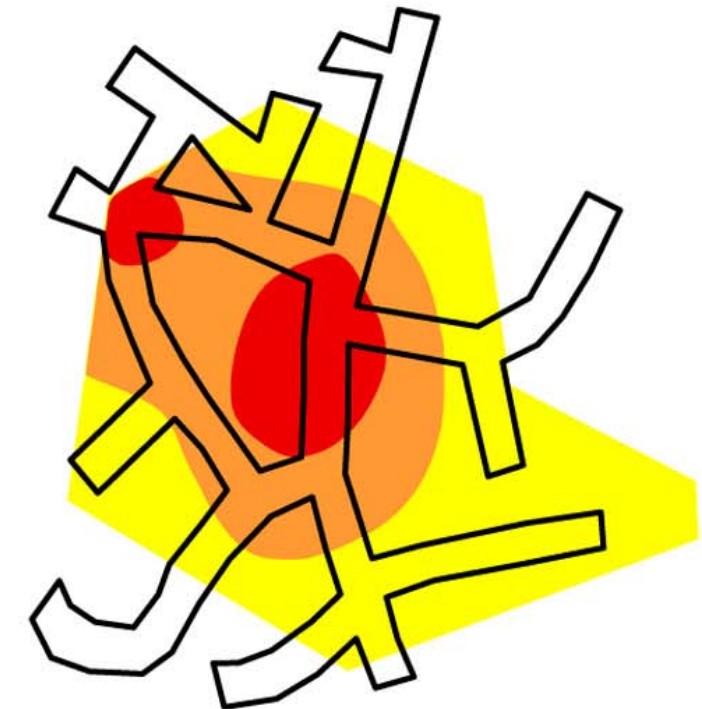
No. of Days Until
Propane Builds

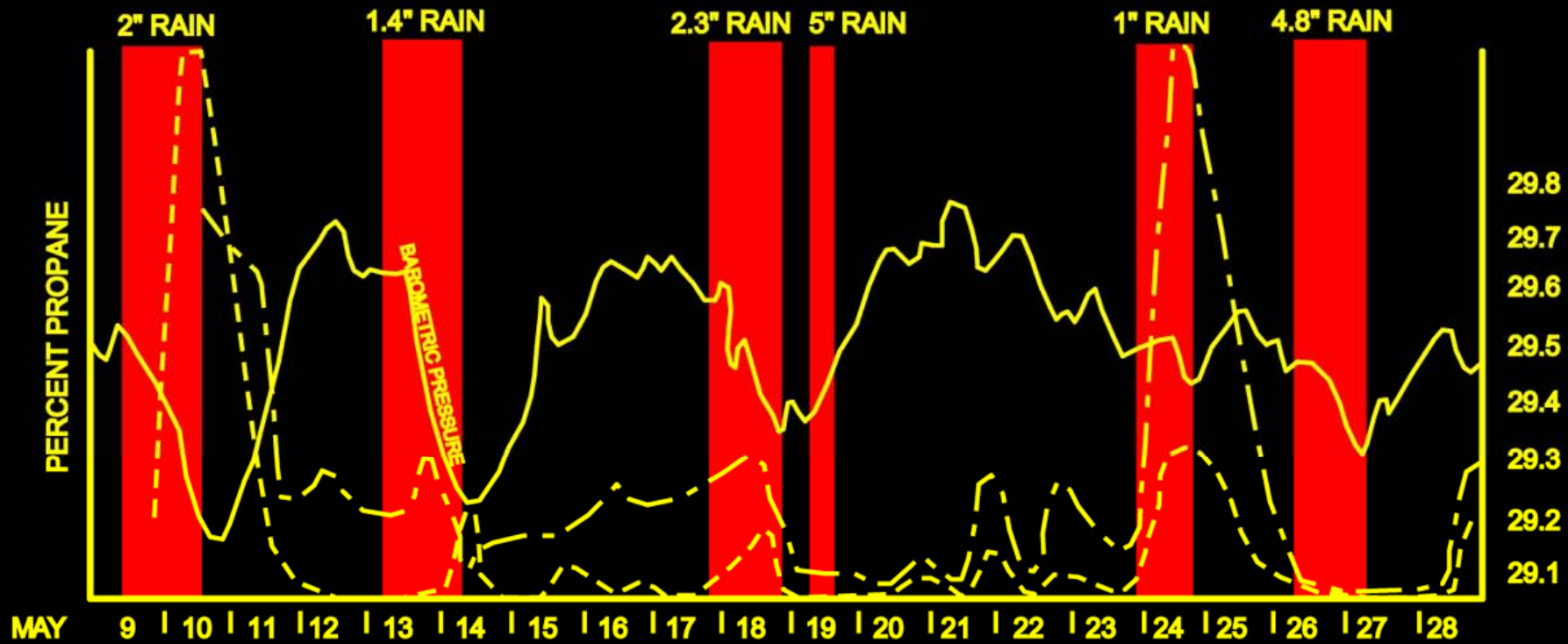


HELIUM RECHARGE ABOVE PROPANE STORAGE CAVERN OCTOBER 1982



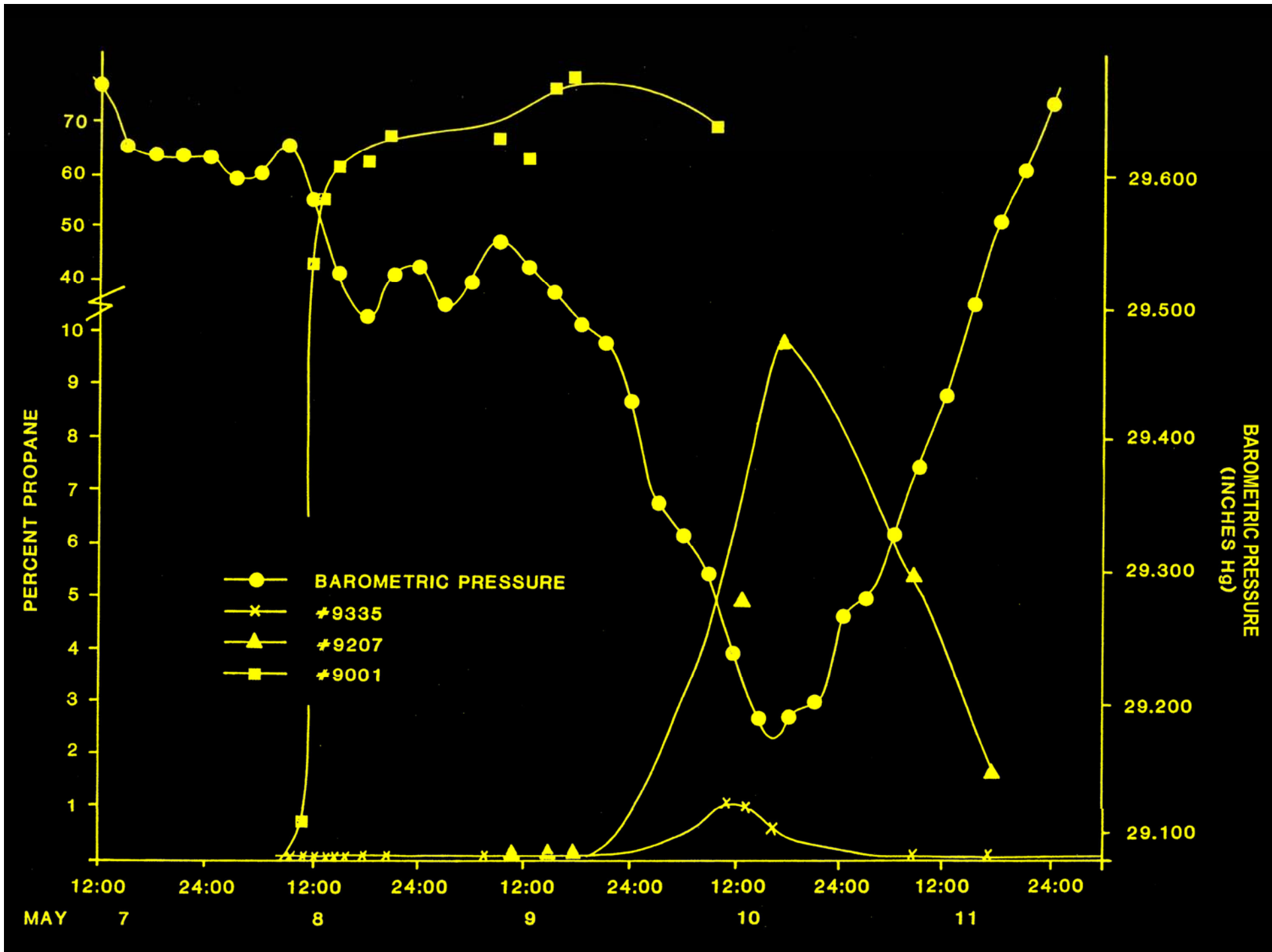
No. of Days Until
Helium Builds





BAROMETRIC PUMPING OF HYDROCARBONS

- PERCENT PROPANE UNDER GROUND SHEET
- - - - PERCENT PROPANE UNDER GROUND SHEET
- BAROMETRIC PRESSURE



NS-3-7

NS-3-8

NS-4-7

● *Northern Geochemical Anomaly*

CHUKCHI SEA

NR 3-1

NR 3-2

NR 4-1

NR 4-3

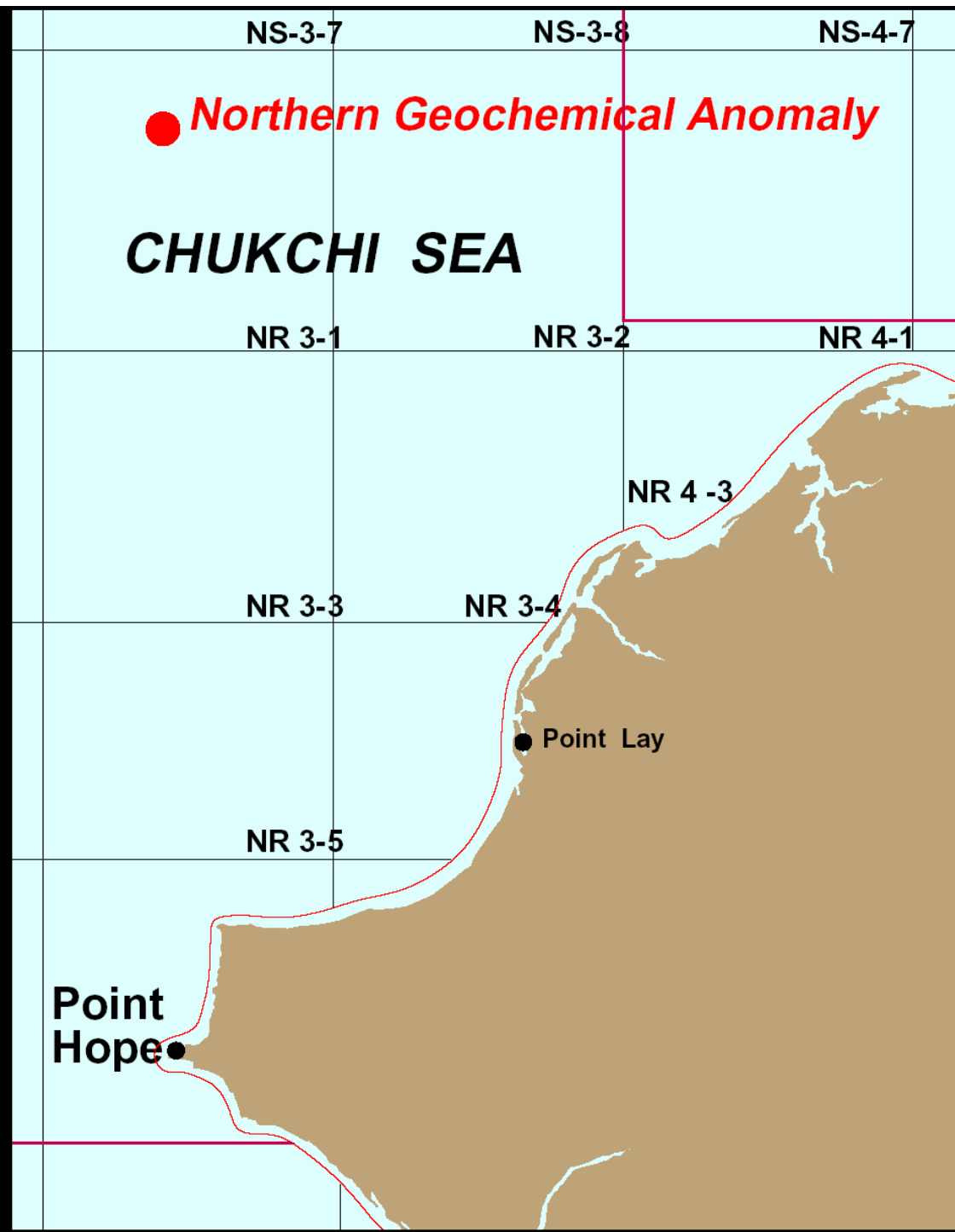
NR 3-3

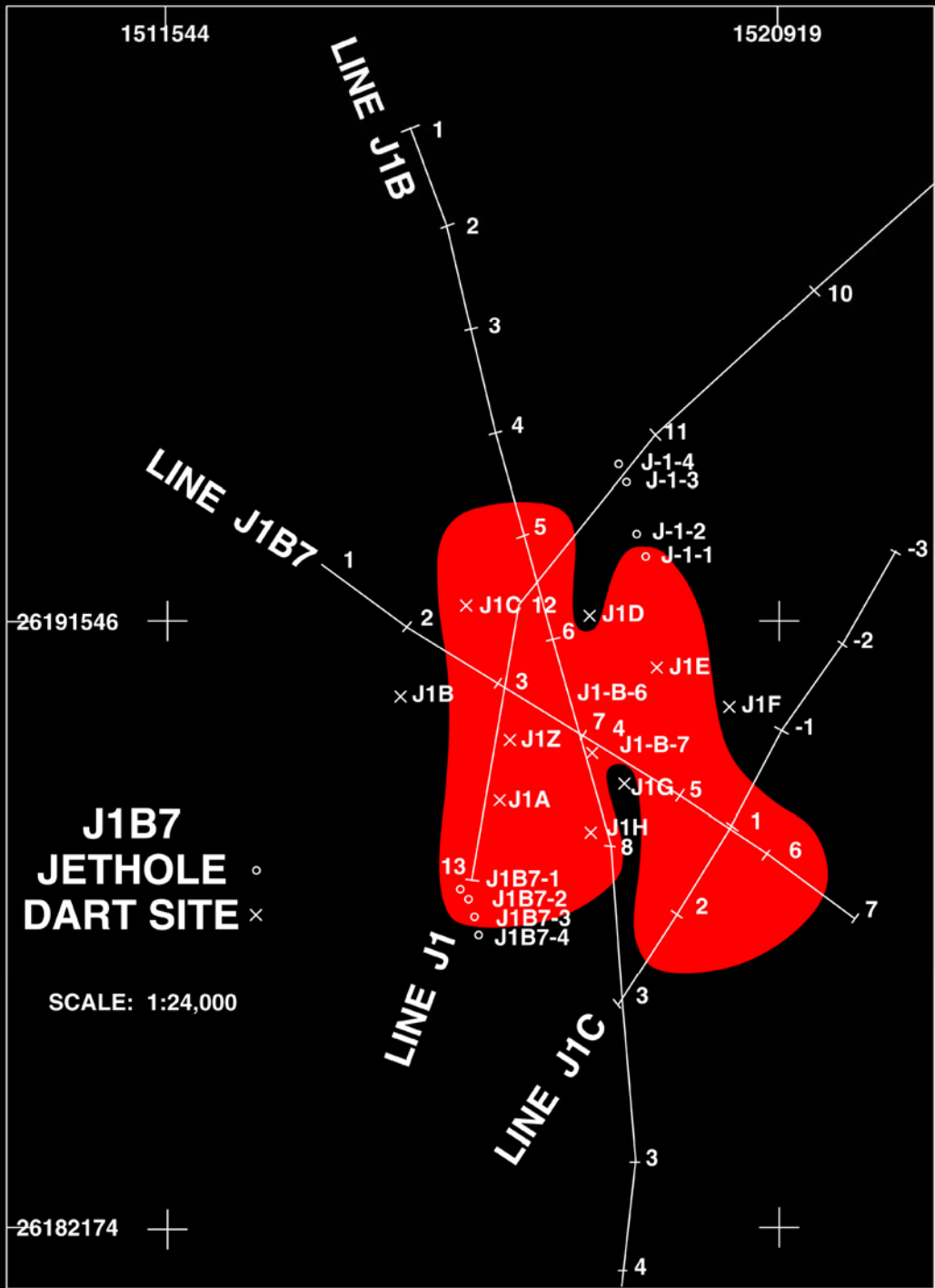
NR 3-4

● Point Lay

NR 3-5

● Point Hope



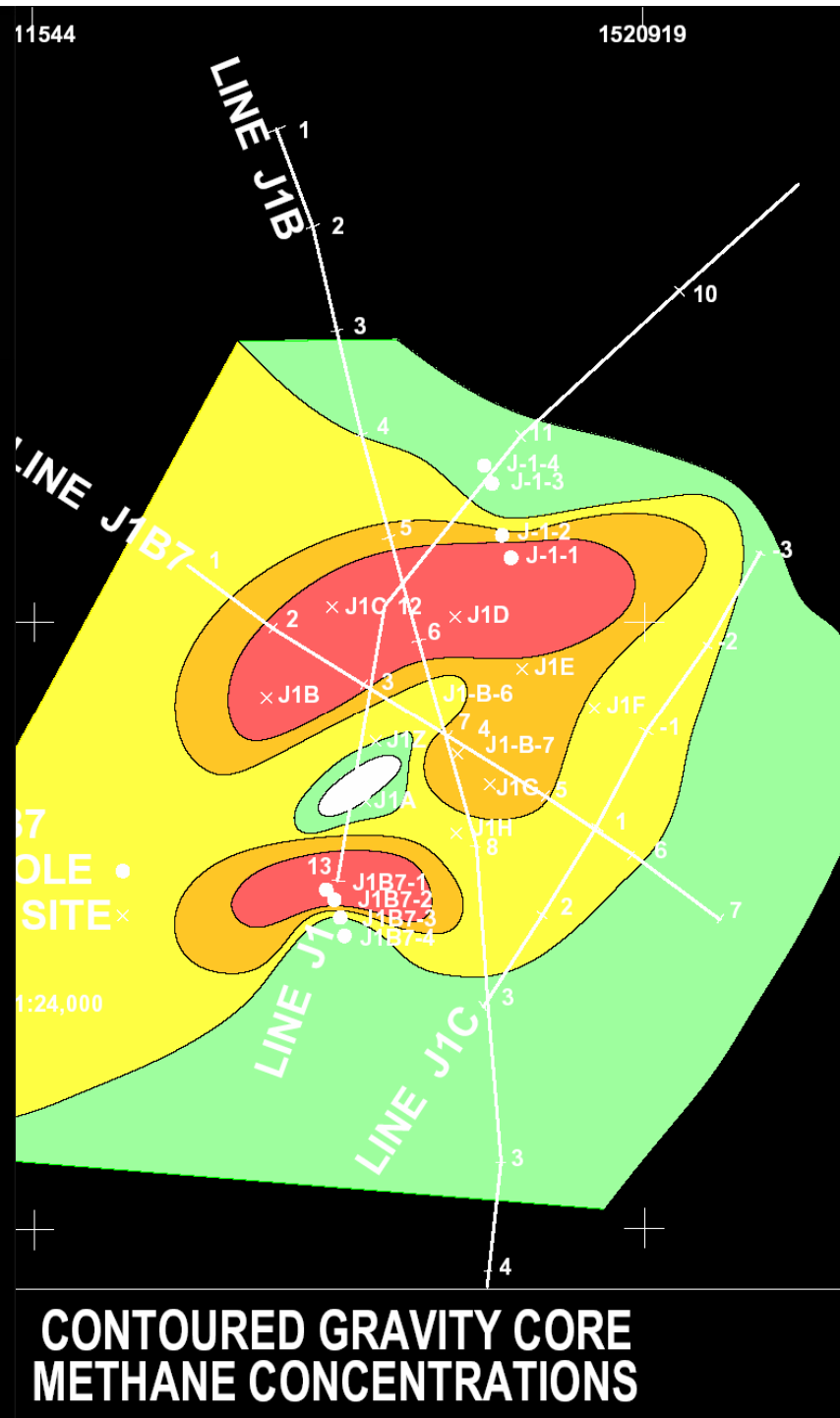
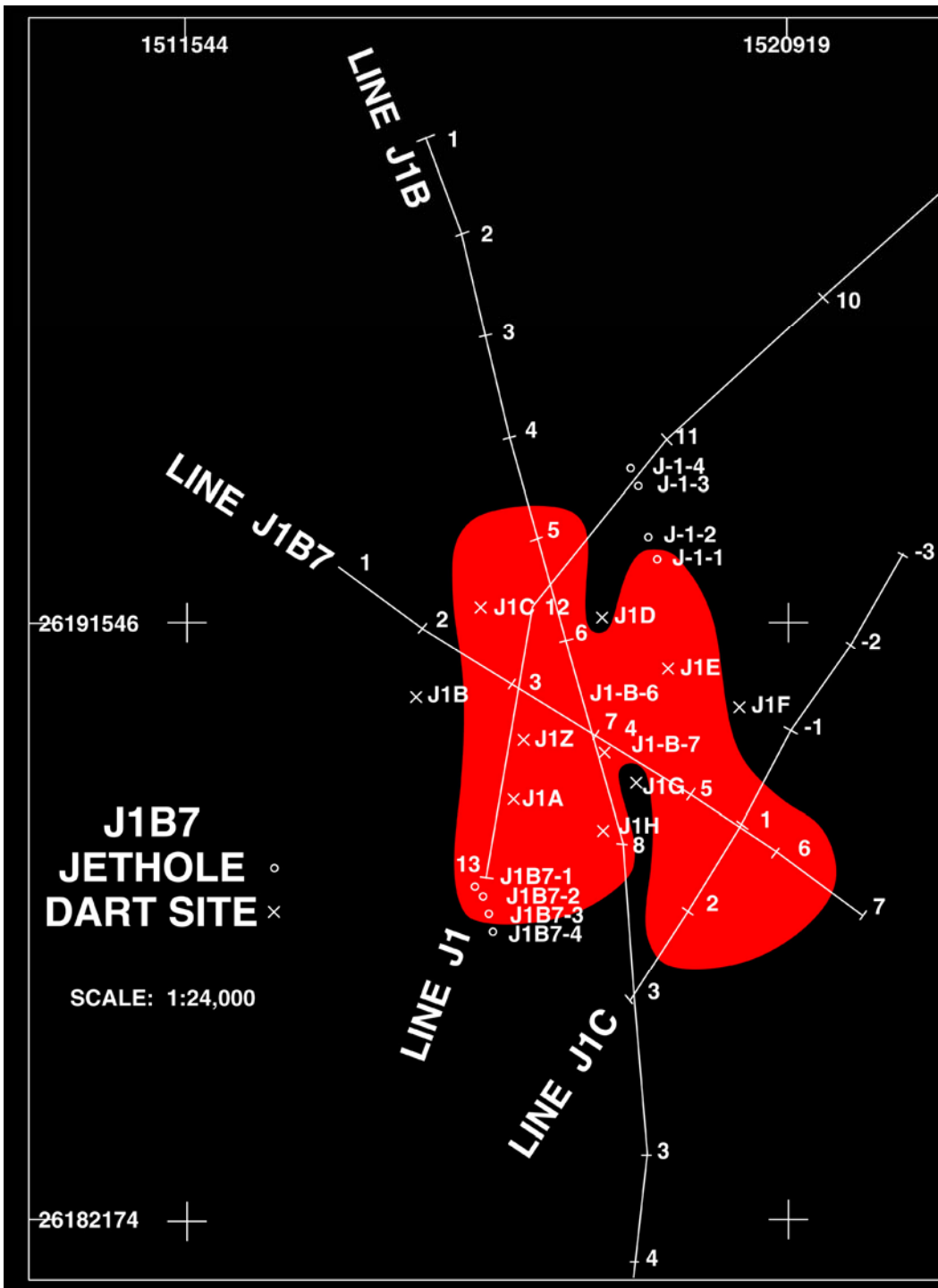


**DARTS FROM REGIONAL GRID CLOSEST TO JET LOCATION J1B7
(C1-C4 IN PPM, 2D FLUORESCENCE IN UNITS)**

Site	Water Depth (ft)	Methane	Ethane	Propane	I-Butane	N-Butane	Ethylene	Propylene	LF2D	HF2D
EE55	156	30.785	0.462	0.498	0.090	0.123	1.176	0.510	6.00	21.00
EE56	156	25.994	0.431	0.328	0.038	0.086	0.847	0.323	6.00	18.00
FF54	150	8.209	0.192	0.266	0.013	0.061	0.471	0.108	5.00	6.00
FF55	156	19.500	0.385	0.320	0.064	0.089	0.719	0.308	0.00	0.00
FF57	162	42.999	0.467	0.208	0.018	0.035	0.465	0.210	0.00	0.00
GG54	156	27.285	0.511	0.354	0.060	0.087	0.678	0.262	6.00	21.00
GG56	156	45.735	0.253	0.223	0.022	0.039	0.694	0.217	6.00	30.00
GG57	156	37.588	0.478	0.211	0.028	0.035	0.551	0.238	8.00	41.00

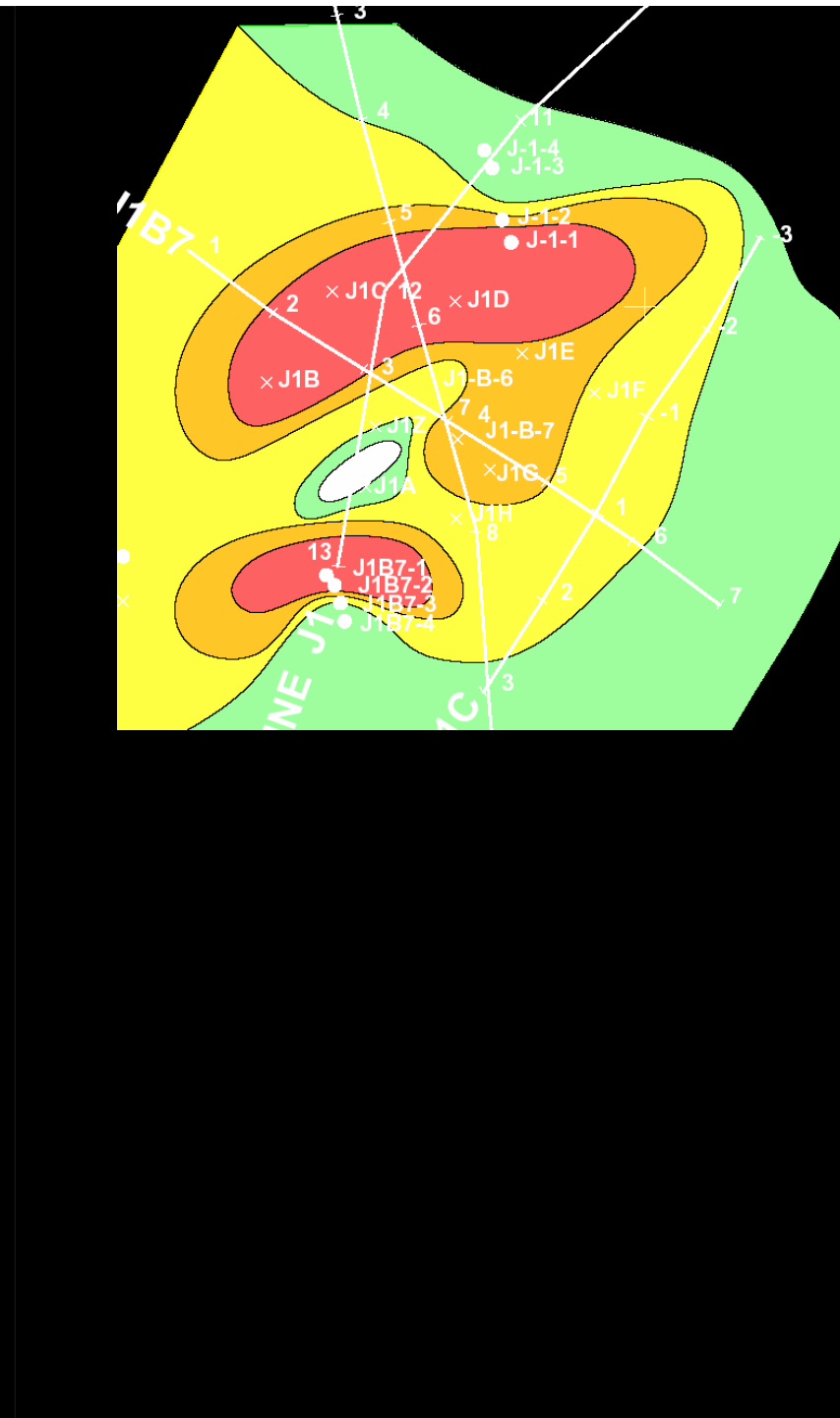
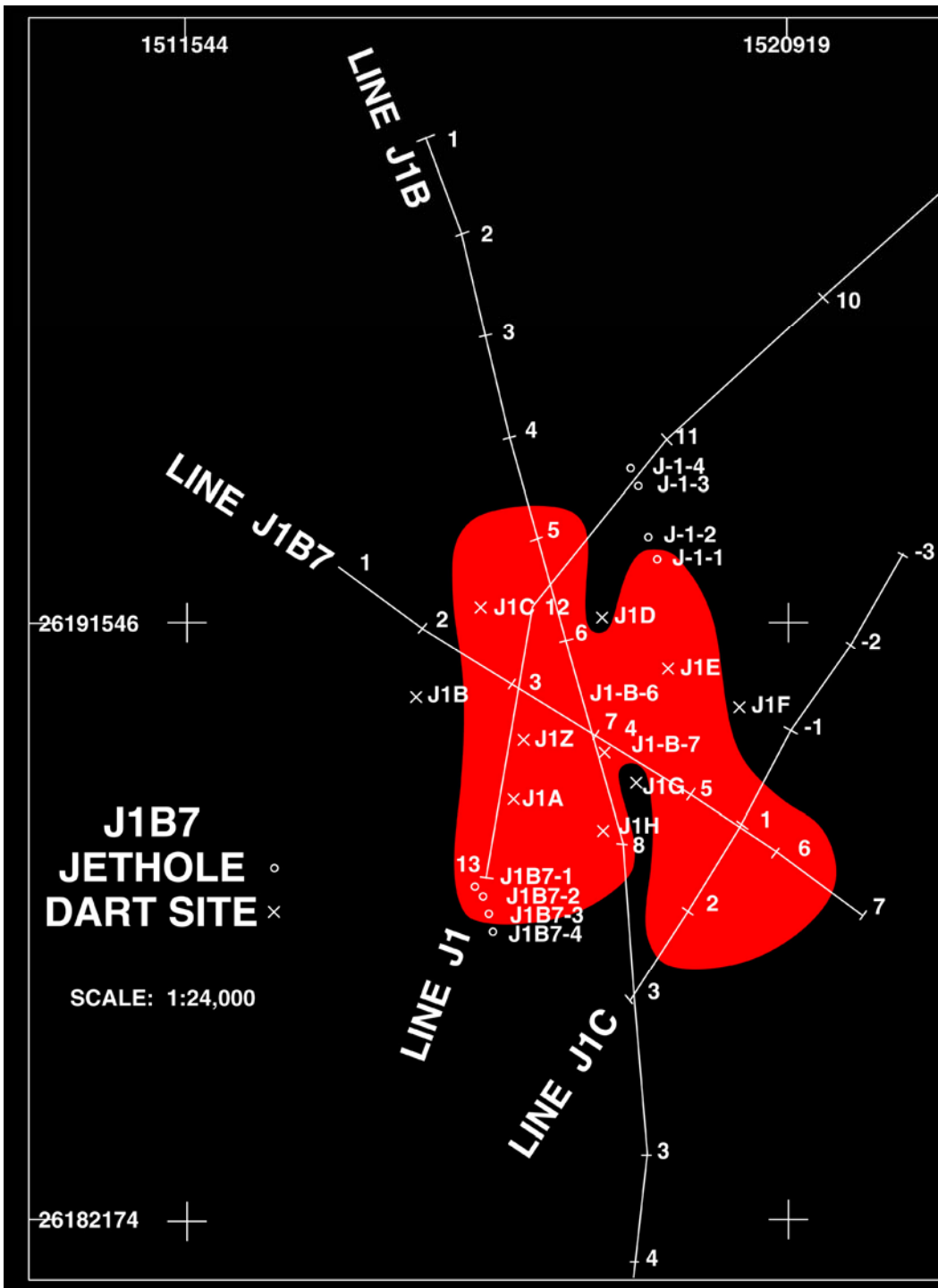
**CHUKCHI SEA GEOCHEMICAL SURVEY
GEOCHEMICAL ANOMALY SPECIAL STUDIES
(C1-C4 IN PPM, 2D FLUORESCENCE IN UNITS)
DART SAMPLES**

Site	Depth (ft)	Methane	Ethane	Propane	I-Butane	N-Butane	Ethylene	Propylene	LF2D	HF2D
J1B6	162	69.8	0.807	0.453	0.118	0.115	0.664	0.167	7.000	12.000
J1B7	162	227.8	1.463	1.353	0.175	0.151	1.301	0.157	5.000	15.000
J1A	161	22.4	0.491	0.243	0.028	0.054	0.850	0.179	5.000	11.000
J1B	163	379.3	5.895	0.415	0.055	0.061	0.777	0.157	5.000	15.000
J1C	164	640.2	10.025	2.459	0.681	0.350	1.632	0.615	12.000	18.000
J1D	162	588.0	2.809	0.519	0.096	0.107	0.771	0.351	10.000	20.000
J1E	162	256.5	31.560	6.091	1.663	0.185	7.030	0.186	2.000	10.000
J1F	164	71.0	0.934	0.530	0.098	0.097	1.187	0.348	3.000	8.000
J1G	165	249.2	3.077	3.503	0.102	0.112	0.775	0.229	4.000	9.000
J1H	165	76.3	1.681	1.129	0.565	0.318	2.051	0.613	2.000	7.000

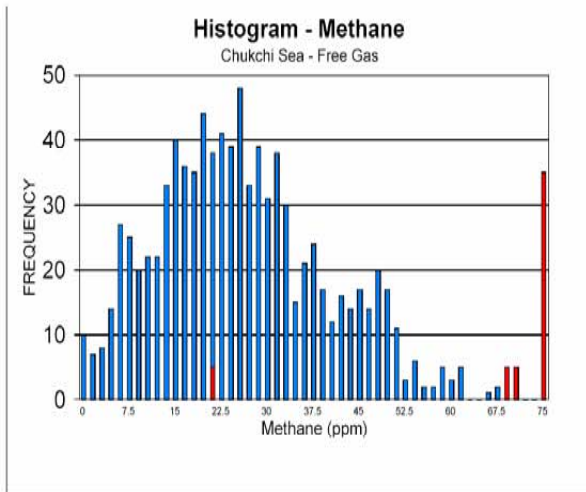


**CHUKCHI SEA GEOCHEMICAL SURVEY
GEOCHEMICAL ANOMALY SPECIAL STUDIES
J1B7 JET SAMPLE ANALYSES
(C1-C4 IN PPM, 2D FLUORESCENCE UNITS)**

Site	Depth (ft)	Methane	Ethane	Propane	I-Butane	N-Butane	Ethylene	Propylene	LF2D	HF2D
Location 1										
J1B711	2	350.4	0.952	0.692	0.000	0.142	0.395	0.144	3.000	7.00
J1B712	7	1908.3	17.572	4.533	0.665	0.388	1.671	0.422	5.000	9.00
J1B713	12	57461.7	482.072	24.283	18.539	2.000	29.319	0.051	6.000	14.00
Location 2										
J1B721	2	1407.1	17.684	0.545	0.124	0.158	1.371	0.159	2.000	8.00
J1B722	7	2106.2	32.569	2.128	0.865	0.497	9.561	0.070	11.000	19.00
J1B723	12	2084.4	12.279	0.728	2.653	0.346	3.115	0.201	3.000	7.00
J1B724	17	33436.3	42.832	1.122	0.220	0.181	10.756	1.545	5.000	21.00
J1B725	22	185.9	2.422	0.933	0.477	0.369	0.753	0.680	4.000	11.00
Location 3										
J1B731	2	924.5	27.275	2.061	0.941	0.276	2.143	0.166	9.000	15.00
J1B732	7	952.8	29.030	2.221	1.910	0.353	2.910	0.198	2.000	10.00
J1B733	12	61421.0	189.580	3.539	3.980	0.578	36.693	0.000	3.000	7.00
J1B734	17	51576.4	197.078	1.293	0.443	0.259	18.136	0.641	50.000	60.00
Location 4										
J1B741	2	28.8	0.526	0.301	0.055	0.103	0.670	0.364	4.000	12.00
J1B742	7	52.0	1.095	0.579	0.079	0.091	0.935	0.173	5.000	20.00
J1B743	12	56.9	1.380	1.311	0.134	0.186	1.473	0.395	4.000	12.00

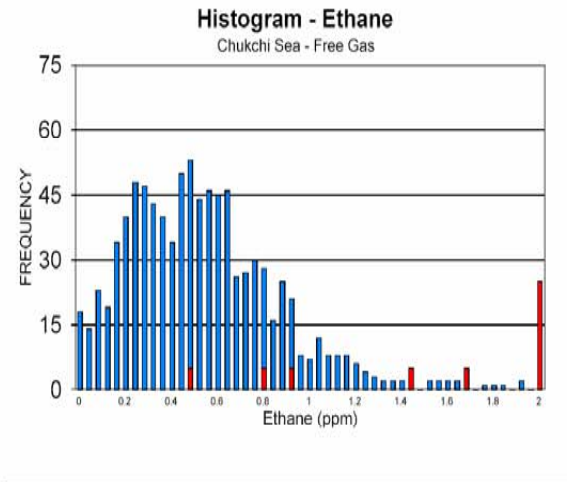


MAGNITUDE HISTOGRAMS - Chukchi Sea Dart Core Samples - Regional Free Gas vs. Macroseep Samples



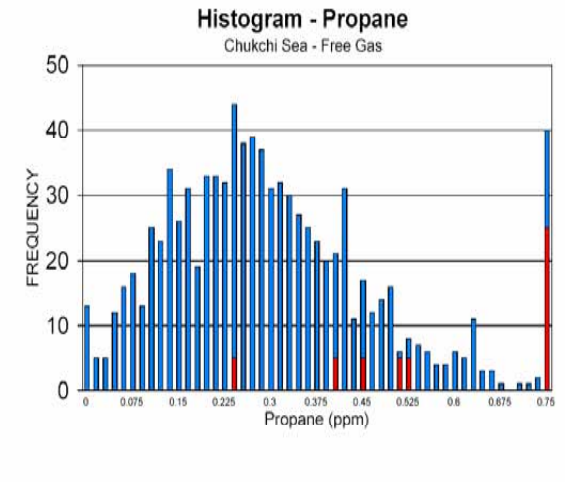
Exploration Technologies, Inc.

Figure - 1a



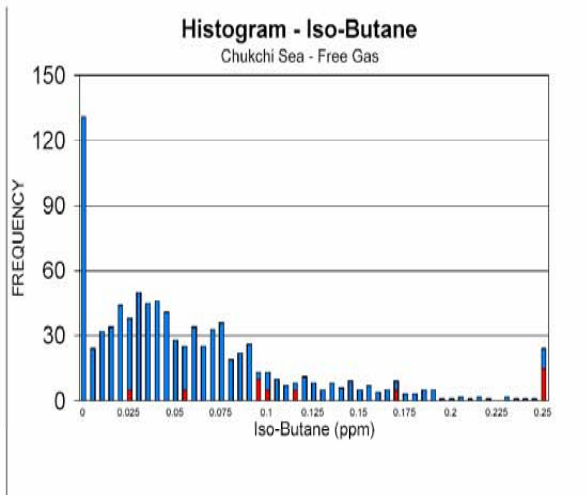
Exploration Technologies, Inc.

Figure - 1b



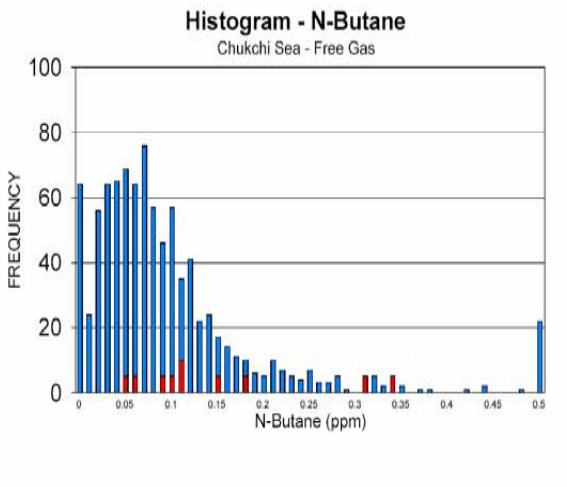
Exploration Technologies, Inc.

Figure - 1c



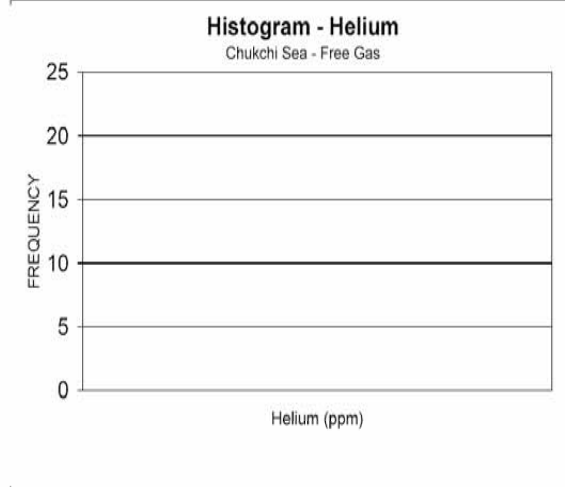
Exploration Technologies, Inc.

Figure - 1d



Exploration Technologies, Inc.

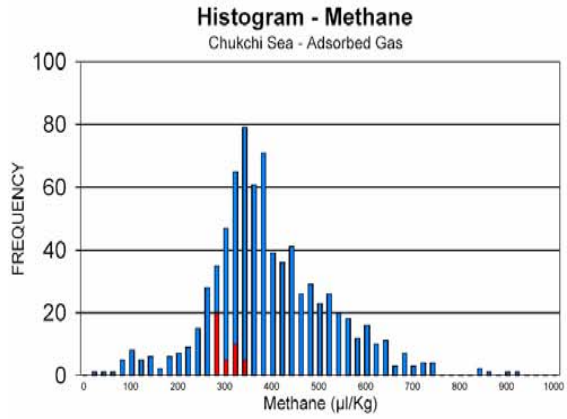
Figure - 1e



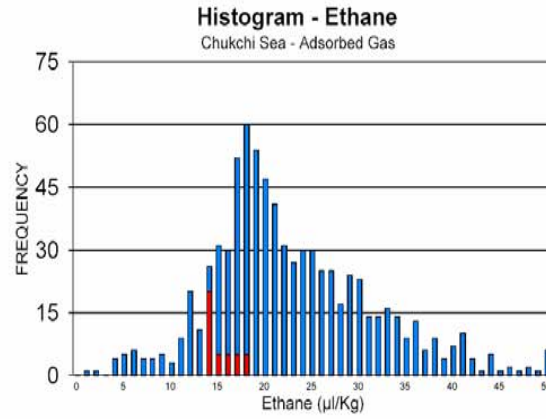
Exploration Technologies, Inc.

Figure - 1f

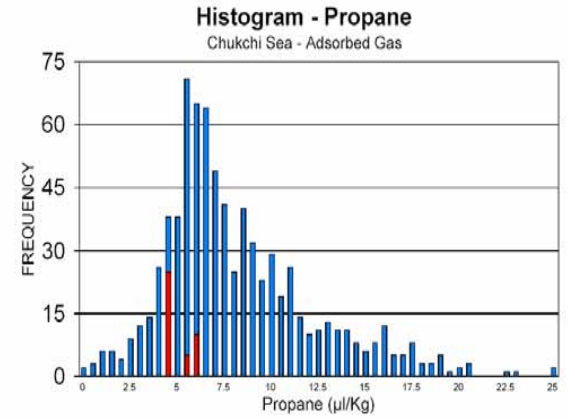
MAGNITUDE HISTOGRAMS - Chukchi Sea Dart Core Samples - Regional Adsorbed Gas vs. Macroseep Samples



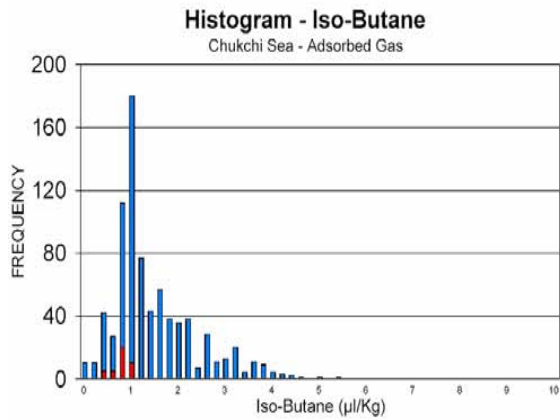
Exploration Technologies, Inc. Figure - 2a



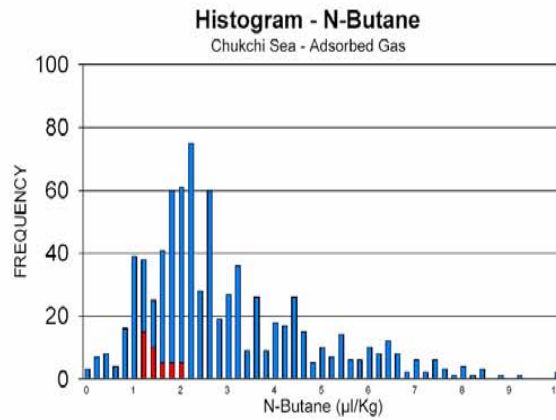
Exploration Technologies, Inc. Figure - 2b



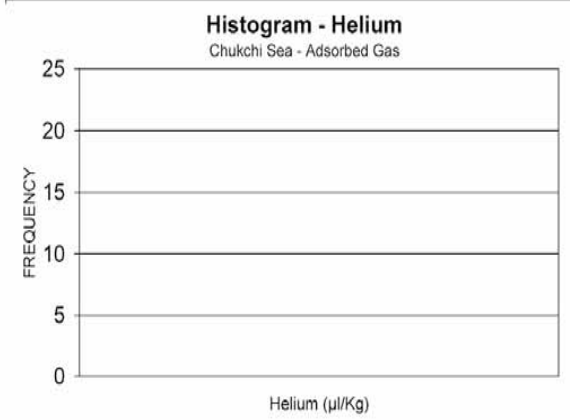
Exploration Technologies, Inc. Figure -



Exploration Technologies, Inc. Figure - 2d



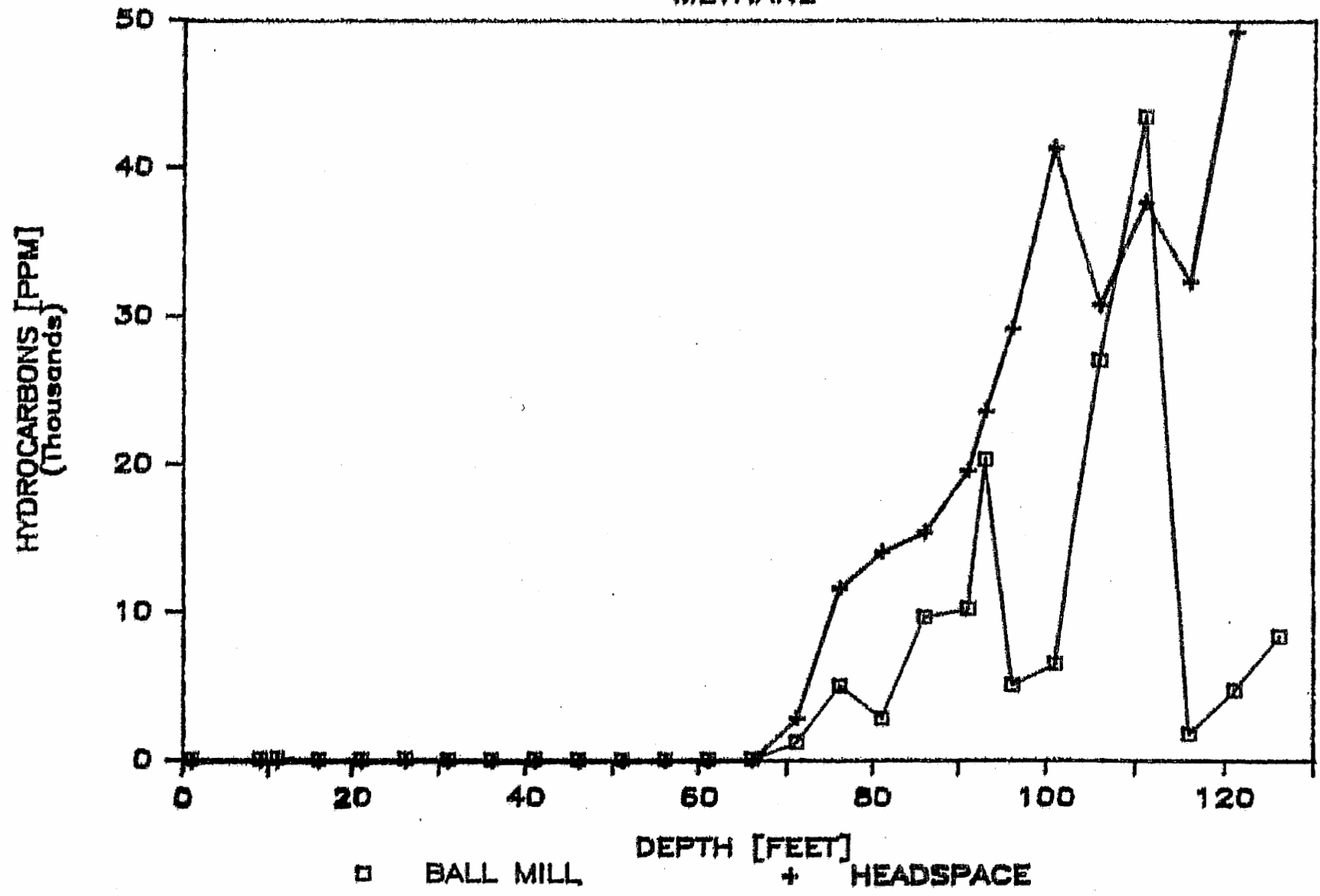
Exploration Technologies, Inc. Figure - 2e



Exploration Technologies, Inc. Figure -

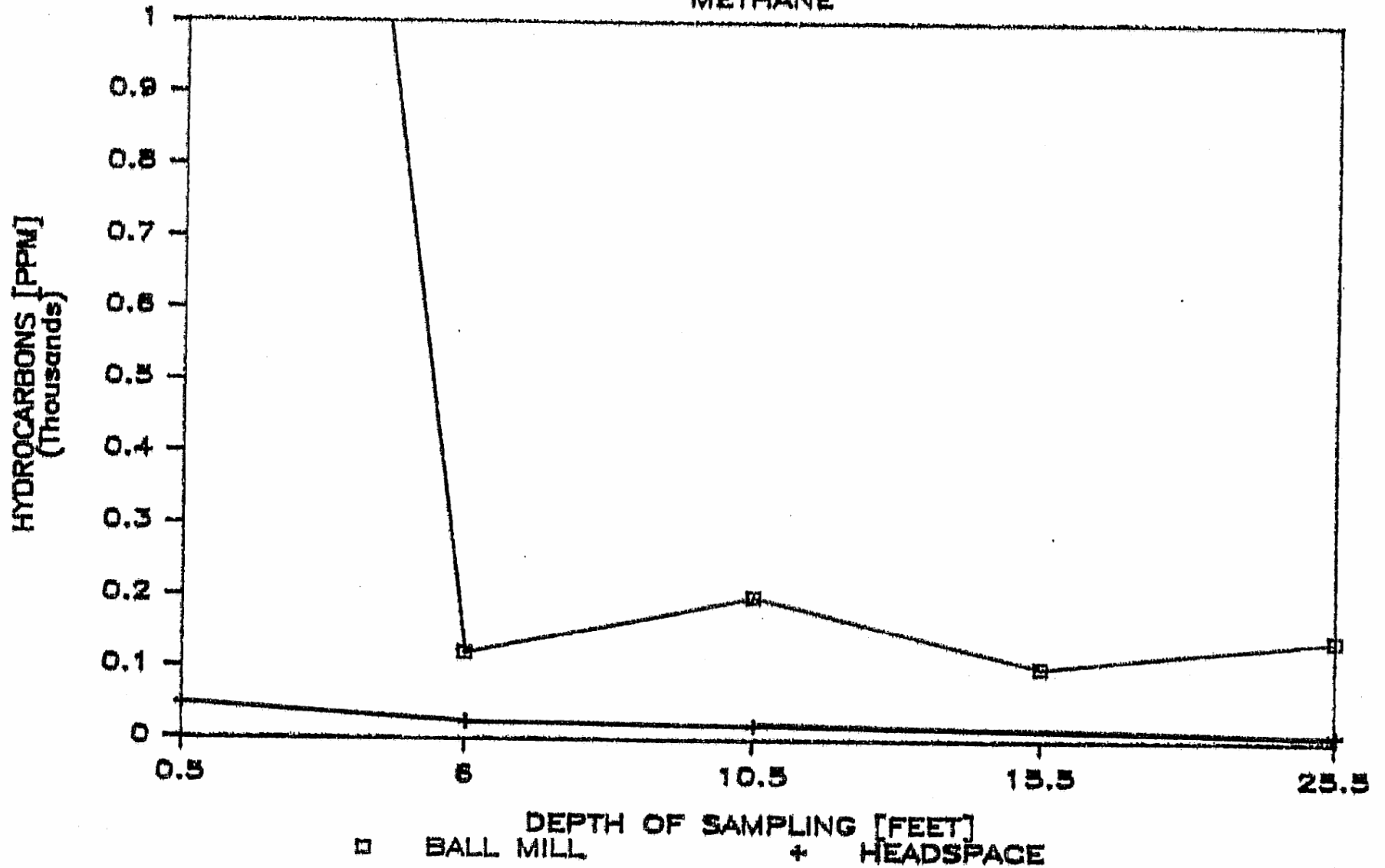
BOREHOLE A1

METHANE



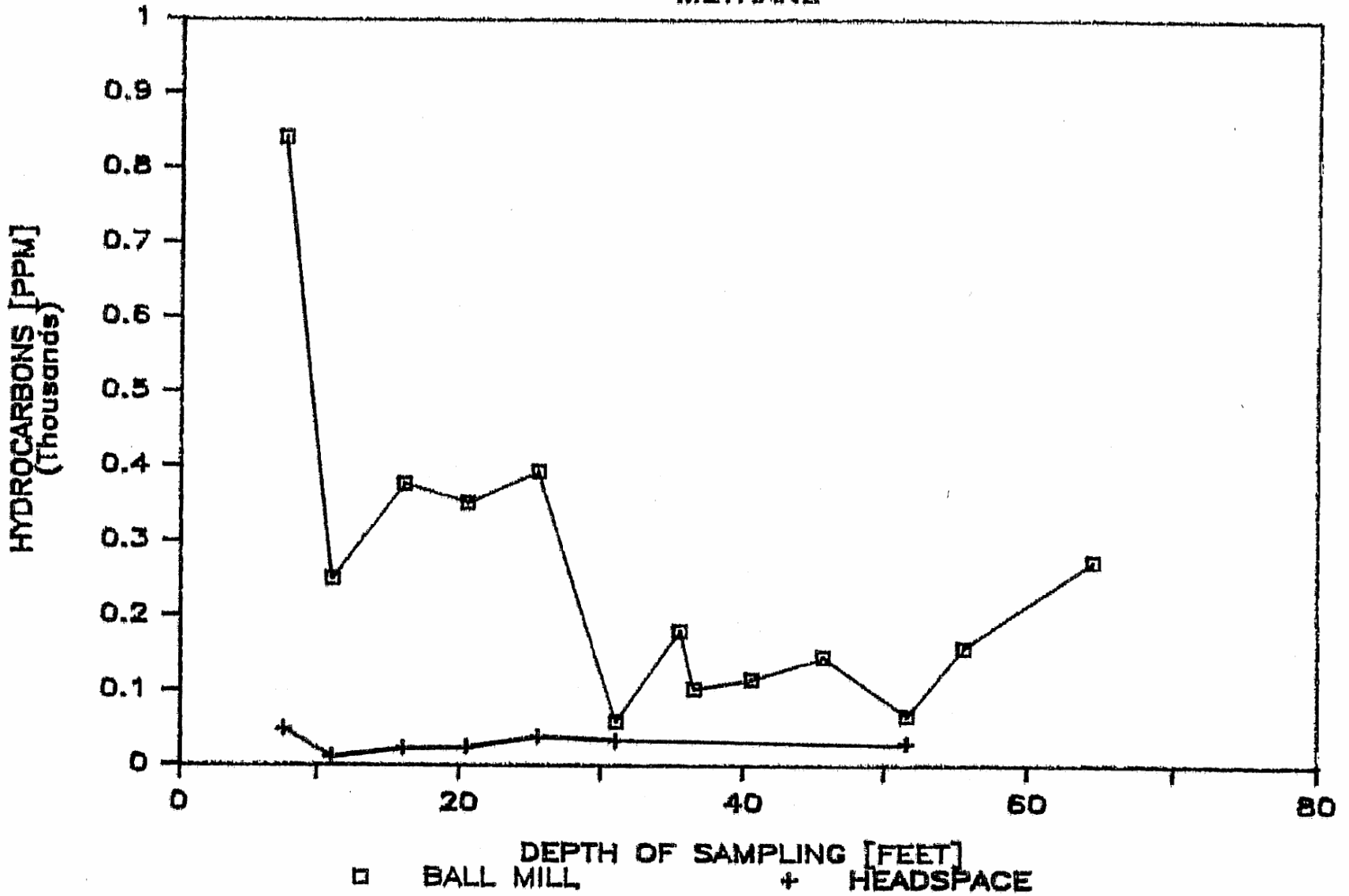
BOREHOLE BBB- 37/2

METHANE



BOREHOLE P - 3

METHANE

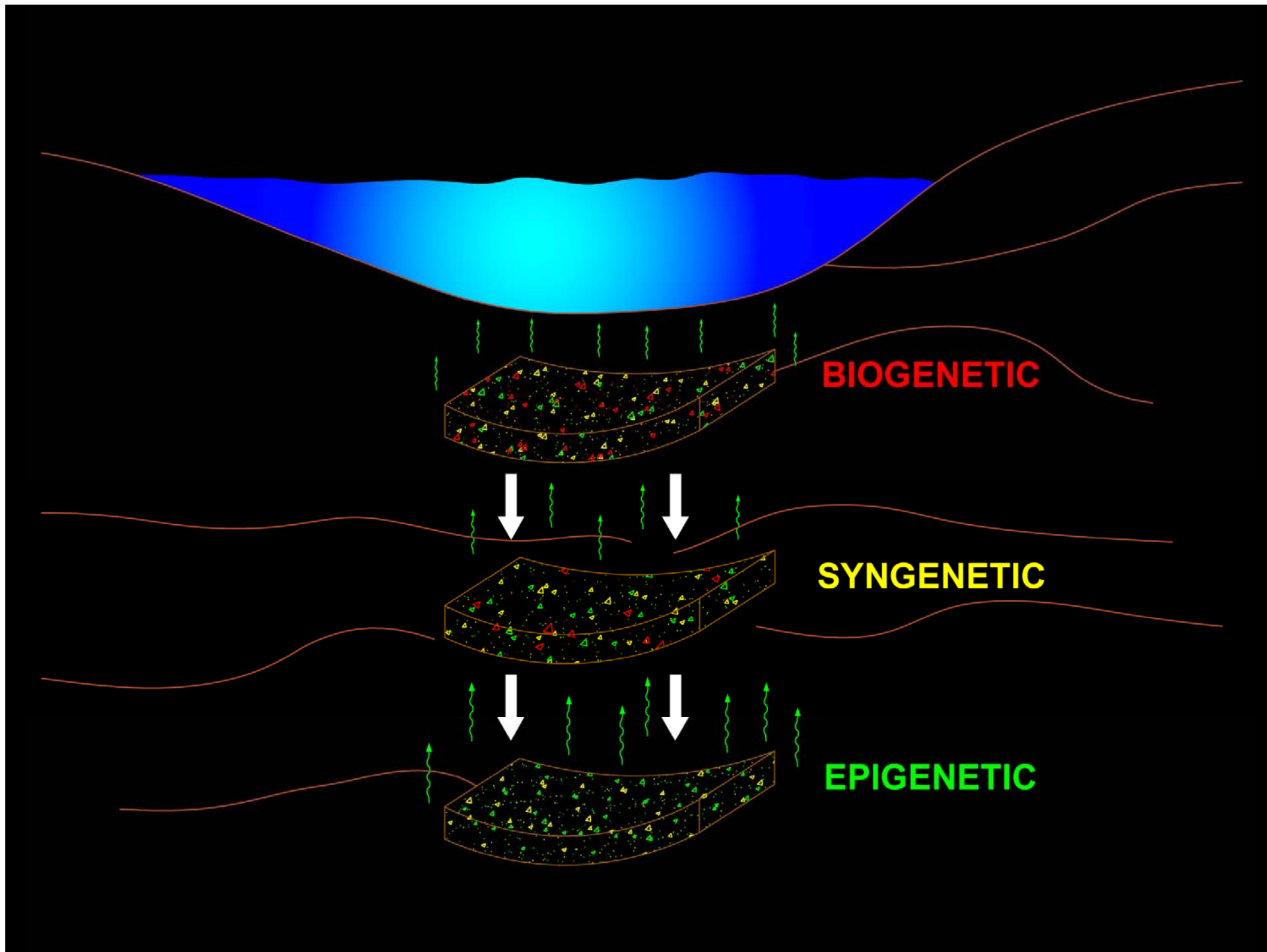


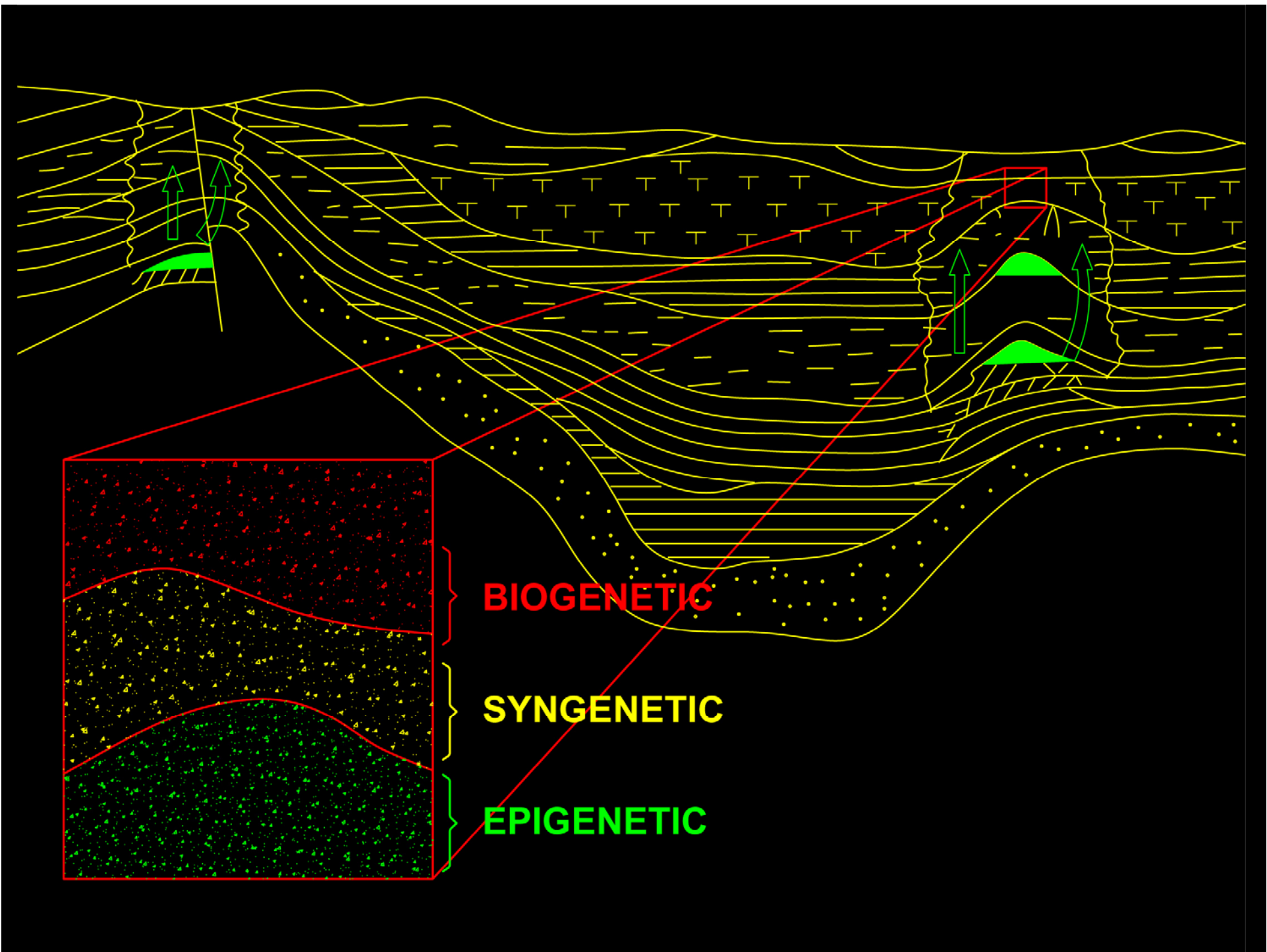
DETRITALLY DISTRIBUTED GASES EXIST

THEY APPEAR THERMAL BECAUSE THEY ARE, THEY WERE CREATED DURING ROCK FORMATION AT DEPTH, UPLIFTED AND ERODED TO MAKE SOILS

RECYCLED GASES STILL EXIST IN THESE SEDIMENTS

THESE GASES SHOULD NOT BE EXTRACTED AND MIXED WITH FREE GAS





MIGRATED GASES

FREE GAS (IN-SITU)

**HEADSPACE GASES (HEAT, VACUUM AND SOLVENT
EXTRACTION)**

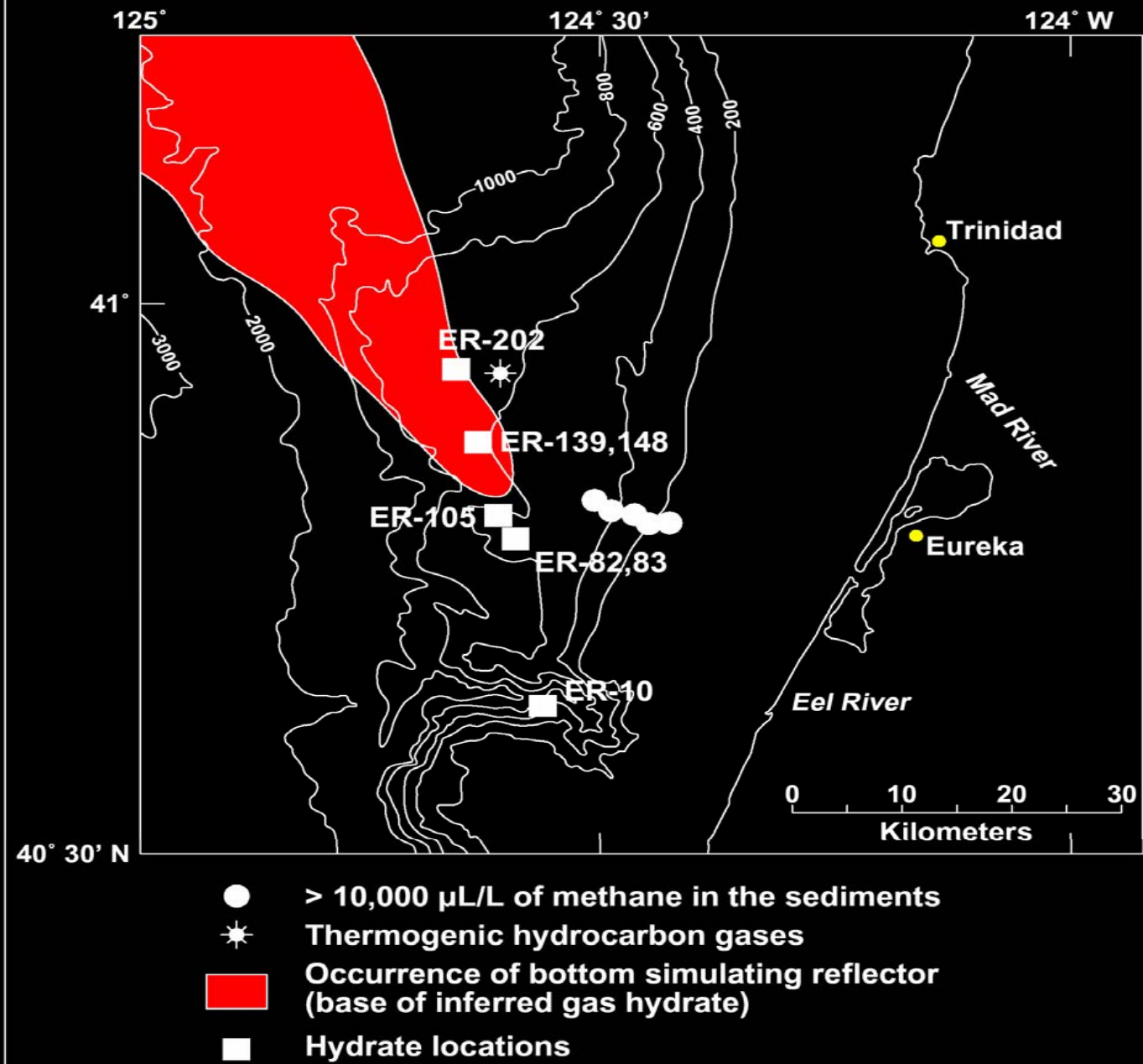
**LIGHT HYDROCARBONS C1-C4 ARE LABILE AND EASILY
EXTRACTED**

**DISAGGREGATION ONLY IMPORTANT TO FREE GASES
(OPEN PORE SPACE)**

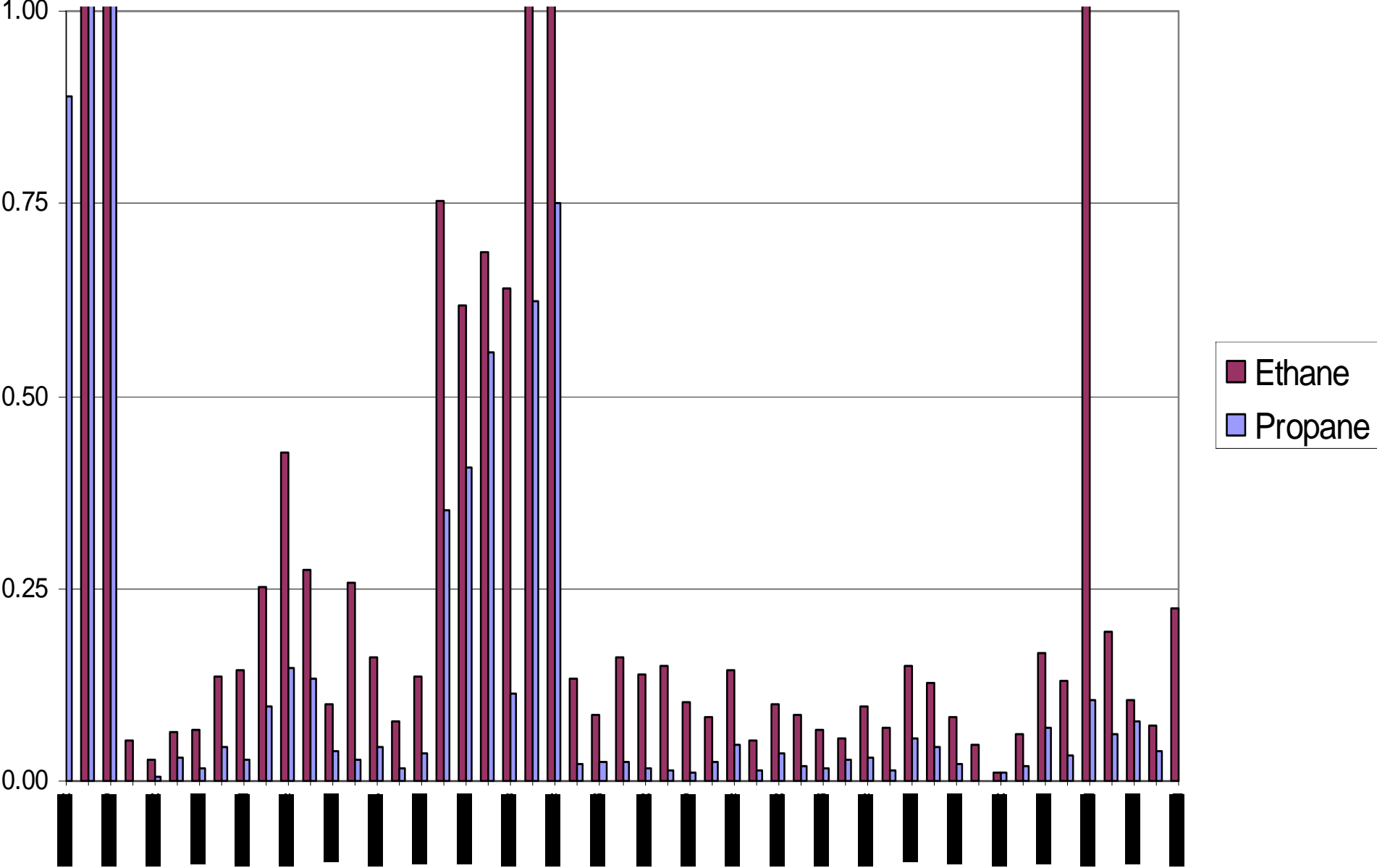
VACUUM, HEAT AND SOLVENT

COMPOSITIONS SAME FROM 100% DOWN TO SUBPPMV

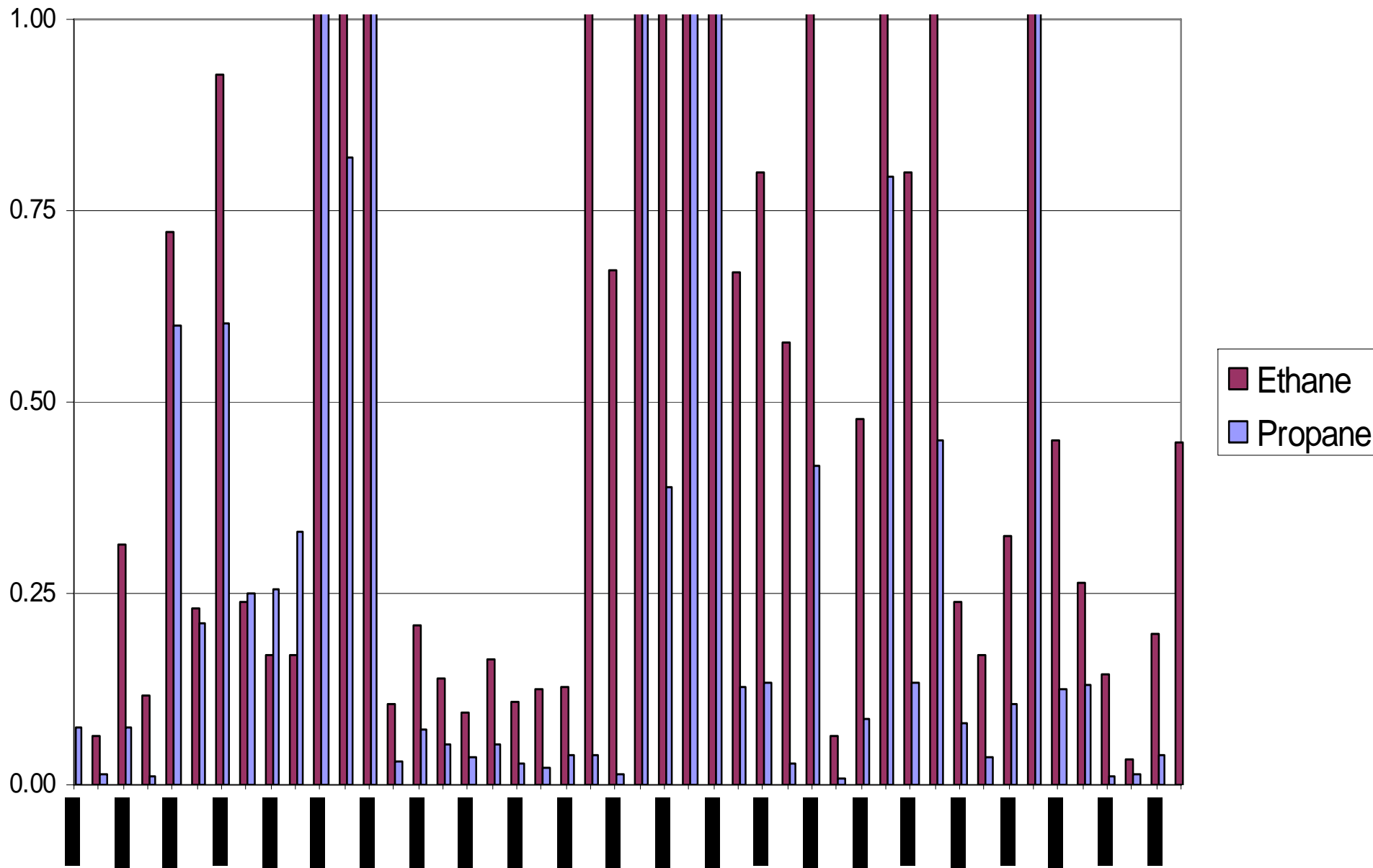
EEL RIVER - OFFSHORE CALIFORNIA LIGHT GASES VERSUS HEAVIES

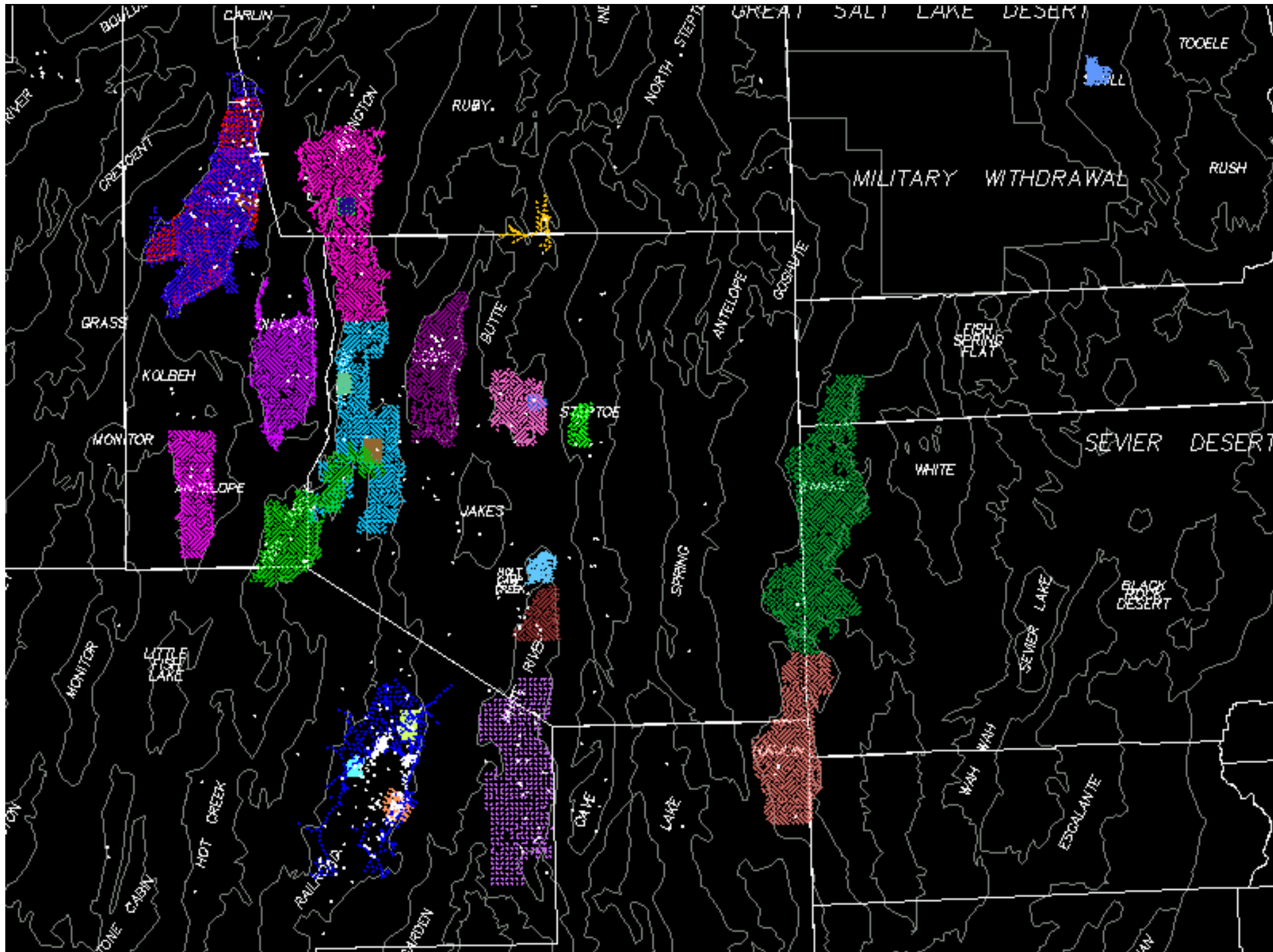


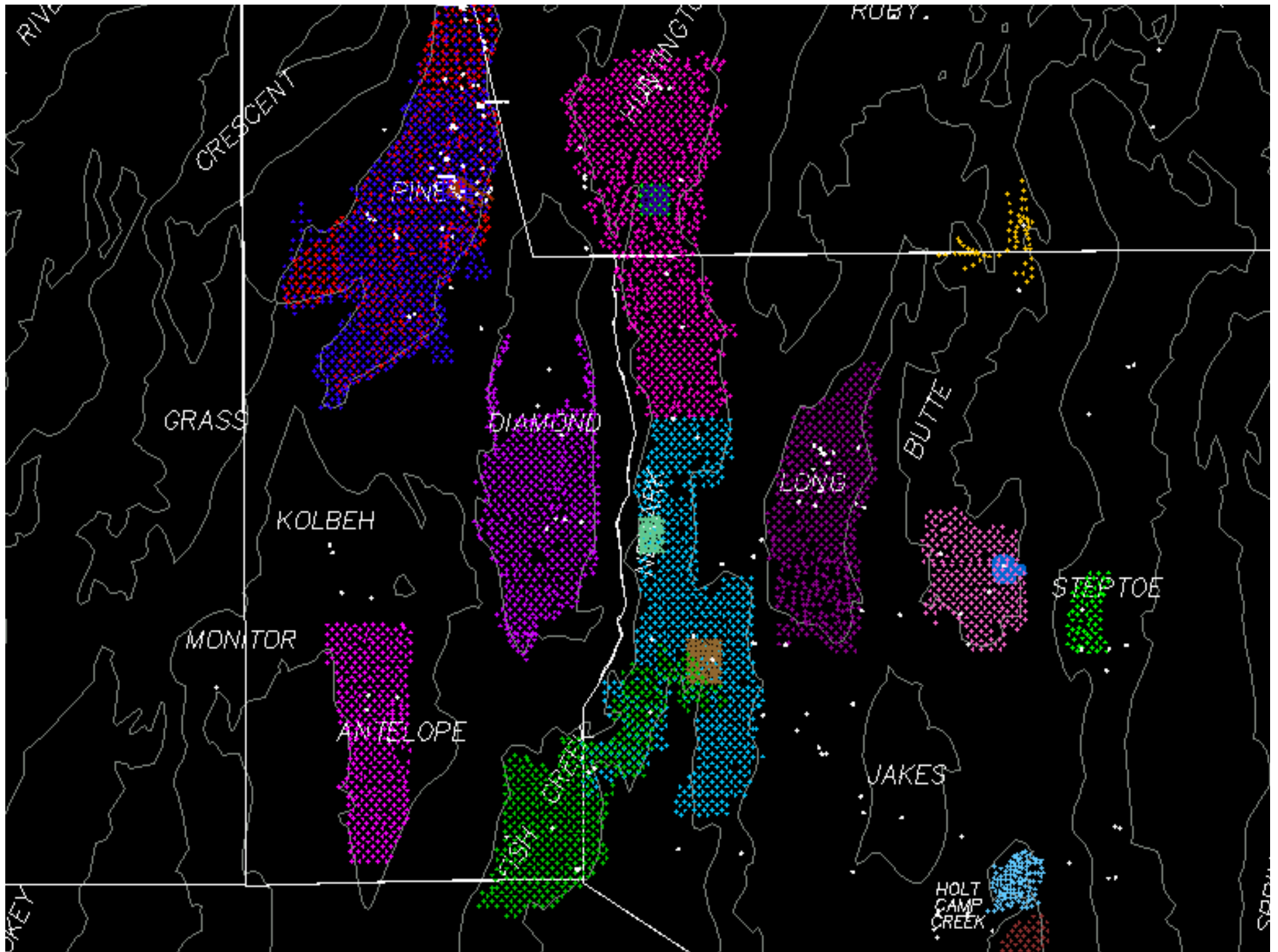
EEL River

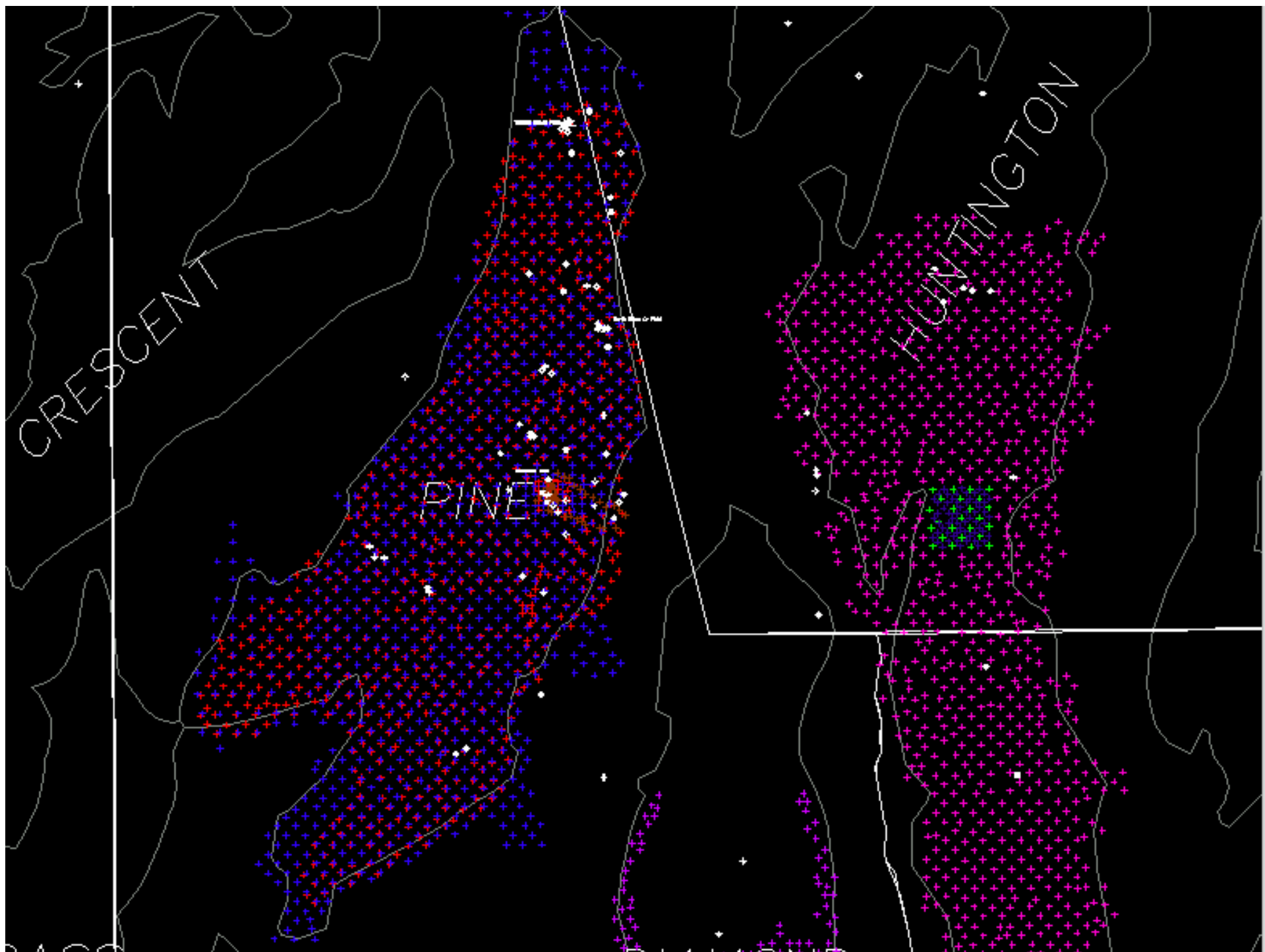


EEL River



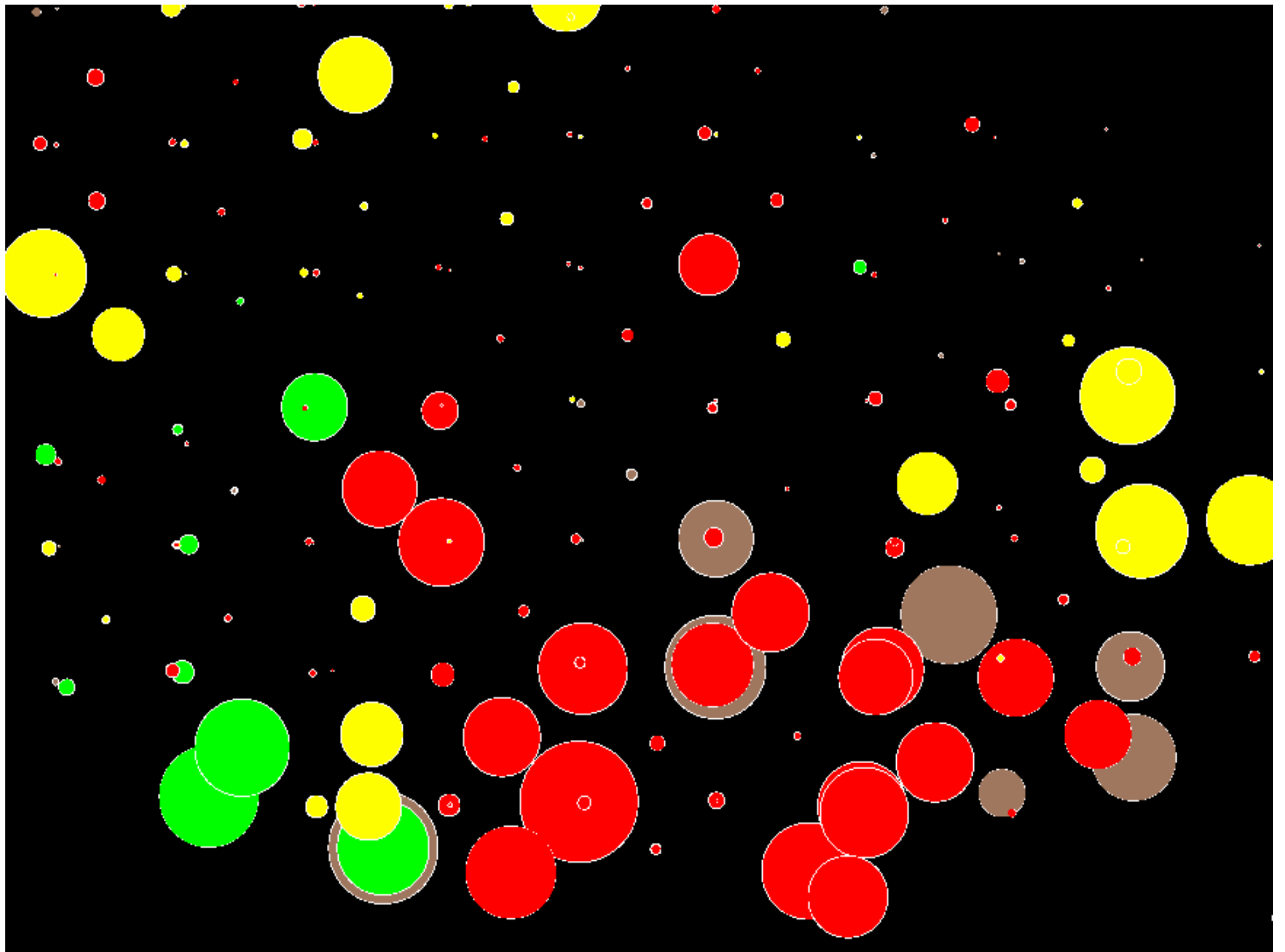


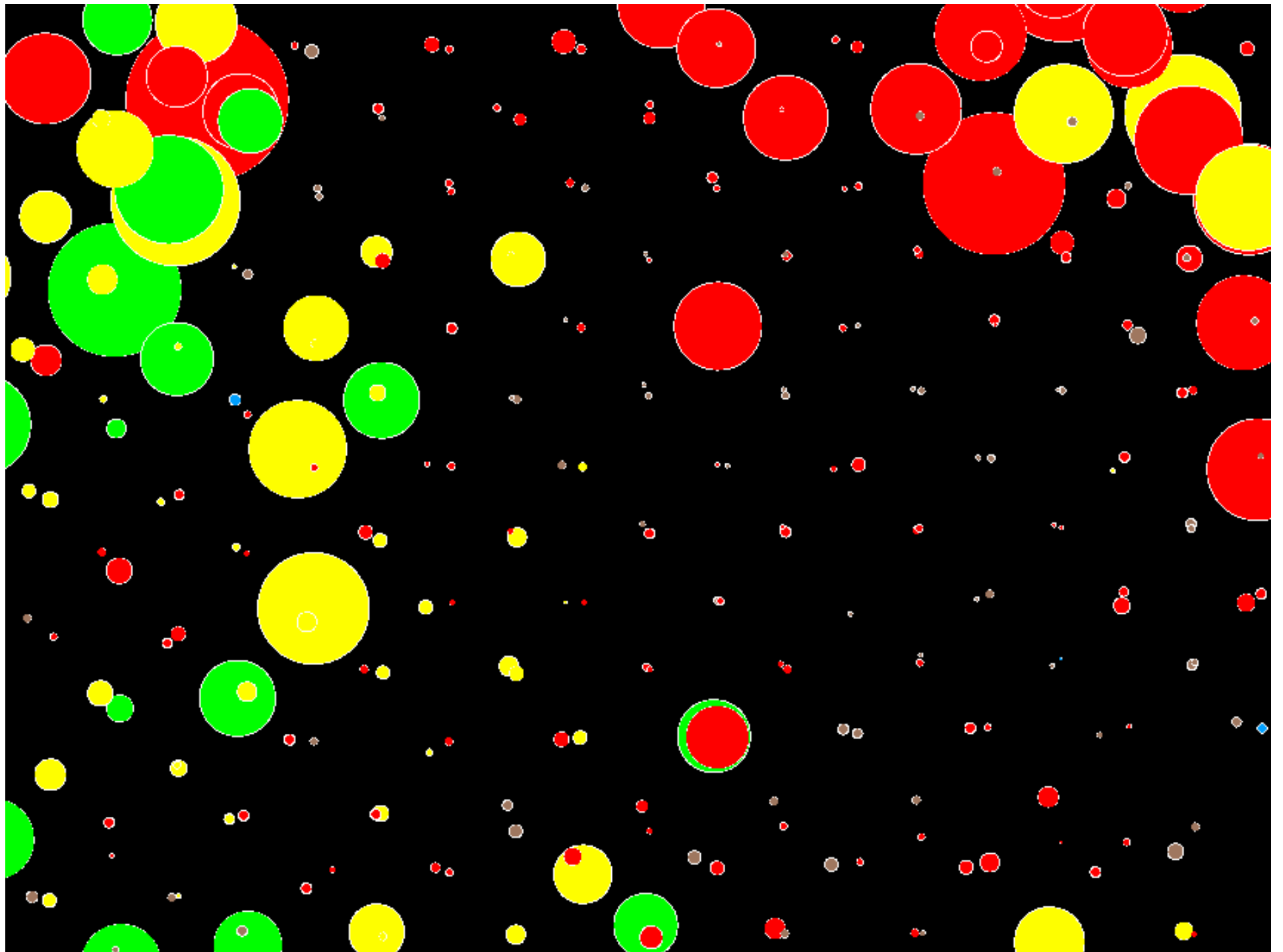


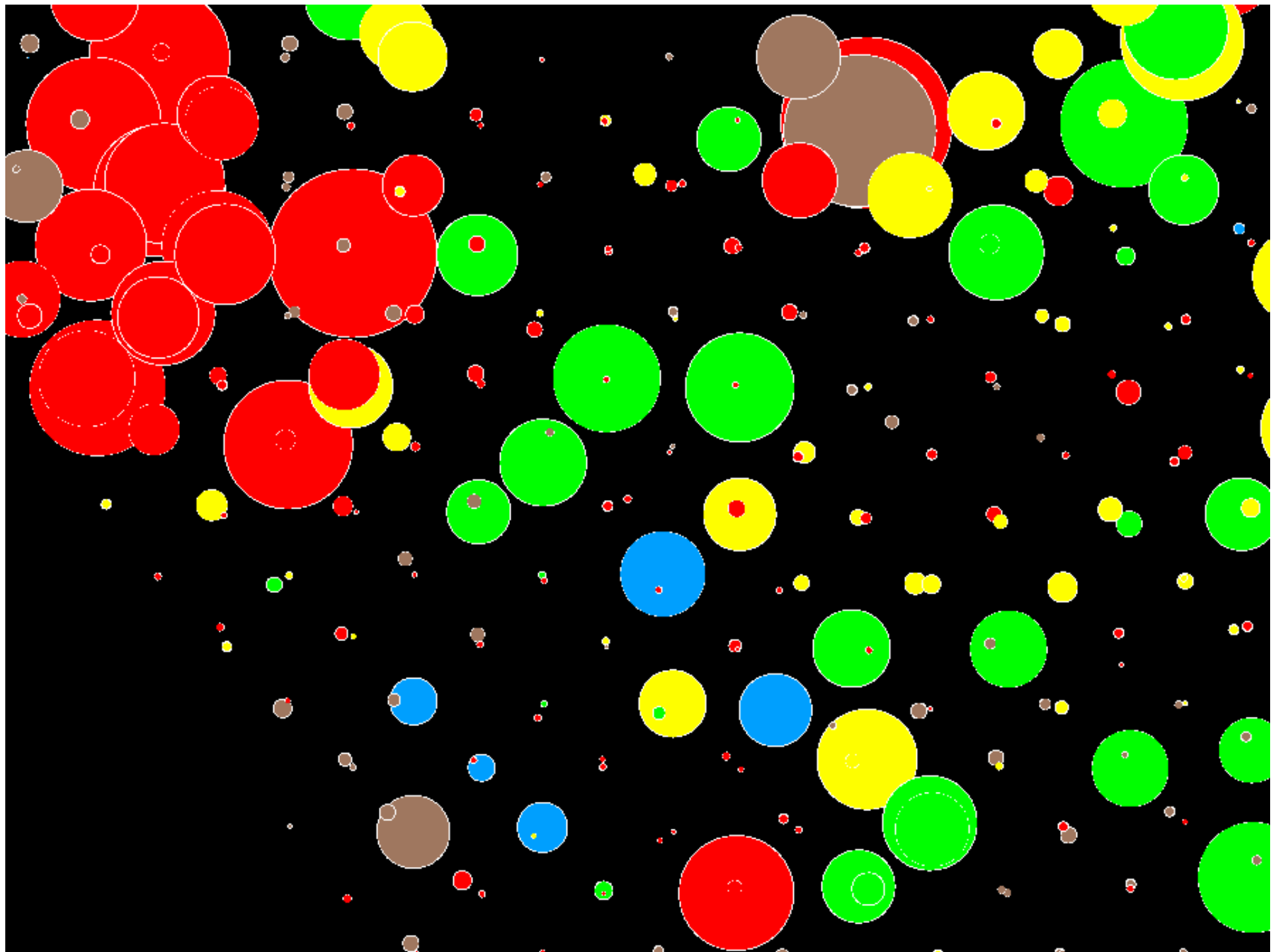


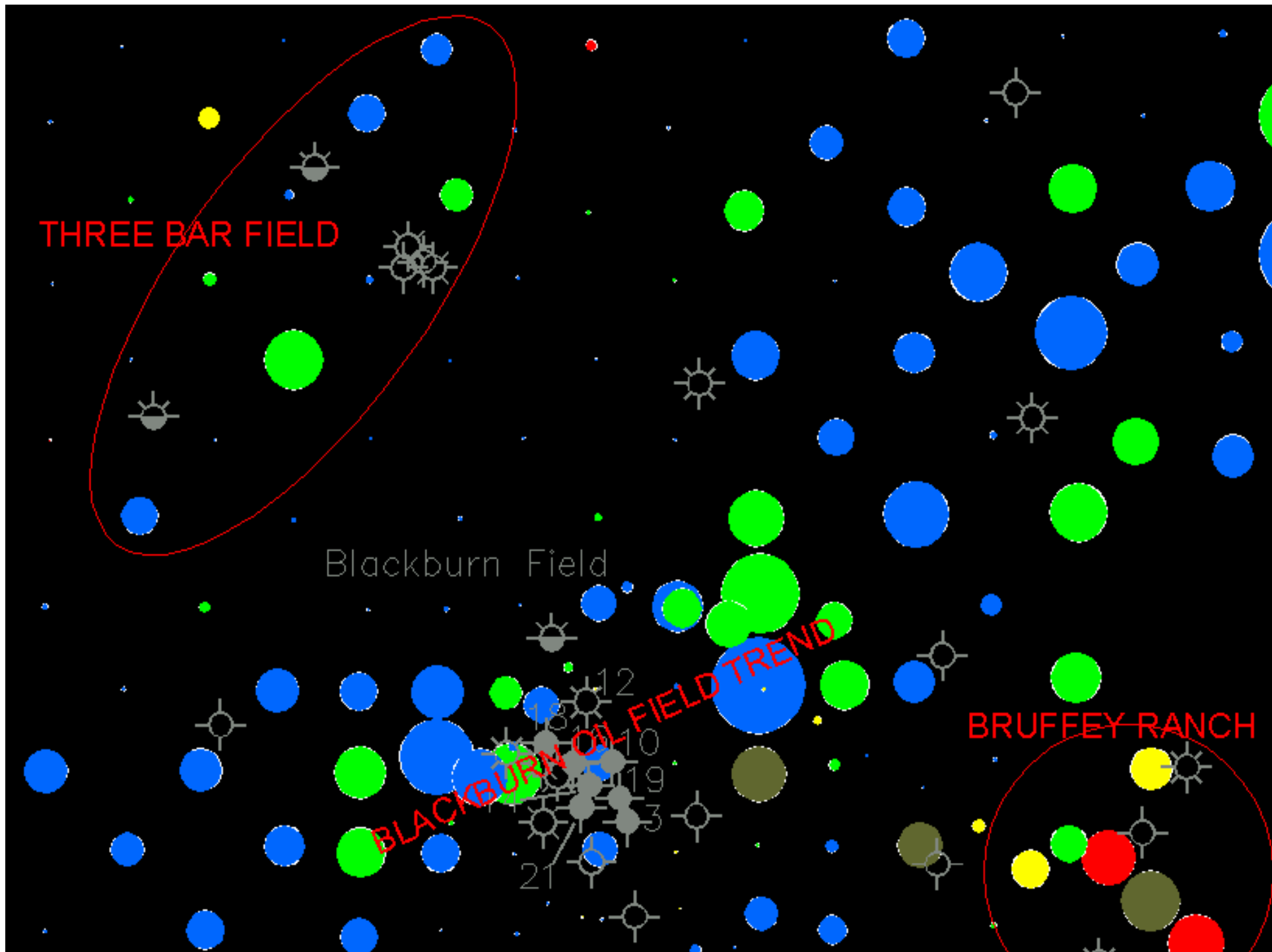
Pine Valley Data

	Marathon	Texaco
	1986 1007 sites	1988 985 sites
Methane	0.925	1.32
Ethane	0.020	0.027
Propane	0.015	0.016
C1/C2	103.0	112.0
	46.8	46.8
	21.6	20.6









PIERCE JUNCTION SALT DOME, HARRIS COUNTY, TEXAS

By W.F. Bowman

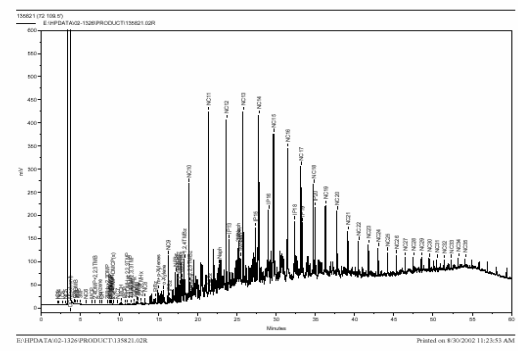
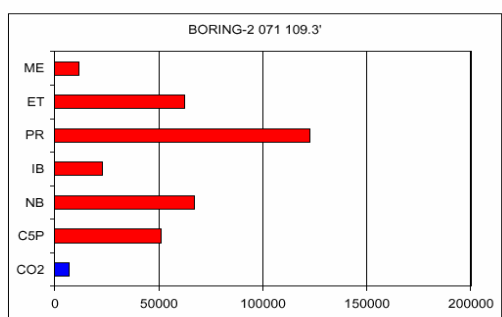
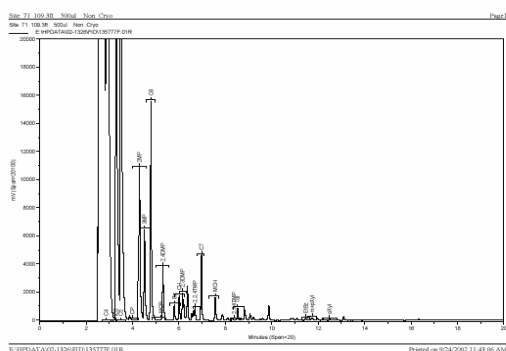
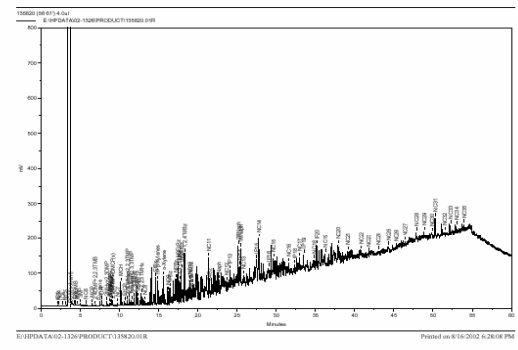
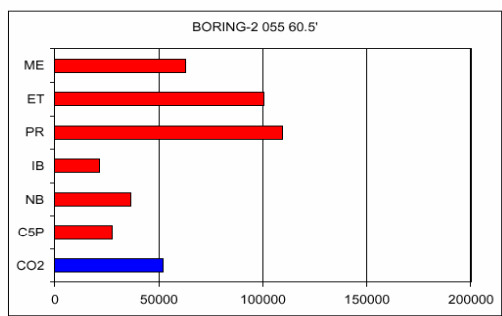
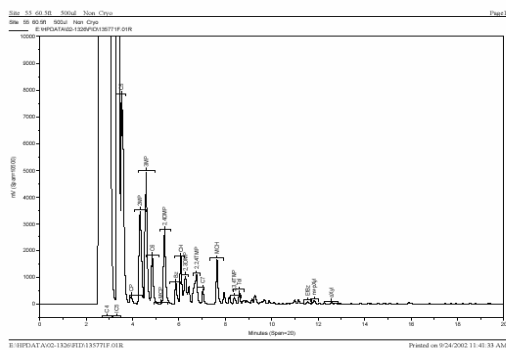
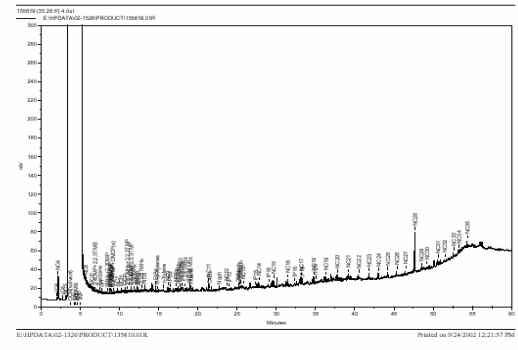
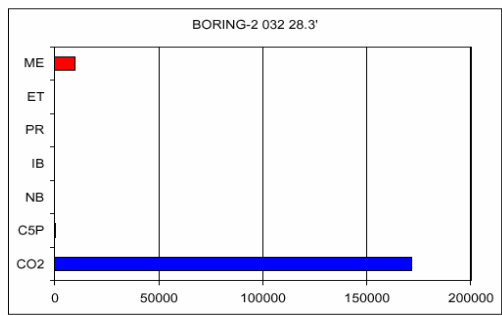
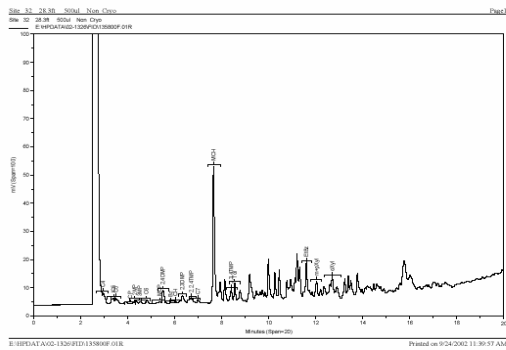
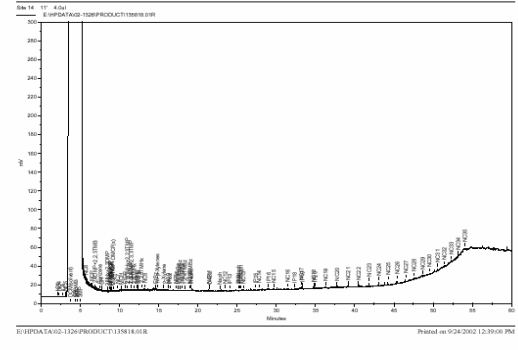
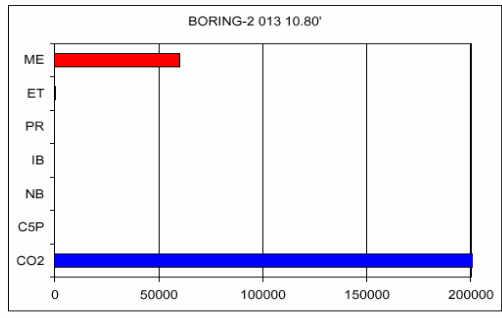
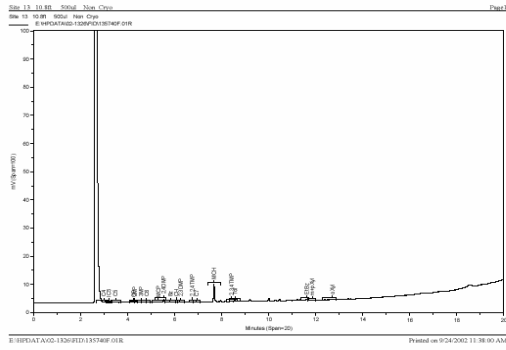
September 8, 1927

Published by The Oil Weekly

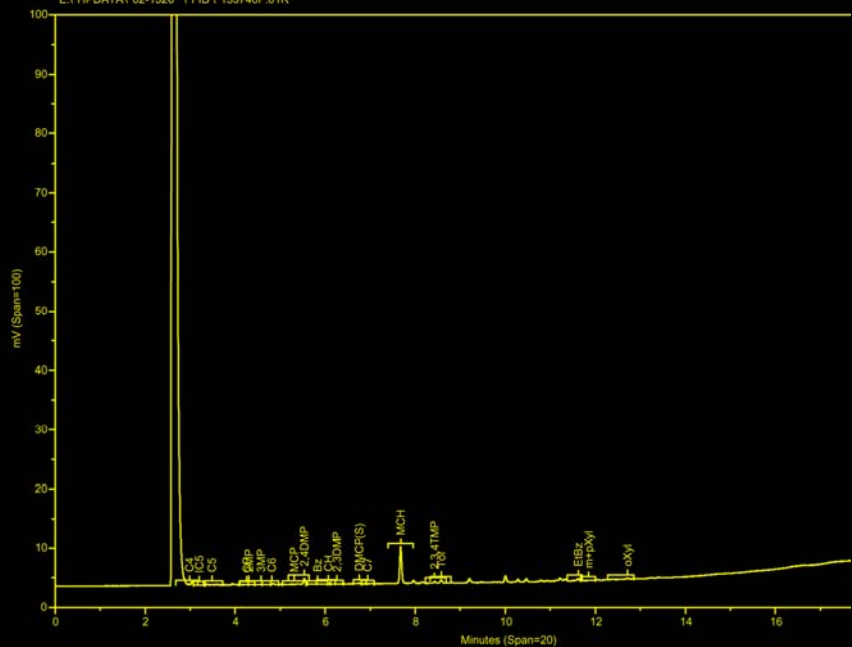
“Since the starting of operations in this area in 1901, some 35 different companies and individuals have drilled a total of about 180 wells in the area. Of this number 52 had been completed before commercial production was found by the Snowden-McSweeney Company in July of 1921”.

VOLATILE ORGANIC C1-C4, C5+ (ppmv), NITROGEN, OXYGEN, & CO2 (%) HYDROCARBONS

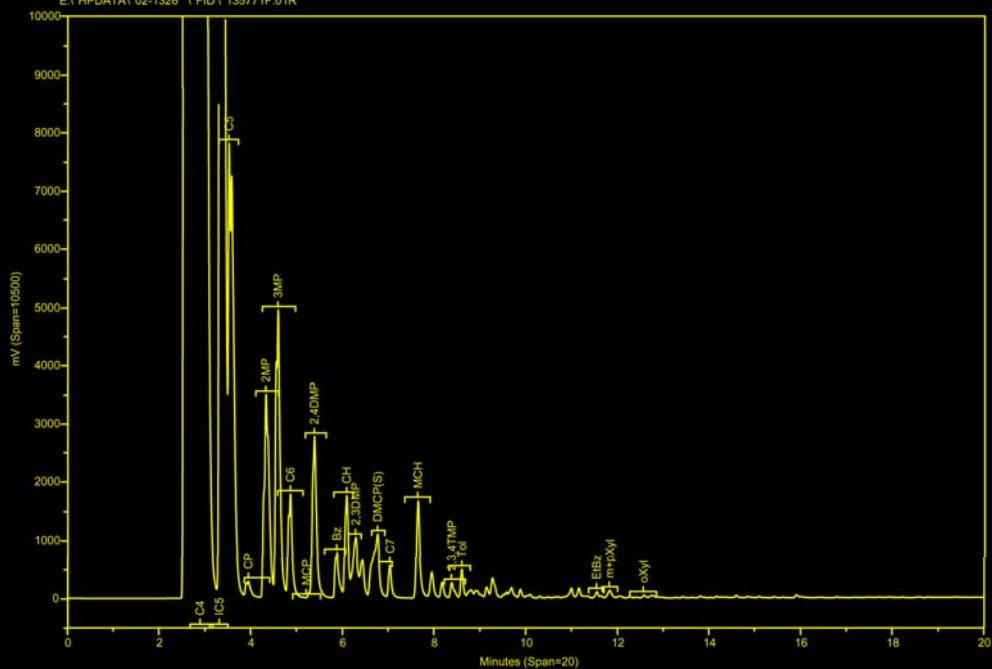
SAMPLE NO.		METHANE	ETHANE	PROPANE	I-BUTANE	N-BUTANE	C5-BZ	BZ-TL	TL-XYL	XYL+	C5+	NITROGEN	OXYGEN	CO2
AKAL-H (Gas3)														
BORNG-2 013	10.80'	59,8979	344.875	9.754	1.188	0.671	0.5	2.3	1.5	0.5	4.8	13.63	1.69	25.6
BORNG-2 032	28.3'	9,6449	38.174	5.592	1.126	0.955	8.1	43.4	60.3	80.1	191.9	23.29	2.12	17.1
BORNG-2 043	38'	55,3773	5,948.470	939.529	79.736	37.332	127.9	167.4	146.5	260.8	702.6	17.68	2.01	14.6
BORNG-2 048	45'	85,9796	67,031.797	59,937.941	13,682.830	9,941.65	7,2247	2,9190	1,0180	678.8	11,8404	21.05	1.98	8.4
BORNG-2 052	55'	65,0289	67,239.859	82,012.117	16,629.168	27,147.326	20,7667	6,0148	1,5116	716.1	29,0091	15.37	1.46	6.8
BORNG-2 055	60.5'	62,9307	100,320.336	109,367.414	21,542.879	36,708.938	20,3140	5,4697	1,2006	541.8	27,5260	32.60	1.97	5.2
BORNG-2 071	109.3'	11,3560	62,259.918	122,691.852	23,132.186	67,278.508	43,2785	5,6613	1,4251	688.1	51,0529	21.90	1.72	0.7
BORNG-2 077	140.5'	11,1697	58,413.172	135,661.125	25,985.234	77,539.852	67,3718	6,5763	1,1320	793.8	75,8739	23.81	1.30	2.8
BORNG-2 082	170'	27,5210	74,744.047	137,261.156	25,043.521	72,245.227	64,4649	7,7673	1,6531	1,0926	74,9779	11.63	1.22	4.4
BORNG-2 085	190'	18,6945	67,613.500	121,531.117	22,257.410	63,120.379	64,6577	7,8841	1,6845	1,5881	75,8144	10.49	1.30	4.2
BORNG-2 087	210'	25,1150	86,924.242	154,629.281	26,914.770	77,583.773	64,9581	7,6726	1,5949	718.3	74,9438	20.70	1.17	1.6
BORNG-2 094	250'	14,1770	83,626.523	163,812.063	30,239.393	89,263.789	73,4431	9,0458	2,1812	1,4588	86,1289	23.20	1.73	1.5
BORNG-2 097	269.3'	42,4294	90,574.898	140,101.094	25,543.834	73,618.125	65,9537	7,0493	1,4016	486.2	74,8908	12.11	2.02	1.5
BORNG-2 100	289.5'	47,7066	99,643.219	161,601.234	29,922.691	88,259.641	73,8957	8,2481	1,8026	987.8	84,9342	28.42	2.25	0.8
BORNG-2 109	331.3'	27,9841	52,189.301	90,803.844	18,582.004	54,553.672	54,0983	6,5994	1,7523	743.4	63,1934	10.19	2.09	1.2
BORNG-2 113	351.5'	1,4407	24,176.404	94,370.023	22,387.422	70,391.734	33,7912	4,6188	1,0238	551.8	39,9856	24.04	2.32	1.6
BORNG-2 121	391.5'	2,8455	28,277.949	71,186.617	14,081.453	42,353.559	46,2762	6,5191	1,3872	822.9	55,0053	22.56	2.15	2.9



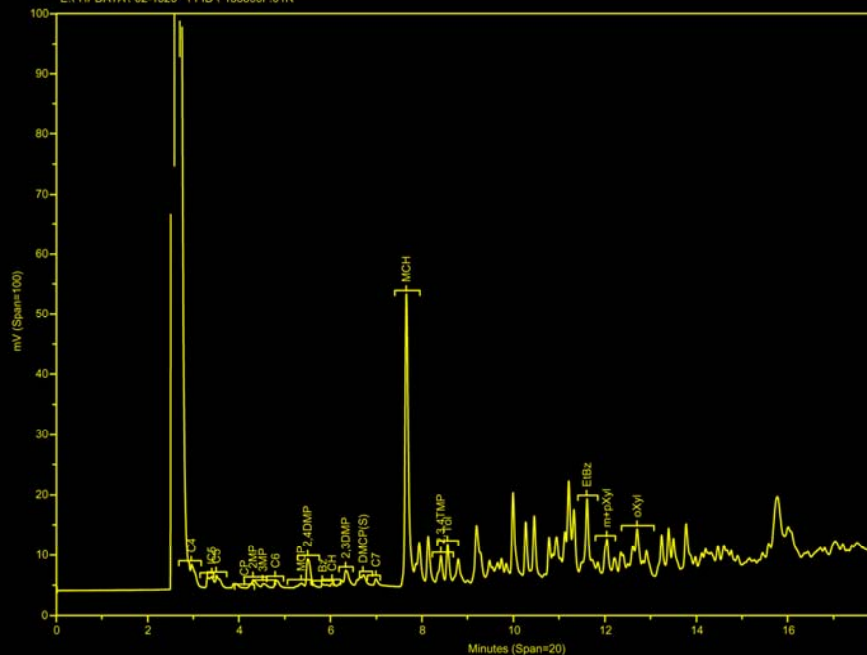
Site 13 10.8ft 500ul Non Cryo
E:\HPDATA\ 02-1326 \ FID\ 135740F.01R



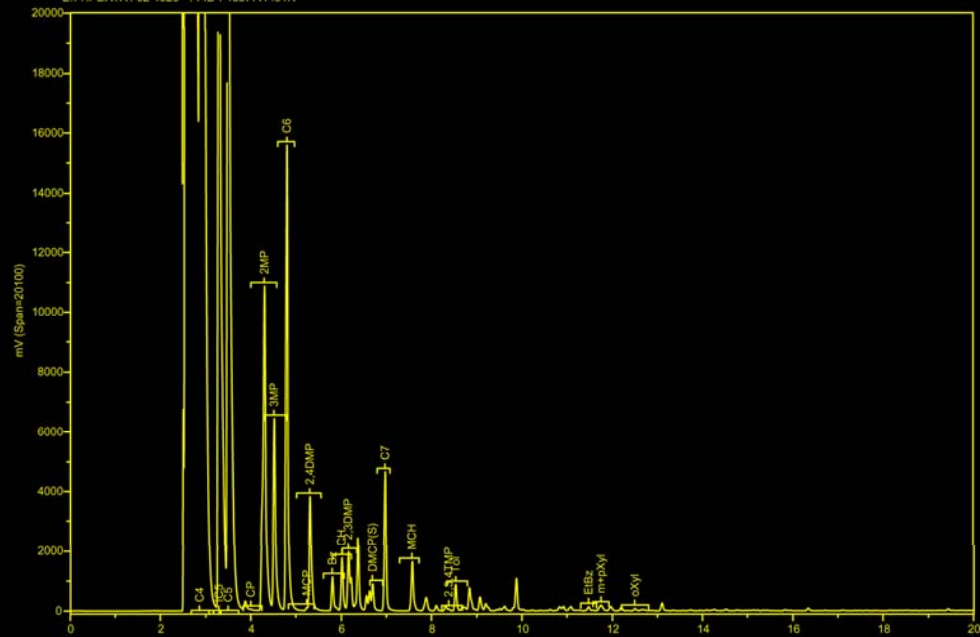
Site 55 60.5ft 500ul Non Cryo
E:\HPDATA\ 02-1326 \ FID\ 135771F.01R



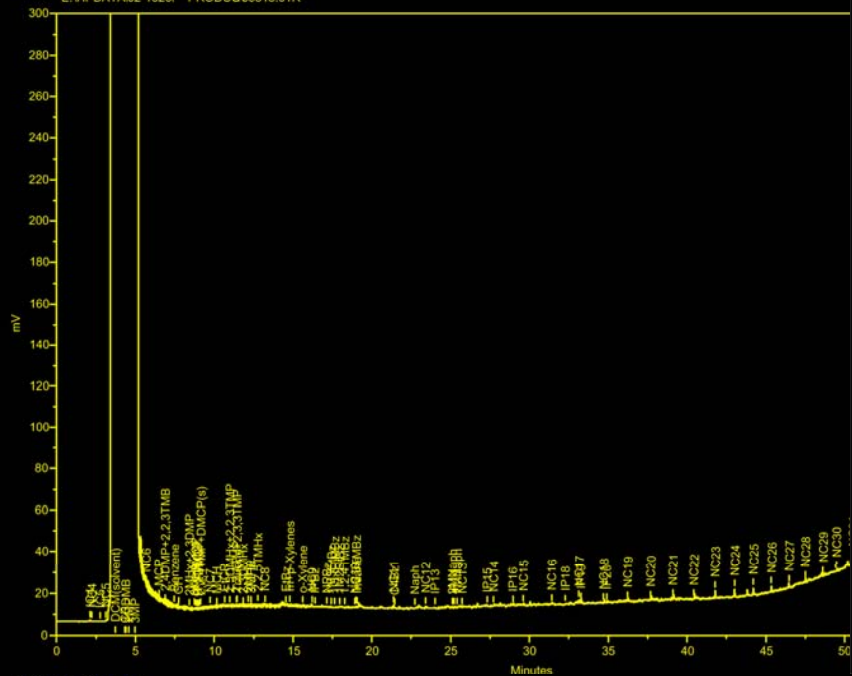
Site 32 28.3ft 500ul Non Cryo
E:\HPDATA\ 02-1326 \ FID\ 135800F.01R



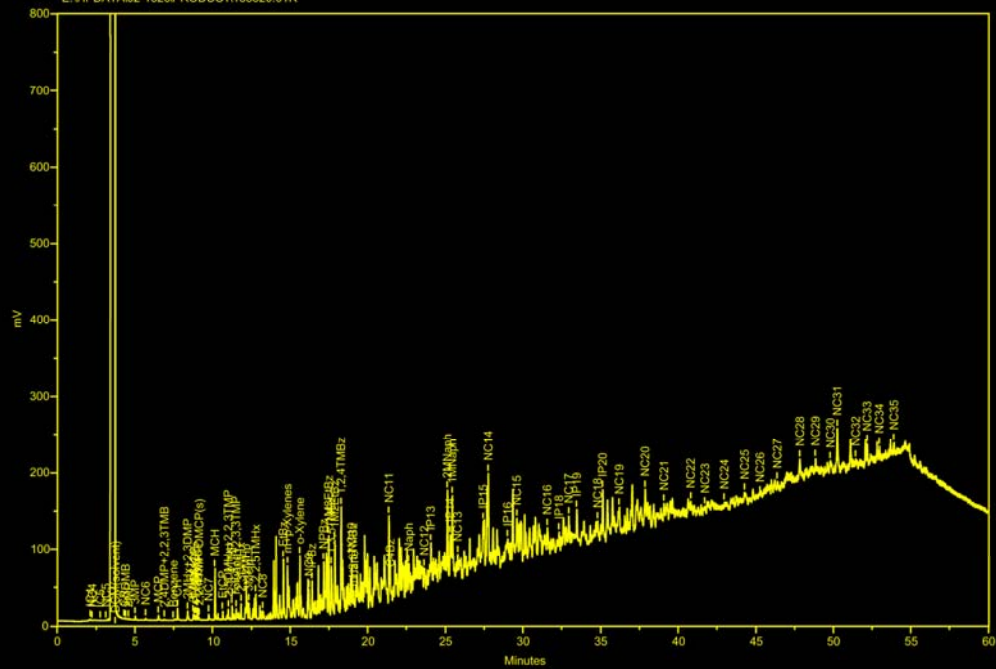
Site 71 109.3ft 500ul Non Cryo
E:\HPDATA\ 02-1326 \ FID\ 135777F.01R



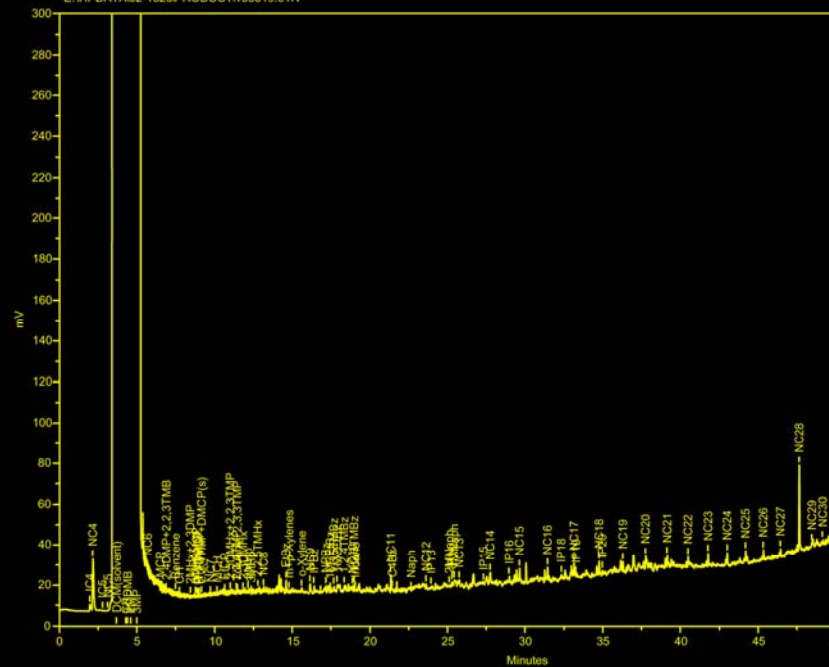
Site 14 11' 4.0ul
E:\HPDATA\02-1326\PRODUCT\5818.01R



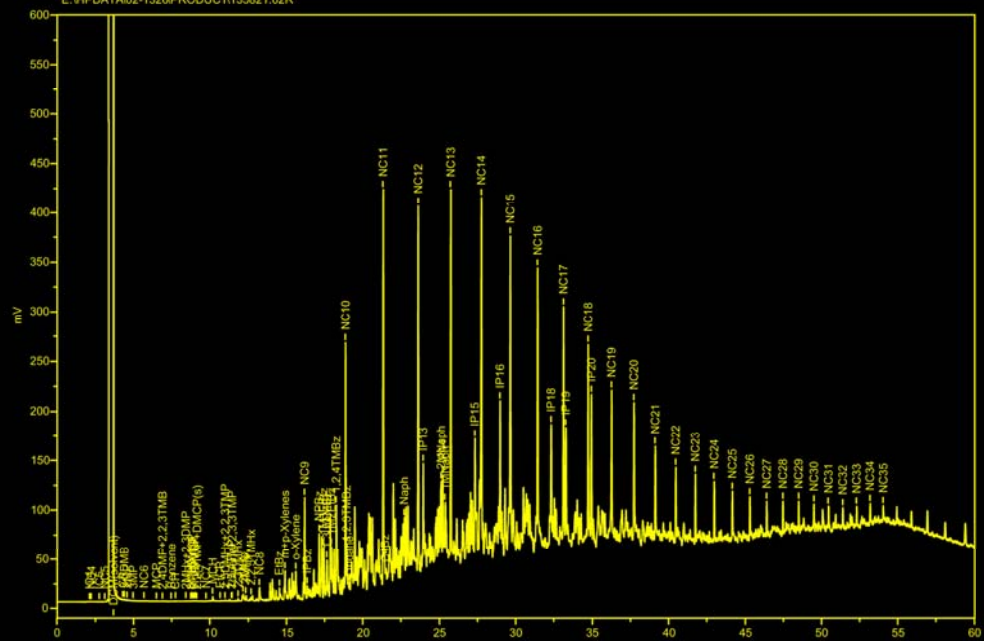
135820 (56.61) 4.0ul
E:\HPDATA\02-1326\PRODUCT\135820.01R

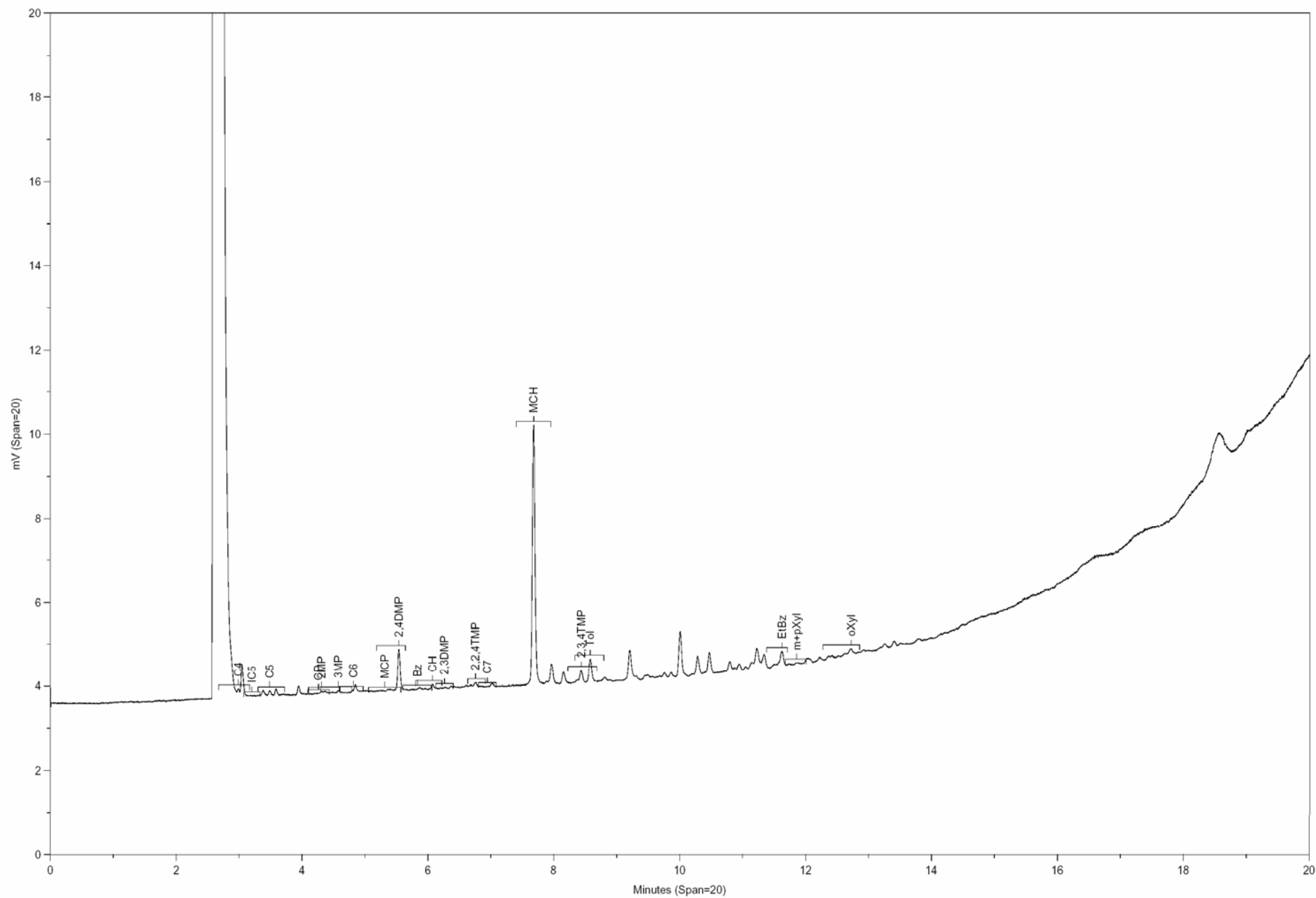


135819 (33.28.5) 4.0ul
E:\HPDATA\02-1326\PRODUCT\135819.01R

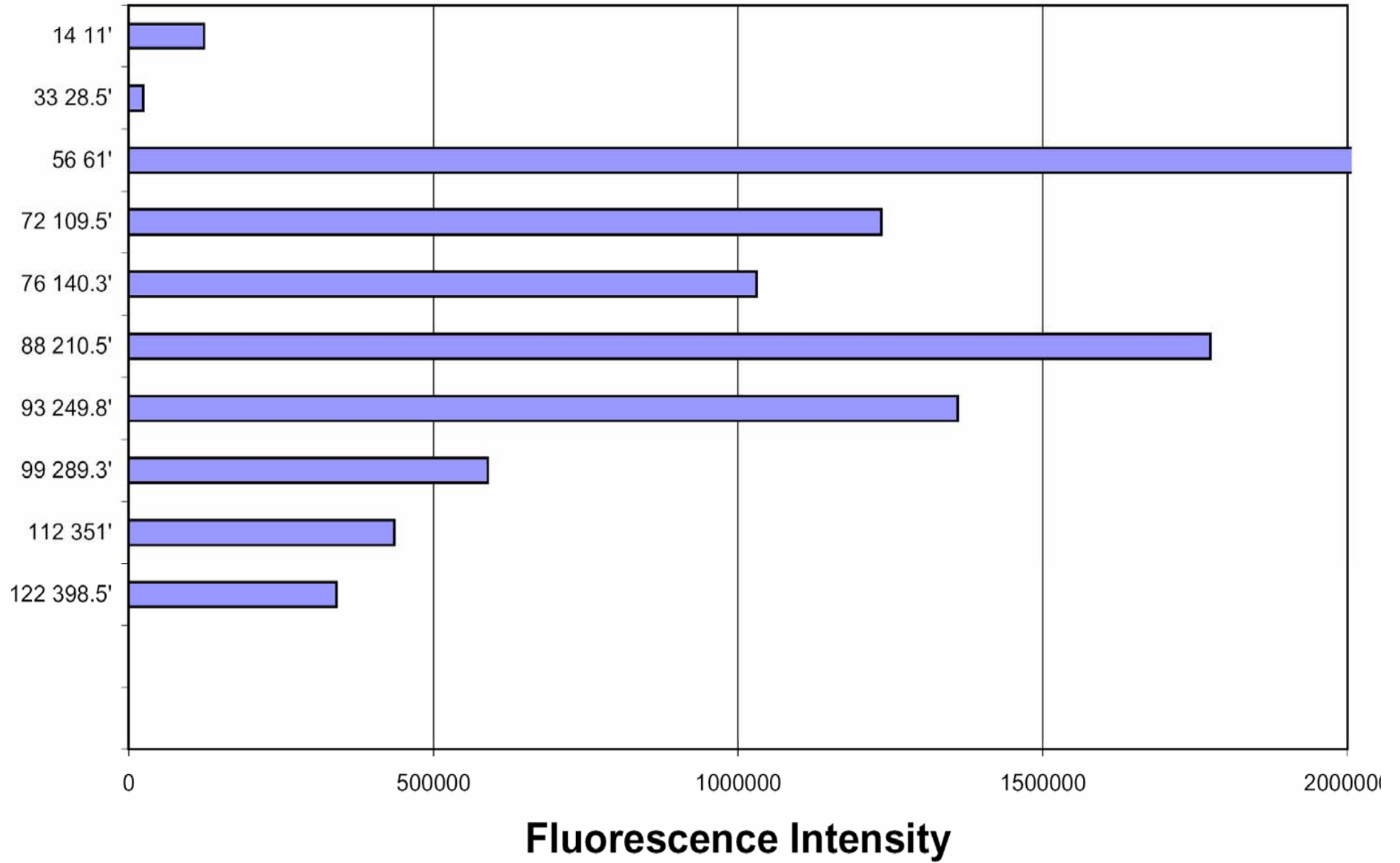


135821 (72.106.5)
E:\HPDATA\02-1326\PRODUCT\135821.02R

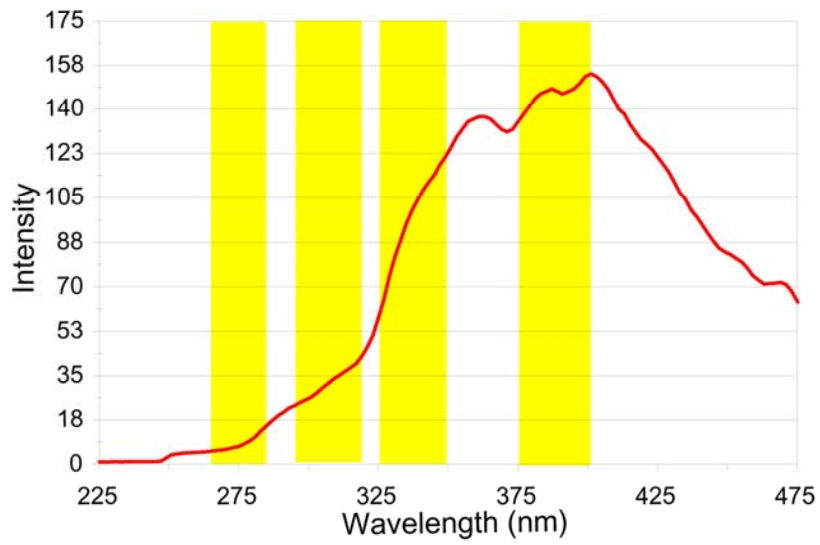




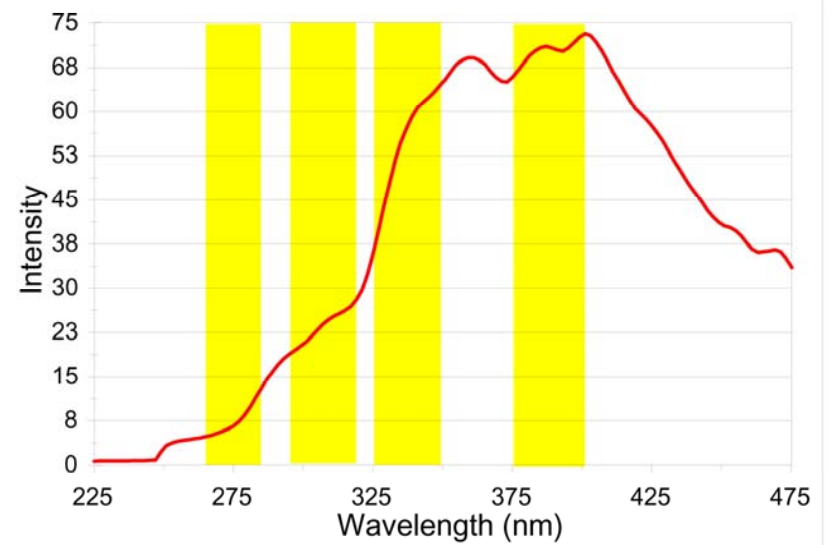
AKAL - H (Gas 3) - BORING 2



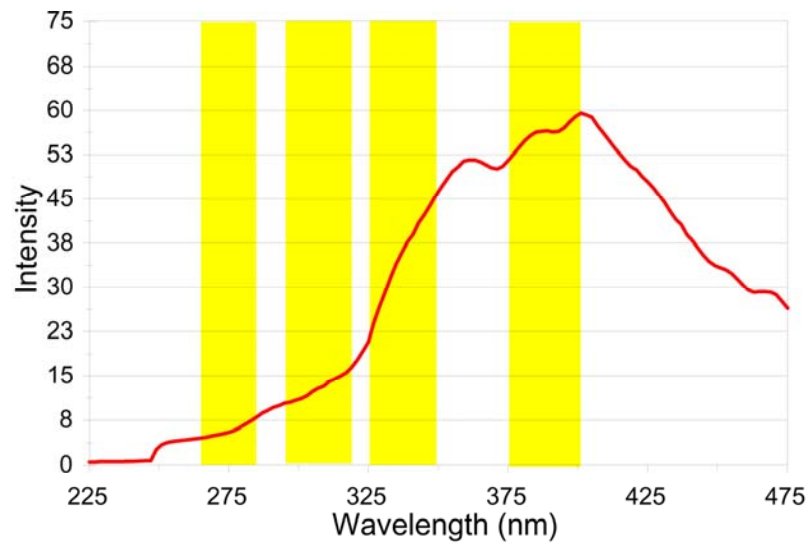
14 11' Dilution 1:800



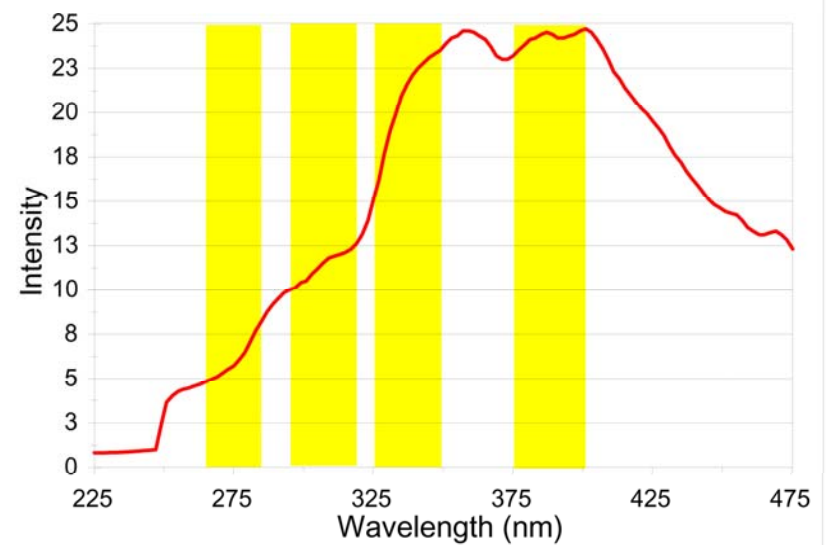
56 61' Dilution 1:50000

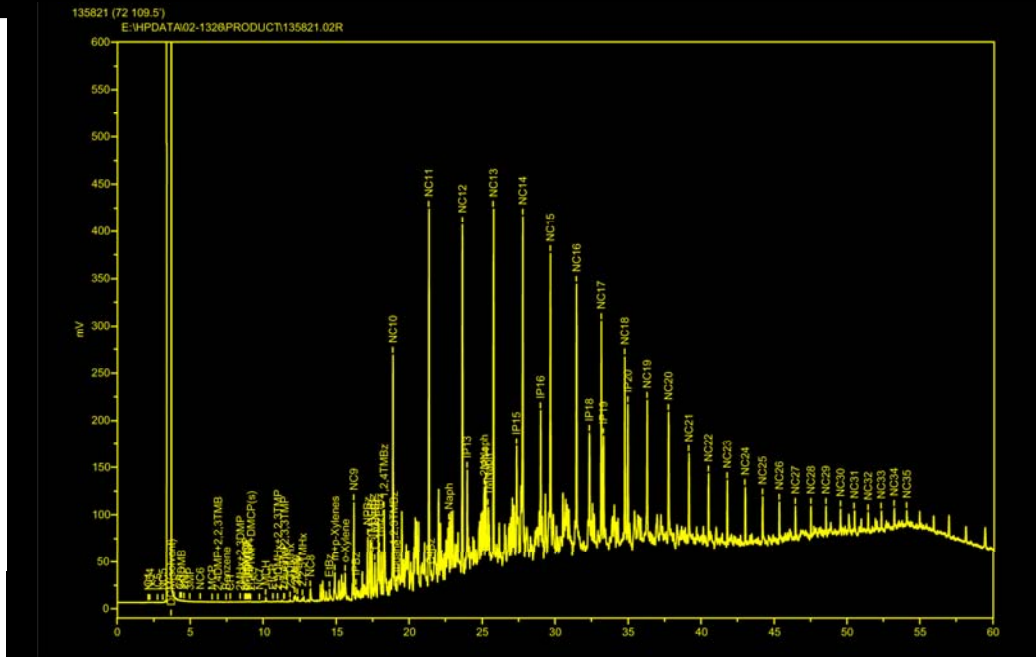
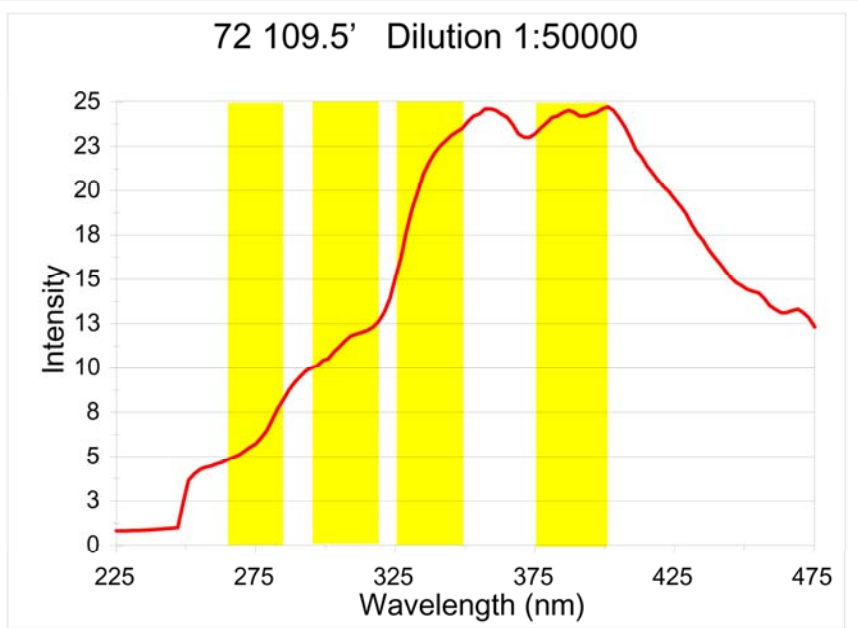
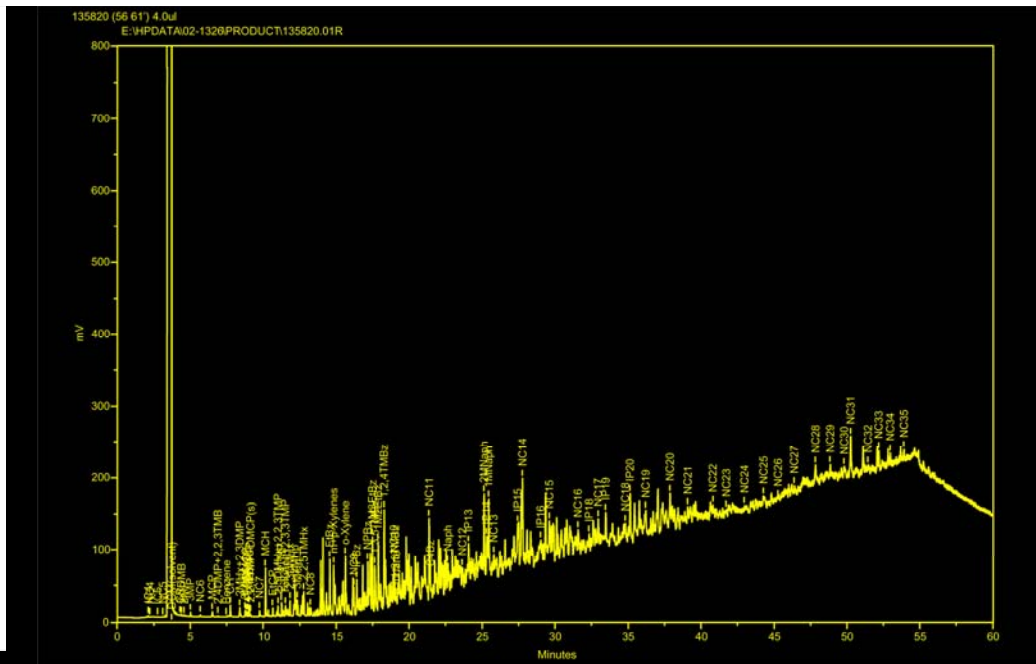
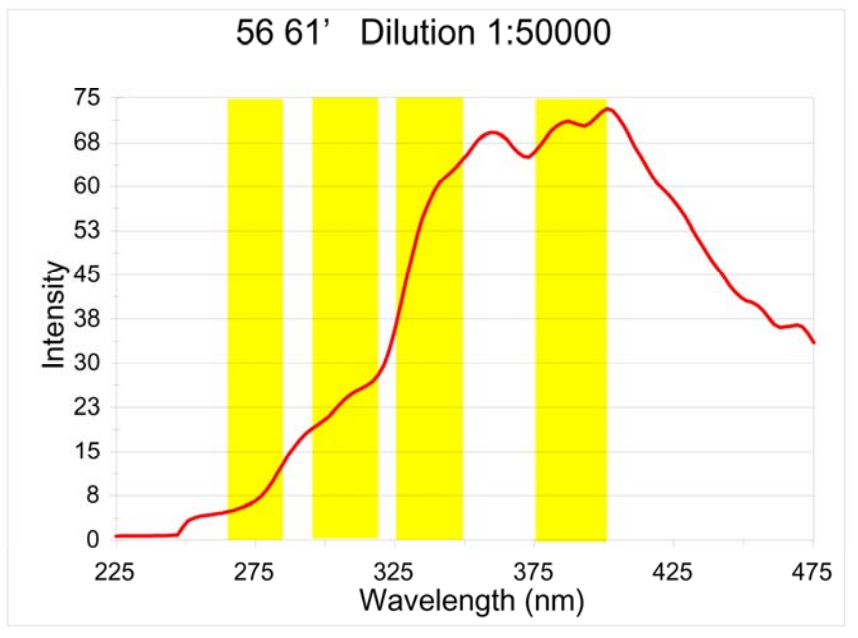


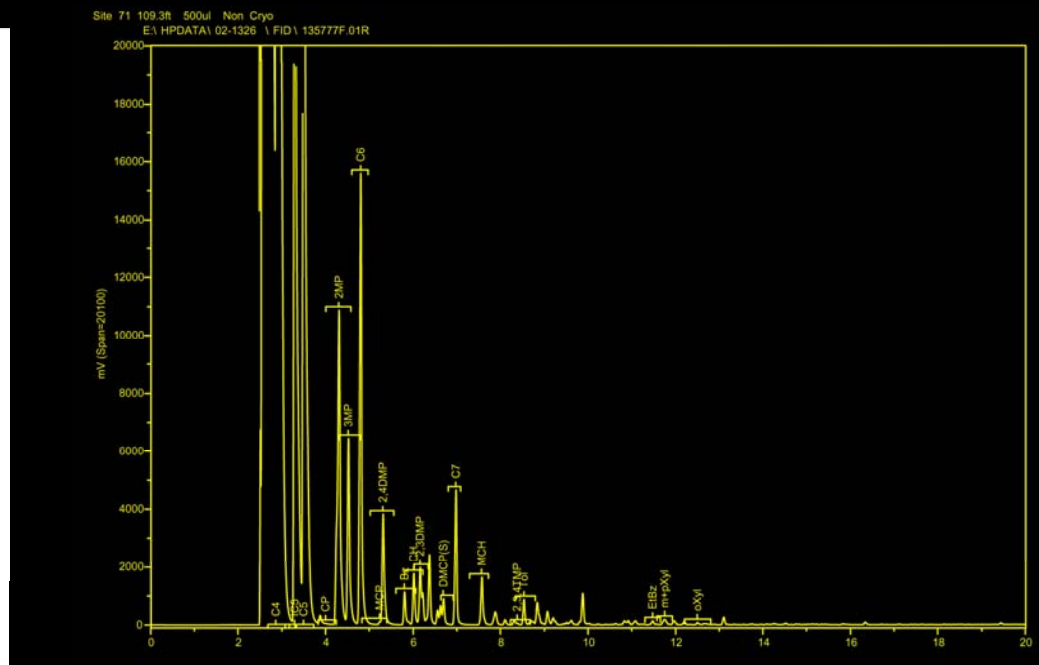
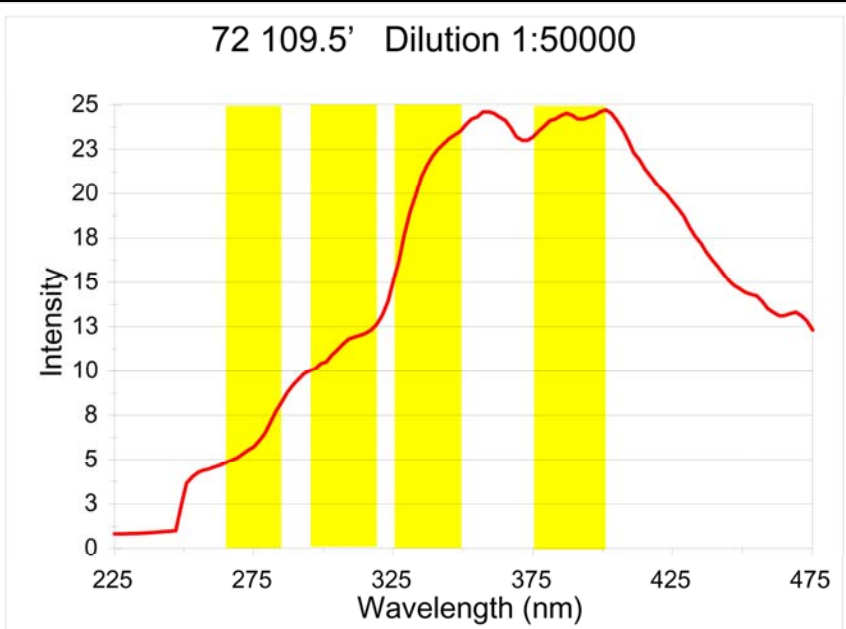
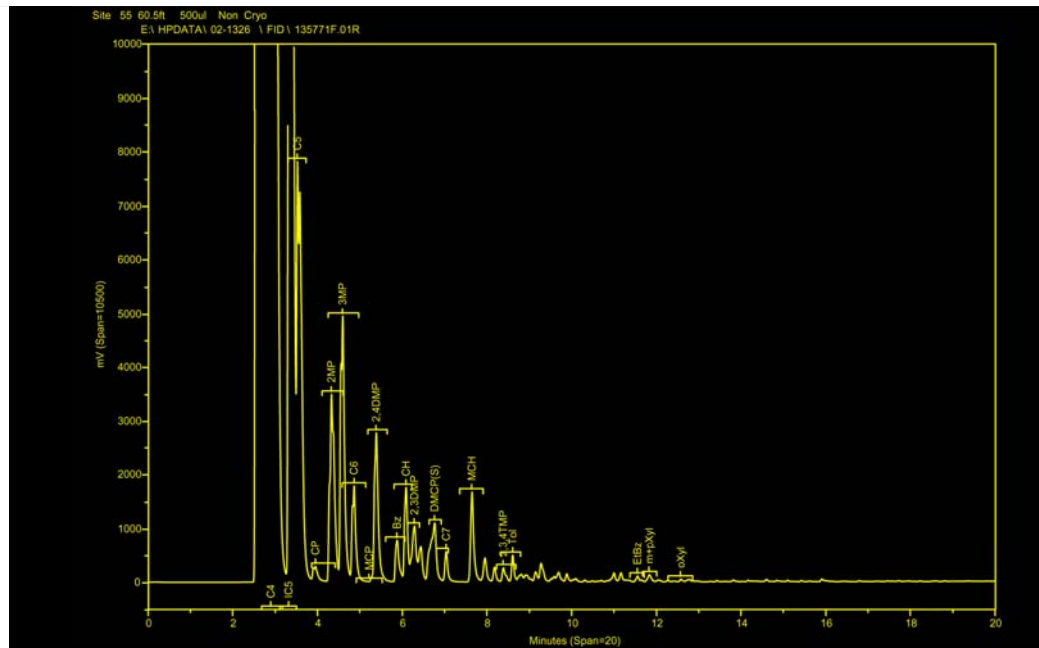
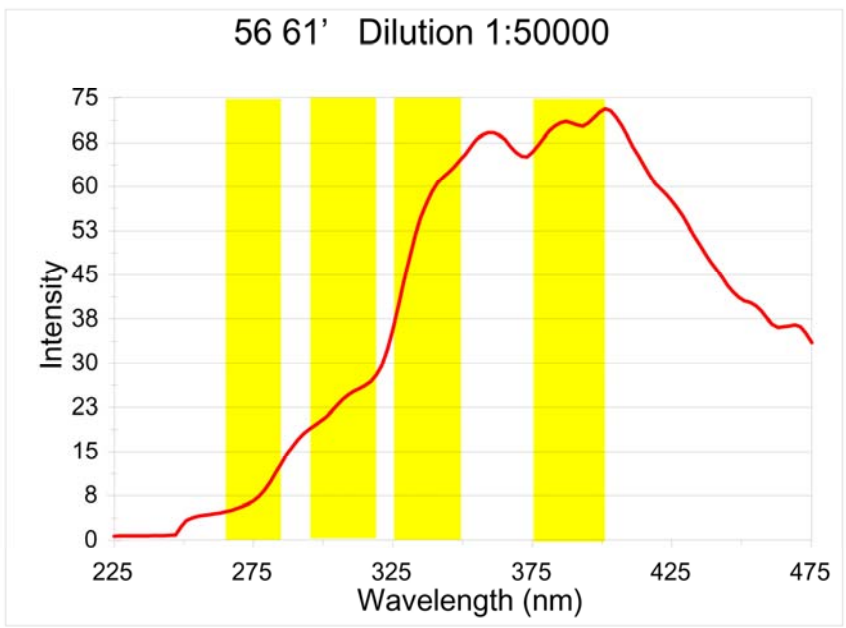
33 28.5' Dilution 1:400



72 109.5' Dilution 1:50000







CONCENTRATION AND ISOTOPIC COMPOSITION OF NATURAL GAS HYDROCARBONS

DEPTH (m)	METHANE*	ETHANE*	PROPANE*	ISOBUTANE (ppm)	BUTANE (ppm)	ISOPENTANE (ppm)
					<i>Core IG-47-2-7</i>	
1.1	5,900	142	Tr	1,100	ND	ND
2.3	273,000 -56.5	608	ND	99	ND	ND
3.7	105,000 -54.2	290	Tr	92	ND	ND
5.7	196,000 -44.7	4,400	561	273	775	538
7.4	645,000 -61.9	9,980	1,440	397	3,080	1,130
7.6	663,000 -61.8	10,600	1,510	334	2,880	906
9.2	659,000 -59.7	22,300 -28.6	9,630 -24.5	1,800	3,770	774
10.5	439,000 -61.0	14,200	5,830	1,104	3,525	963
					<i>Core IG-47-2-12</i>	
0.8	343,000 -48.1	32,000 -28.6	83,600 -24.5	21,000	3,680	257
1.5	45,500 -30.5	4,340	11,400	9,320	5,240	3,850
3.6	18,700 -53.7	9,890	25,800	13,100	5,530	2,660