

ELOISE

341

See John Atwood

✓ = error

May

EFFICIENCY LINE No. 2636



	1 Footage	2 Footage	3 Density	4	5 <sup>WISC</sup> <sub>sq ft</sub>	6	7	8	9
400-430 1	415	415	2.66		100				
430-490 2	<del>460</del>	475	2.52		90				
3	<del>520</del>	535	2.32 ✓		49				
4	<del>580</del>	595	2.62		42				
5	<del>640</del>	655	2.55		109				
6	<del>685</del>	685	2.58		59				
7	<del>715</del>	715	2.59		446 ✓				
8	737.5	737.5	2.73		2296				
9	752.5	752.5	2.76		3223				
10	767.5	767.5	2.74		2677				
11	782.5	782.5	2.74		2147				
12	795	795	2.64		1987				
13	815	822.5	2.49		487				
14	837.5	837.5	2.43		545				
15	852.5	852.5	2.85		1163				
16	875	882.5	2.57		868				
17	905	912.5	2.67		602				
18	927.5	927.5	2.68		758				
19	942.5	942.5	2.58		641				
20	957.5	957.5	2.80		2087				
21	972.5	972.5	2.83		2981				
22	987.5	987.5	2.73		2196				
23	1002.5	1002.5	2.69		945				
24	1017.5	1017.5	2.66		335				
25	1032.5	1032.5	2.65		1208				
26	1045	1045	2.65		1752				
27	1055	1055	2.75		1136				
28	1065	1065	2.66		847				
29	1075	1075	2.63		164 ✓				
30	1085	1085	2.55		158				
31	1097.5	1097.5	2.65		109				

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	1 Footage.	2 Footage.	3 Density	4	5 <sup>W</sup> <sub>SUSC.</sub>	6	7	8	9
1	112.5	1112.5 ✓	2.58		74				
2	1127.5	1127.5	2.62		151.				
3	1142.5	1142.5	2.65		1197				
4	1157.5	1157.5	2.68		545				
5	1172.5	1172.5	2.64		196				
6	1187.5	1187.5	2.68		245				
7	1202.5	1202.5	2.62		654				
8	1225	1225	2.58 ✓		332				
9	1255	1255	2.61 ✓		224				
10	1285	1285	2.59		732				
11	<del>1325</del>	1337.5	2.62		1416				
12	1352.5	1352.5	2.70		1467				
13	1367.5	1367.5	2.55		814				
14	1382.5	1382.5	2.63		1979				
15	1397.5	1397.5	2.68		1764				
16	1420	1420	2.60		1155				
17	1442.5	1442.5	2.65		1115 ✓				
18	1457.5	1457.5	2.73		2184				
19	1472.5	1472.5	2.63		2139				
20	1487.5	1487.5	2.61		1484				
21	1502.5	1502.5	2.56		2385 ✓				
22	1517.5	1517.5	2.80		2922				
23	1532.5	1532.5	2.68		2039				
24	1547.5	1547.5	2.64		536				
25	<del>1562.5</del>	1562.5	2.73 ✓		3975				
26	1575	1575	2.60		1795				
27	1590	1592.5	2.78		6365				
28	1607.5	1607.5	2.95		7607				
29	1622.5	162.2.5	2.79		5964				
30	1637.5	1637.5	2.84		6119				
31	1652.5	1652.5	2.76 ✓		2247				

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A-9

	1	2 Footage	3 Density	4	5 Susc.	6	7	8	9
1	1667.5	1667.5	2.82		4357				
2	1682.5	1682.5	2.74		3080				
3	1697.5	1697.5	2.80		2880				
4	1712.5	1712.5	2.77		3096				
5	1727.5	1727.5	2.75		3165				
6	<del>1742.5</del>	1745	2.82		3407				
7	1757.5	1757.5	2.92		3328				
8	1772.5	1772.5	2.76		2689				
9	1787.5	1787.5	2.72		2670				
10	1797.5	1797.5	2.71		1221				
11	1805	1805	2.75		3979				
12	1817.5	1817.5	2.77		4283				
13	1832.5	1832.5	2.63		2742				
14	1847.5	1847.5	2.70		2435				
15	1862.5	1862.5	2.68		4149				
16	1877.5	1877.5	2.89		3856				
17	1900	1900	2.74		4206				
18	1922.5	1922.5	2.82		4597				
19	1937.5	1937.5	2.76		4153				
20	1952.5	1952.5	2.81		4469				
21	1967.5	1967.5	2.77		3790				
22	1982.5	1982.5	2.74		4246				
23	1995	1995	2.66		884				
24	2002.5	2002.5	2.65		818				
25	2012.5	2012.5	2.61		488				
26	2027.5	2027.5	2.73		3756				
27	2042.5	2042.5	2.72		2854				
28	2057.5	2057.5	2.85		3355				
29	2072.5	2072.5	2.70		3618				
30	2087.5	2087.5	2.81		4246				
31	2102.5	2102.5	2.77		3533				

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	<del>1</del>	Boatage	Density	4	Suscep	6	7	8	9
1	2117.5	2117.5	2.69		2510				
2	2132.5	2132.5	2.74		2565				
3	2147.5	2147.5	2.70		3105				
4	2162.5	2162.5	2.80		3835				
5	2177.5	2177.5	2.81		3771				
6	2192.5	2192.5	2.82		3969				
7	2207.5	2207.5	2.79		3105				
8	2222.5	2222.5	2.86		3192				
9	2237.5	2237.5	2.65		1000				
10	2247.5	2247.5	2.72		3248				
11	2255	2255	2.77		4572				
12	2265	2265	2.85		3987				
13	2275	2275	2.82		3045				
14	2285	2285	2.68		2508				
15	2295	2295	2.82		3231				
16	2305	2305	2.73		3002				
17	2315	2315	2.88		3053				
18	2325	2325	2.86		2766				
19	2335	2335	2.79		2318				
20	2345	2345	2.81		2886				
21	2355	2355	2.78		3262				
22	2365	2365	2.72		3180				
23	2375	2375	2.76		3335				
24	2385	2385	2.78		4467				
25	2405	2410	2.70		2457				
26	2425	2425	2.69		2324				
27	2435	2435	2.66		2304				
28	2445	2445	2.74		969				
29	2455	2455	2.11		729				
30	2465	2465	2.68		2253				
31	2485	2495	2.71		1649				

2460

EFFICIENCY® LINE No. 2636



	1 Footage	2 Footage	3 Density	4	5 Suscep.	6	7	8	9
1	2502	2505	2.64		2554				
2	2520	2525	2.75		4470				
3	2535	2535	2.66		2005				
4	2545	2545	2.66		3360				
5	2555	2555	2.72		2761				
6	2565	2565	2.66		2993				
7	2575	2575	2.72		2925				
8	2585	2585	2.65		3051				
9	2595	2595	2.72		3364				
10	2605	2605	2.77		4410				
11	2615	2615	2.72		3564				
12	2625	2625	2.70		1446				
13	2640	2645	2.62		1409				
14	2660	2665	2.62		1440				
15	2680	2685	2.63		2994				
16	2700	2705	2.61		3900				
17	2715	2715	2.76		2718				
18	2725	2725	2.80		2849				
19	2740	2745	2.67		2400				
20	2755	2755	2.71		2582		Density	Susc	
21	2765	2765	2.71		2374	2780	2.61	1976	
22	2820	2825	2.67		946	2800	2.71	2210	
23	2840	2845	2.69		787				
24	2860	2865	2.52		787				
25	2895	2915	2.56		891				
26	2930	2935	2.56		1294				
27	2950	2955	2.45		1414				
28	2970	2975	2.52		2108				
29	2990	3005	2.58		1616				
30	3030	3045	2.53		1316				
31	3060	3065	2.57		2074				

2830 →

3070

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	1 Footage	2 Footage	3 Density	4	5 Mag 5052.	6	7	8	9
3090-1	3080	3085	2.61		1450				
2	3000	3105	2.56		1413				
3	3155	3165	2.64 ✓		3389				
4	3190	3200	2.56		1520				
5	3215	3215	2.67		1862				
6	3230	3235	2.63		2134 ✓				
7	3250	3255	2.62		3313				
8	3275	3285	2.64		2938				
9	3300	3305	2.67		1678				
10	3325	3330	2.68		1953 ✓				
11	3350	3355	2.66		2144				
12	3370	3375	2.68		2178 ✓				
13	3395	3405	2.57		3340				
14	3420	3425	2.65		1701				
15	3445	3455	2.68		5421				
16	3465	3465	2.75		7050				
17	3480	3485	2.77		3422				
18	3495	3495	2.73		3249				
19	3510	3515	2.63		2614 ✓				
20	3530	3530	2.64		2608				
21	3545	3545	2.74		2406	- Start here			
22	3555	3555	2.62		2050				
23	3570	3575	2.50		1315				
24	3590	3595	2.61		892				
25	3610	3615	2.49		889				
26	3630	3635	2.53		1279				
27	3650	3655	2.49		1102				
28	3670	3675	2.48		1262				
29	3690	3695	2.51		1009				
30	3710	3715	2.49		1135				
3740 31	3730	3735	2.56		2264				

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	1	2 Foot	3 Density	4	5 Susc. $\mu$ cps	6	7	8	9
3760	1	3750	3755	2.61	2404				
	2	3770	3775	2.57	2333				
	3	3790	3795	2.60	2272				
	4	3810	3815	2.52	1313				
	5	3830	3835	2.43	778				
	6	3850	3855	2.53	1817				
	7	3870	3875	2.60	1438				
	8	3890	3895	2.63	918				
	9	3915	3925	2.62	2847				
	10	3945	3955	2.56	2060				
	11	3970	3975	2.61	731				
	12	3995	4000	2.51	1777				
	13	4020	4025	2.52	2639				
	14	4040	4045	2.60	2201				
	15	4060	4065	2.61	1945				
4090	16	4080	4085	2.59	3182				
	17	4095	4095	2.58	1635				
	18	4105	4105	2.63	1814				
	19	4120	4125	2.70	1521				
	20	4140	4145	2.70	1089				
	21	4160	4165	2.76	1275				
	22	4180	4185	2.63	2581				
	23	4200	4205	2.57	1584				
	24	4220	4225	2.66	2622				
	25	4240	4245	2.66	2026				
	26	4260	4265	2.64	1813				
	27	4280	4285	2.63	1597				
	28	4305	4305	2.61	829				
	29	4310	4325	2.60	927				
	30	4340	4345	2.55	1936				
4370	31	4360	4365	2.65	1561				

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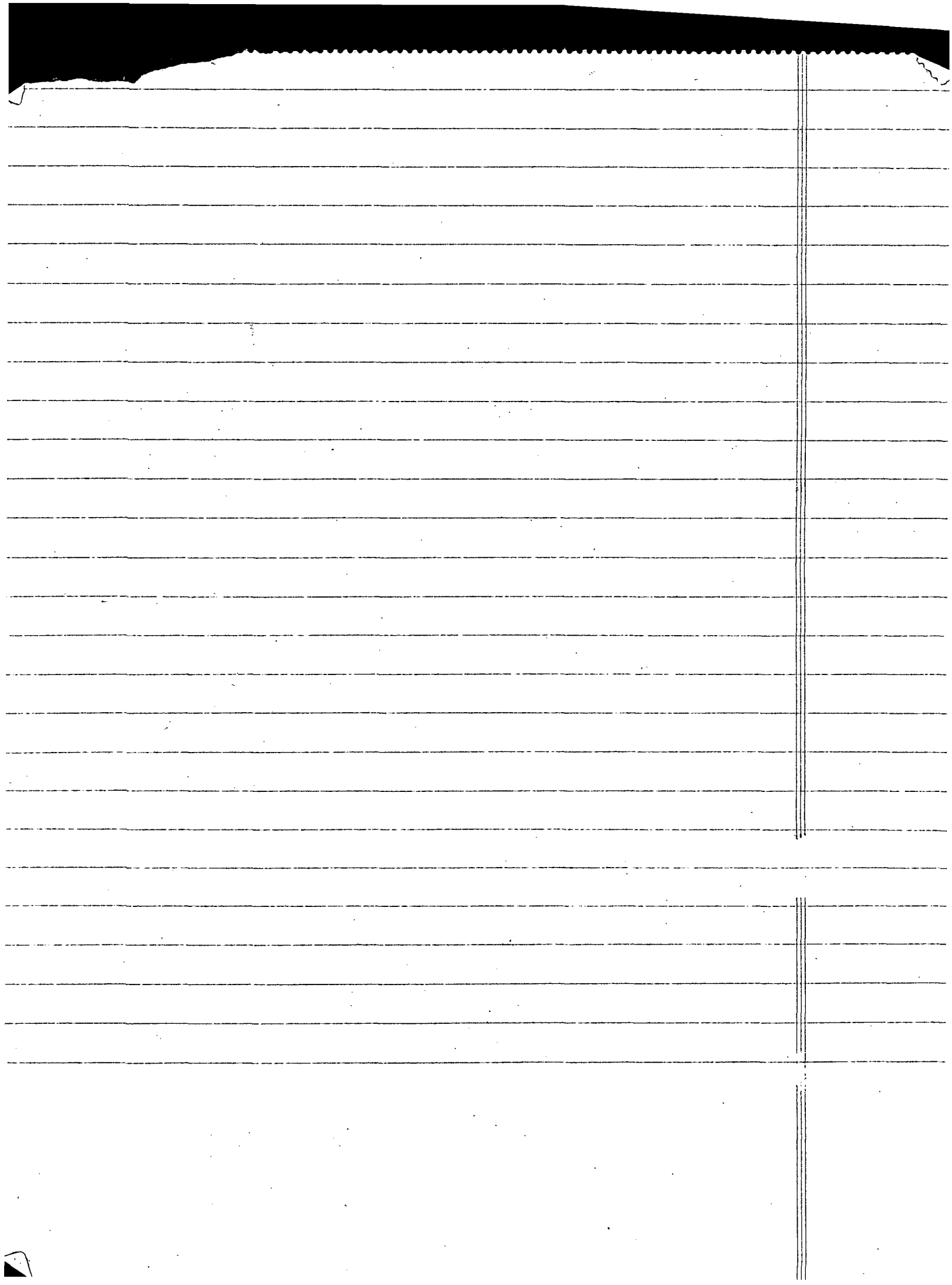
	1 Footage	2	3 Density	4	5 $\frac{SW}{SUB}$	6	7	8	9
4390 - 1	4380	4385	2.69		1667				
2	4400	4405	2.61		1521				
3	4420	4425	2.61		1631				
4	4440	4445	2.62		1644				
5	4460	4465	2.67		1720				
6	4480	4485	2.65		3749				
7	4500	4505	2.63		2366				
8	4520	4525	2.68		1588				
9	4540	4545	2.66		2452				
10	4560	4565	2.64		1632				
11	4580	4585	2.65		1270				
12	4600	4605	2.57		1484				
13	4620	4625	2.60		1117				
14	4640	4645	2.66		2081				
15	4660	4665	2.64		2372				
4690 - 16	4680	4685	2.64		3464				
17	4705	4715	2.61		2521				
18	4730	4735	2.67		2638				
19	4755	4760	2.66		1530				
20	4780	4785	2.60		1030				
21	4800	4805	2.66		1059				
22	4820	4825	2.62		1668				
23	4840	4845	2.64		2231				
24	4860	4865	2.62		2057				
25	4880	4885	2.65		1652				
26	4900	4905	2.65		1262				
27	4920	4925	2.59		2110				
28	4940	4945	2.68		2298				
29	4965	4975	2.63		2121				
30	4990	4995	2.75		1485				
5020 31	5010	5015	2.59		1563				



Footage	Density	Mag - suse - mcqs
5030 5035	2.58	1045
5050 5055	2.63	1080
5070 5075	2.67	1601
5090 5095	2.63	1006
5110 5115	2.65	2039
5130 5135	2.60	1773
5150 5155	2.58	2031
5170 5175	2.67	3448
5195 5200	2.61	2160
5220 5225	2.64	1993
5240 5245	2.65	3213
5265 5275	2.60	1646
5295 5300	2.63	1758
5325 5335	2.67	3185
5355 5360	2.66	1724
5380 5385	2.68	2337
5400 5405	2.71	2547
5420 5425	2.74	1972
5440 5445	2.77	1881
5460 5465	2.67	2204
5480 5485	2.71	1707
5510 5520	2.79	2117
5540 5545	2.80	1891
5560 5565	2.76	1806
5580 5585	2.70	2051
5600 5605	2.70	1847
5620 5625	2.73	2280
5640 5645	2.69	2155

Footage	Density	Mag-susc- $\mu$ cg.s.
5660 5665	2.64	2630
5680 5685	2.68	2391
5700 5705	2.70	1944
5720 5725	2.51	5478
5745 5750	2.71	1188
5770 5775	2.65	1299
5790 5795	2.68	1014
5810 5815	2.69	953
5825 5825	2.70	1046
5835 5835	2.72	2075
5855 5865	2.86	2673
5880 5885	2.67	1173
5900 5905	2.72	3106
5920 5925	2.80	1754
5940 5945	2.84	1276
5960 5965	2.90	1037
5980 5985	2.73	1846
6000 6005	2.79	968
6020 6025	2.84	1647
6040 6040	2.81	976
6060 6065	2.79	1697
6085 6090	2.84	1216
6110 6115	2.79	2083
6130 6135	2.80	2403
6150 6155	2.79	1831
6170 6175	2.85	1331
6190 6195	2.80	2546
6210 6215	2.87	1854

Footage	Density	Mag-susc- $\mu$ cg/s
6230 6235	2.87	2461
6250 6255	2.86	2688
6270 6275	2.75	2537
6290 6295	2.70	958
6310 6315	2.85	2005
6330 6335	2.78	3742
6350 6355	2.73	1623
6370 6375	2.78	1799
6390 6395	2.85	2222
6410 6415	2.71	1368
6430 6435	2.62	1590
6450 6455	2.78	1181
6470 6475	2.74	1131
6490 6495	2.74	1263
6510 6515	2.74	1521
6530 6535	2.64	2231
6550 6555	2.67	2009
6575 6580	2.67	1840
6610 6625	2.70	2187
6645 6650	2.72	1517
6665 6665	2.67	1788
6680 6685	2.74	1792
6700 6705	2.81	2607
6720 6725	2.62	2616
6745 6755	2.73	2339
6775 6785	2.68	2116
6815 6835	2.77	2098
6850 6855	2.54	2020
6865 6865	2.58	1888



# Densilog Changes to obtain $\rho$

Steps

Long Spacing  
 1.  $(\div 2 + \div 7500)_{so} \div 15000$   
 2.  $\log X$   
 3.  $a \times \log X$ ,  $a = -1.03487$   
 4.  $+ b$ ,  $b = 2.7385$

file 74, 75, 76, 77  
 3300' - 6828'

Short Spacing  
 1.  $(\times 2 + \div 11475)_{so} \div 5737.5$   
 2.  $\log X$   
 3.  $a \times \log X$ ,  $a = -2.5592$   
 4.  $+ b$ ,  $b = 2.7220$

52, 53, 54, 55, 56  
 2750' - 6828'

## Neutron Log Dresser Atlas

1. To obtain API units  $\times 12$   
 2. to obtain porosity need to use  $X = a + bX + cX^2$   
 $a = 1.72$ ,  $b = -4.68 E-04$ ,  $c = -8.11 E-11$

23, 43, 44, 45  
 3132' - 6826'

options  $7 \times 12$ ; 18 polym.; 10, 10<sup>x</sup>

	$\rho$		
LD 74	131	3300 - 4300	173
75	132	4300 - 5300	
76	133	5300 - 6300	174
77	134	6300 - 6828	175

	$\rho$		
SD 52	135	2750 - 3750	
53	136	3750 - 4750	
54	137	4750 - 5250	
55	138	5250 - 6250	
56	139	6250 - 6828	

	$\rho$			
23	140	3132 - 4100	$\rightarrow$ 144	160 172
43	141	4100 - 5100	$\rightarrow$ 145	176 178
44	142	5100 - 6100	$\rightarrow$ 146	161 170
45	143	6100 - 6826	$\rightarrow$ 147	162 171

row count

TGRAD

	API	50ft
3500 - 4500	148	151
4500 - 5340	149	152
5340 - 6840	150	153

18-22  
25-27  
20-22  
266

251

248

290

240

200

+5

160, 161, 162

10

1. a) Loss vs neutron

b) Loss vs neutron,  $\delta(z)$

2 x 2

2. Z-plot 4380 - 4480

.5 ft

a) N,  $\rho$ ,  $\delta(z)$

.2 - 2.9

b) N,  $\rho$ ,  $\Delta t(z)$

2.5 - 2.7

16 - 29

254 - 289

1 x 1

3. Z-plot

5900 - 6100

N,  $\rho$ ,  $\delta(z)$

z'

1 x 1

4. Z-plot

5700 - 6000

N,  $\rho$ ,  $\delta(z)$

5'

14 + 9

~~78 - 2.16~~

~~.53 - 1.18~~

~~1.55 - 2.67~~

~~.57 - 3.81~~

~~.63 - 2.49~~

~~23.6 - 31.6~~

~~.37 - 2.82~~

~~.62 - .89~~

~~20 - 41~~

0.5

0.5

, 2

.7 - 1.9

.7 - 2.8

20 - 33

0 - 5.5

2.5 - 2.7

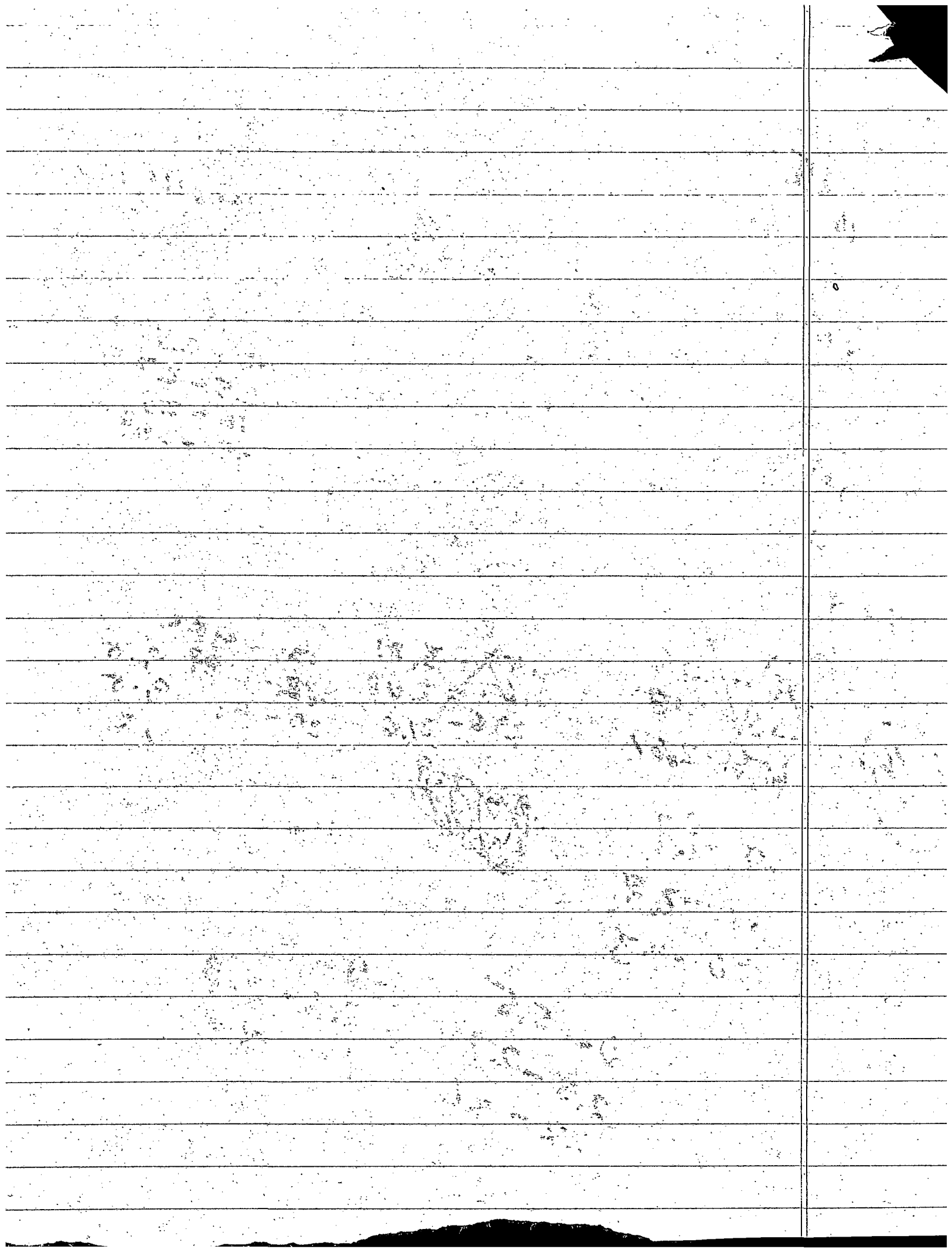
22 - 36

.5 - 2.1

2.6 - 2.8

19 - 32

(23)





John - do the following

14

1. move the start depth for  $\Delta t$  up 35'

2. redo attached cross plot except

use  $\phi_b = 0.00$ ,  $\rho_m = 3.15$ ,  $\rho_f = 2.59$ ,  $\rho_g = -0.02$   
 $\rho_s = 1.0$ ,  $\rho_x = 1.0$

and also do the  $n$ -st +  $\rho_f$ -st plots  
for this interval 4380 - 4480, @  
.5' intervals

3. Make  $n$ - $\rho_f$  plots for the 6220 - 6320  
interval @ 1' averages - no st  
plots can be made.

4. redo  $\Delta t$  -  $n$  +  $\Delta t$  +  $\rho_b$  plots  
on 5900 - 6100 @ 2' averages

5. redo 4500 - 4700  $\Delta t$  -  $n$  +  $\Delta t$  -  $\rho_b$   
plots at 2' averages.

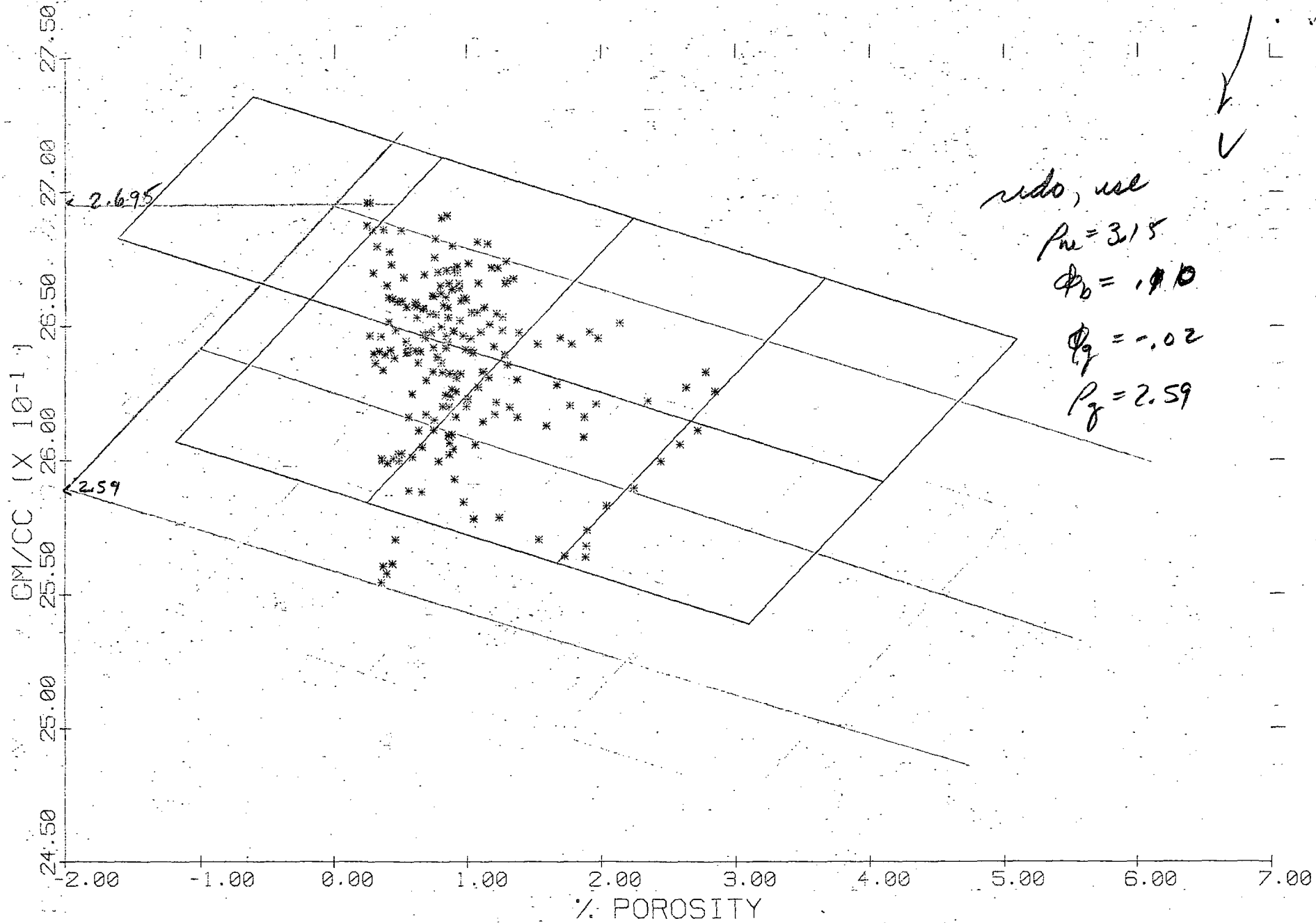
249 - 2.86  
255 - 2.70  
254 - 2.89

382 - 3.68  
263 - 2.79  
233 - 3.84  
330  
160

506 - 2.05  
261 - 2.72  
248 - 2.90  
277

172 - 2.28  
256 - 2.69  
220 - 2.78

# BULK DENSITY VS NEUTRON POROSITY



C/T-2

AT 4380.00 - 4480.00 FEET  
0.50 DEPTH UNIT INTERVALS

0, 5000, 5"

180' depth

- 1. ~~DATA~~ to 12X Dresser API units
- 2. Schl. API plot - neutron 3"
- 3. Mag. Suscep. } lab ones. 0, 2500, 5000, 7500
- 4. Density } 2.0, .1, 3.0, 10"
- API S. Gamma Ray 0, 100, 200, 300, 3"
- MSL 6. dt 200, 250, 300, 350, 3"
- °C/KM 7.0 Th. Cond. 1.0 1.5 2.0, 2.5, 3.0 4"
- 8. Th. Gradient ~~1.0, 1.5, 2.0, 2.5, 3.0~~ 4"

MILLI WATTS/M.K

4000 - 6900

X 1822.7

- |    |                      |  |
|----|----------------------|--|
|    |                      | 144, 145, 146, 147                     |
| 1. | DA Neut.             | <del>23, 43, 44, 45</del>              |
| 2. | Schl. "              | 21, 22, 27                             |
| 3. | M <sub>1</sub> Suss. | 102                                    |
|    |                      | 101                                    |
| 4. | Lab Purity           |  |
| 5. | GR                   | 31, 59, 33                             |
| 6. | At                   | 14                                     |
| 7. | Thermal Cond.        | 78                                     |
| 8. | Temp → TGRAD         | <del>66, 64, 65</del><br>148, 149, 150 |

-134 to 394

-49 to 243

-111 to 335

-150 to 400

-200, 0, 200, 400

-200, -150, 0, 100, 200, 300, 400

John create the following x-plots:  
 in the three intervals with geochem.  
 see below.

X-plots

1. DA <sup>u</sup> bulk density versus MgO + Fe<sub>2</sub>O<sub>3</sub> ~~84 + 82~~ <sup>84 + 82</sup>
2. <sup>u</sup> Mag Suscep. " " ~~102 + 84 + 82~~ <sup>102 + 84 + 82</sup>  
~~156~~
3. <sup>u</sup> Li us Nat  $\gamma$  119, 7  $\rightarrow$  155
4. <sup>u</sup> K<sub>2</sub>O us Nat  $\gamma$  86, 7  $\rightarrow$  155
5. Loss us Li 89; 119
6. Loss us K<sub>2</sub>O 89, 86
7. Loss us Fe<sub>2</sub>O<sub>3</sub> + MgO 89, 82 + 84

① Schlumberger API - neutron versus Dresser Atlas  
 neutron - x-plot say 5'

averages on linear-linear graph -  
~~need~~ make these plots

4200 - 4600 80 pts

5000 - 5400 "

6000 - 6400 "

need to use DATCAL on log data - DA P<sub>3</sub>  
 & Nat  $\gamma$  - 10' averages

5770 to 5920, then change footage

6250 to 6350 to +5'

66~~40~~ to 6750 e.g. 5775  $\rightarrow$  5780

John 7 rows - PB - The Core & Grad.

N(D-A)

N(Sch)

4200 - 4600

145

21

5000 - 5500

~~145~~ 146

22

6000 - 6800

~~146~~ 147

27

*John*

John you  
will need to  
do more 9-1  
photo for Jeff.

Nov 22~~23~~' }  
Density 12'  
8' 24" } ✓

*	DA LS Gen	131	3300 - 4100	3312. - 4312.
		132	4300 - 5300	4312. - 5312.
		133	5300 - 6300	5312. - 6312.
		134	6300 - 6828	6312. - 6840.

*	DA West φ	140	3132 - 4100	3154. - 4122.
		141	4100 - 5100	4122. - 5122.
	✓	142	5100 - 6100	5122. - 6122.
		143	6100 - 6826	6122. - 6848.

*	DA γ	163	3600 - 4300	3824 - 4324
		164	4300 - 5000	4324 - 5024.
		165	3132 - 3600	3156 - 3824.
		166	5000 - 5700	5024. - 5724.
	✓	167	5700 - 6400	5724. - 6424.
		169	6400 - 6820	6424. - 6844.
	-	168	2900 - 3128	2924. - 3152.

At 181  
At 180

Schl γ	28	800 - 1800	
	29	1800 - 2800	✓
	30	2800 - 3800	
	31	3800 - 4800	
	59	4800 - 5800	
	33	5800 - 6880	
	58	1800 - 2800	

DA

144

3132 - 4100

3154

145

4100 - 5100

4122

N

146

5100 - 6100

5122

API

149

6100 - 6826

6122

SCHL

API

21

3800 - 4800

22

4800 - 5800

27

5800 - 6880



2.73

$$x \phi_b = .01$$

$$P_b = 2.73 = 2.59(1 - \phi - x) + P_f \phi + P_m x$$

$$2.73 = 2.59(1 - x) + P_m x$$

$$2.73 - 2.59 = (P_m - 2.59)x$$

$$.14 \phi_b = P_m - 2.59$$

$$\phi_b = \frac{P_m - 2.59}{.14}$$

3.15	2.85
2.59	2.59
.56	.26
.14	.14

4      .02

$$x = \frac{.01}{.04} = .25$$

$$\phi_b = 10\% \quad \frac{1}{5} \times 2 = 2$$

$$2.695 = 2.59 \times .8 + .2 P_m$$

$$2.695 - 2.072 = .2 P_m$$

$$.623 = .2 P_m \quad P_m = \frac{.623}{.2} = 3.115 = 3.12$$

y is API

x is d

y = a + bx + cx^2 + dx^3 + ...

Table with columns y, ry, x. Rows of data points and a summary row: 12 2 0 1.07E 03

a 3.55E 03
b -2.06E 03
c

NPTS, NTERMS, MEAN, HESSOR

Table with columns y, ry, x. Rows of data points and a summary row: 12 3 0 1.18E 03

a 3.55E 03
b -2.06E 03
c 3.54E 00

Table with columns y, ry, x. Rows of data points and a summary row: 12 4 0 1.51E 02

a 3.51E 03
b -1.64E 03
c -6.89E 02
d 2.88E 02

ANOVA

1/21/80

①

$$y = a + bx + cx^2 + dx^3 + \dots$$

1      2      3      4

y is d + x is API

$y$	$\sigma_y$	$x$	$a$
1.61E 00	0.00E-01	3.00E 02	1.72E 00
1.42E 00	0.00E-01	6.00E 02	-4.86E-04
1.27E 00	0.00E-01	9.00E 02	-8.11E-11
1.13E 00	0.00E-01	1.20E 03	
9.82E-01	0.00E-01	1.50E 03	
8.51E-01	0.00E-01	1.80E 03	
7.16E-01	0.00E-01	2.10E 03	
5.74E-01	0.00E-01	2.40E 03	
4.23E-01	0.00E-01	2.70E 03	
2.79E-01	0.00E-01	3.00E 03	
1.14E-01	0.00E-01	3.30E 03	
0.00E-01	0.00E-01	3.52E 03	
12 3 0	2.80E-04		

ANOTHER CALCULATION, YES=0, NO=1

NPTS, NTERMS, MODE, CHISQR

$y$	$\sigma_y$	$x$	$a$
1.61E 00	0.00E-01	3.00E 02	1.73E 00
1.42E 00	0.00E-01	6.00E 02	-4.86E-04
1.27E 00	0.00E-01	9.00E 02	
1.13E 00	0.00E-01	1.20E 03	
9.82E-01	0.00E-01	1.50E 03	
8.51E-01	0.00E-01	1.80E 03	
7.16E-01	0.00E-01	2.10E 03	
5.74E-01	0.00E-01	2.40E 03	
4.23E-01	0.00E-01	2.70E 03	
2.79E-01	0.00E-01	3.00E 03	
1.14E-01	0.00E-01	3.30E 03	
0.00E-01	0.00E-01	3.52E 03	
12 2 0	2.52E-04		

four terms bombed off!

4000' - 5000' depth plot of ( $\rho_N, \rho_b, \gamma + \Delta t$ )

+8  $\rho_N$   
 +18  $\rho_b$   
 +6  $\gamma$

a) 5750 - 5950  
 b) 6312 - 6424  
 c) 6600 - 6800

2' average

EFFICIENCY LINE No. 2636



	1	2	3	4	5	6	7	8	9
1									
2	1. Need 2o X-plot			$\Delta t$	$\rho_N$	$\rho_b$		a	c
3				$\Delta t$	$\rho_N$	$\rho_b$		a	c
4				$\rho_N$	$\rho_b$			a	b c
5	2. Need 3-plot								
6									
7									
8									
9	3. Need MN plot								
10									
11									
12	A. Move $\rho_N$ down 30'								
13									
14									
15									
16	[REDACTED]								
17									
18									
19		$\rho_N$		$\rho_b$		$\Delta t$	$\gamma$		$\rho$
* 20	800 - 1800	18	770 - 6828	"		770 - 6826	7		N
X 21	1800 - 2800	19	770 - 1300	71		800 - 1800	28		
X 22	2800 - 3800	20	1300 - 2300	72		2800 - 3800	30		
X 23	3800 - 4800	21	2300 - 3300	73		3800 - 4800	31		
* 24	4800 - 5800	22	3300 - 4300	74		4800 - 5800	33		40
25	3132 - 4100	23	4300 - 5300	75		1800 - 2800	58		
26	2250 - 3129	17	5300 - 6300	76		4800 - 5800	59		
27	4100 - 5100	24	6300 - 6828	77					
28	5100 - 6100	25	3312 - 4311.5	131					
29	6100 - 6880	26	4312 - 5311.5	132					
* 30	5800 - 6880	27	6312 - 6839	133					
31	770 - 2250	42							
	4100 - 5100	43							
	5100 - 6100	44	6100 - 6826	45					

$\Phi_N$

140

141

142

143

$\ell_b$

131

132

133

134

$\Delta+$

180

$\gamma$

163

164

165

166

167

168

169

TABLE 1 - CATALOG OF CUTTINGS FROM WELL 9-1

Phillips Petroleum Company  
 Roosevelt Well KGRA 9-1  
 Beaver County, Utah  
 Sec. 9, T27S, R9W

Chip Samples  
 Chip boards completed  
 Sample weight includes envelope

<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>
0 - 430 <sup>00</sup>	N/S	1210	158.3	1930	129.7
430	121.7	1240	180.7	1945	196.6
460	117.4	1270	187.6	1960	136.7
490	176.8	1300	192.9	1975	192.9
520	173.3	1330	145.9	1990	180.9
550	140.0	1345	160.9	2000	104.0
580	202.2	1360	181.4	2005	172.7
610	131.7	1375	148.8	2020	153.4
640	155.9	1390	192.5	2035	165.1
670	174.2	1405	183.8	2050	131.8
700	123.3	1435	119.5	2065	114.4
730	136.6	1450	119.5	2080	138.7
745	125.8	1465	174.9	2095	145.3
760	113.3	1480	147.5	2110	148.2
775	113.1	1495	179.3	2125	92.9
790	83.2	1510	147.6	2140	153.4
800	108.2	1525	185.7	2155	136.0
815	122.4	1540	154.1	2170	171.5
830	104.8	1555	185.8	2185	100.0
845	152.6	1570	155.7	2200	136.8
860	113.4	1580	173.7	2215	100.1
875	138.7	1585	165.5	2230	91.5
890	135.7	1600	154.5	2245	112.1
905	100.7	1615	217.5	2250	110.0
920	155.9	1630	154.7	2260	124.1
935	109.3	1645	162.9	2270	142.5
950	132.9	1660	129.0	2280	129.5
965	179.9	1675	128.0	2290	132.5
980	146.3	1690	135.7	2300	179.4
995	199.6	1705	146.5	2310	150.9
1010	167.3	1720	189.0	2320	163.6
1025	153.2	1735	153.2	2330	135.1
1040	144.7	1740	162.9	2340	121.4
1050	147.8	1750	174.8	2350	129.9
1060	138.8	1765	186.8	2360	188.1
1070	228.4	1780	170.1	2370	106.6
1080	127.5	1795	167.8	2380	124.1
1090	141.5	1800	141.6	2390	151.6
1105	152.9	1810	203.0	2400	42.3
1120	164.6	1825	116.6	2420	138.0
1135	128.2	1840	102.5	2430	86.4
1150	135.0	1855	97.0	2440	123.7
1165	166.1	1870	75.6	2450	104.4
1180	135.6	1885	196.2	2460	58.6
1195	235.9	1915	186.7	2470	129.3

Phillips Petroleum Company  
 Roosevelt Well KGRA 9-1  
 Beaver County, Utah  
 Sec. 9, T27S, R9W

<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>
2490	40.5	2960	224.8	3440	171.7
2500	72.2	2970	200.3	3450	115.2
2510	75.9	2980	208.3	3460	252.2
2520	9.0	3000	139.6	3470	169.7
2530	144.7	3010	178.5	3480	202.5
2540	85.3	3020	147.0	3490	142.6
2550	161.7	3030	166.6	3500	158.2
2560	118.3	3040	125.0	3510	174.6
2570	166.6	3050	209.9	3420	163.1
2580	197.3	3060	188.2	3540	169.6
2590	249.4	3070	143.8	3550	135.4
2600	171.6	3080	147.7	3560	111.7
2610	177.4	3090	181.8	3570	153.8
2620	173.8	3100	168.0	3580	143.6
2630	235.9	3110	167.4	3590	141.8
2640	192.1	3120	124.6	3600	138.9
2650	129.1	3130	146.1	3610	128.7
2660	166.1	3140	151.4	3620	140.1
2670	136.4	3150	166.2	3630	149.7
2680	149.1	3160	149.5	3640	116.2
2690	184.5	3170	155.8	3650	167.5
2700	148.5	3180	212.9	3660	162.2
2710	204.1	3190	194.8	3670	190.0
2720	183.9	3210	143.7	3680	161.0
2730	199.8	3220	156.6	3690	167.4
2740	193.5	3230	268.4	3700	112.1
2750	121.7	3240	135.9	3710	155.0
2760	121.8	3250	118.6	3720	110.4
2770	160.4	3260	151.8	3730	154.0
2790	160.2	3270	117.7	3740	155.9
2800	169.9	3280	126.7	3750	147.0
2810	145.3	3290	119.0	3760	188.2
2820	123.6	3300	154.0	3770	166.7
2830	86.5	3310	142.2	3780	148.6
2840	166.0	3320	123.5	3790	194.6
2850	99.6	3340	153.1	3800	149.8
2860	125.9	3350	173.1	3810	115.1
2870	153.8	3360	131.9	3820	158.5
2880	104.3	3370	129.0	3830	180.7
2890	118.3	3380	127.2	3840	195.7
2910	120.7	3390	126.8	3850	208.4
2920	87.7	3400	196.3	3860	144.3
2930	76.2	3410	99.6	3870	126.9
2940	103.3	3420	148.7	3880	185.5
2950	117.0	3430	150.8	3890	155.7

Phillips Petroleum Company  
 Roosevelt Well KGRA 9-1  
 Beaver County, Utah  
 Sec. 9, T27S, R9W

<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>
3900	164.0	4400	124.8	4860	150.2
3920	254.6	4410	133.4	4870	170.8
3930	165.9	4420	212.9	4880	194.6
3950	129.9	4430	229.9	4890	171.4
3960	208.8	4440	143.4	4900	167.5
3970	194.5	4450	157.6	4910	144.5
3980	191.2	4460	166.0	4920	136.7
3990	177.7	4470	140.4	4930	155.9
4010	193.8	4480	158.3	4940	135.8
4020	157.3	4490	170.5	4950	143.3
4030	208.5	4500	143.1	4970	137.8
4040	192.9	4510	127.1	4980	169.1
4050	190.0	4520	139.3	4990	177.0
4060	164.3	4530	144.1	5000	150.3
4070	206.3	4540	151.6	5010	205.1
4080	185.2	4450	150.3	5020	188.4
4090	163.5	4560	208.9	5030	173.4
4100	125.9	4570	204.2	5040	174.6
4110	193.8	4580	158.0	5050	215.7
4120	195.3	4590	200.6	5060	191.9
4130	249.0	4600	181.7	5070	137.1
4140	174.7	4610	199.5	5080	147.5
4150	196.9	4620	170.3	5090	221.2
4160	168.3	4630	194.0	5100	211.7
4170	205.4	4640	139.9	5110	171.7
4180	136.5	4650	187.6	5120	115.9
4190	155.9	4660	155.7	5130	146.3
4200	137.5	4670	149.7	5140	162.1
4210	147.6	4680	123.6	5150	181.7
4220	237.7	4690	180.7	5160	220.9
4230	183.5	4700	134.1	5170	153.1
4240	216.5	4710	199.1	5180	125.4
4250	148.5	4720	119.1	5190	187.2
4260	140.5	4730	154.7	5210	189.8
4270	159.7	4740	190.3	5220	134.8
4280	138.4	4750	186.3	5230	179.5
4290	211.2	4770	138.7	5240	98.4
4320	146.4	4780	215.1	5250	196.6
4330	149.1	4790	157.8	5270	220.7
4340	141.6	4800	137.7	5280	186.1
4350	207.4	4810	138.5	5290	124.3
4360	219.0	4820	147.9	5310	156.1
4370	164.7	4830	182.5	5330	153.4
4380	246.3	4840	198.7	5340	145.1
4390	168.5	4850	192.9	5350	219.3



Phillips Petroleum Company  
 Roosevelt Well KGRA 9-1  
 Beaver County, Utah  
 Sec. 9, T27S, R9W

<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>	<u>Footage Interval</u>	<u>Weight in Grams</u>
5370	197.8	5840	141.0	6310	162.2
5380	208.0	5850	105.4	6320	177.0
5390	192.4	5860	96.6	6330	154.7
5400	161.6	5870	135.3	6340	197.6
5410	133.4	5880	203.1	6350	114.9
5420	168.9	5890	153.8	6360	188.8
5430	173.1	5900	177.0	6370	149.6
5440	151.2	5910	133.7	6380	158.3
5450	180.0	5920	170.9	6390	187.4
5460	116.6	5930	143.7	6400	149.9
5470	132.1	5940	181.7	6410	213.0
5480	147.0	5950	163.7	6420	200.1
5490	144.0	5960	173.6	6430	136.3
5500	132.4	5970	244.1	6440	210.1
5510	166.3	5980	176.4	6450	150.6
5530	152.9	5990	195.4	6460	188.6
5540	141.4	6000	149.6	6470	212.0
5550	173.4	6010	188.3	6480	203.4
5560	131.2	6020	157.0	6490	138.1
5570	163.8	6030	127.1	6500	262.4
5580	169.1	6050	172.2	6510	202.8
5590	154.9	6060	170.2	6520	183.0
5600	207.1	6070	135.7	6530	177.3
5610	146.3	6080	175.4	6540	145.9
5620	160.0	6100	187.1	6550	156.6
5630	156.2	6110	150.4	6560	162.3
5640	103.8	6120	183.9	6570	193.1
5650	148.0	6130	199.1	6590	210.0
5660	121.3	6140	127.4	6600	163.6
5670	145.2	6150	152.0	6610	242.4
5680	195.2	6160	155.8	6620	148.2
5690	134.8	6170	170.8	6630	153.7
5700	140.0	6180	198.2	6640	182.7
5710	142.5	6190	96.9	6650	169.3
5720	170.8	6200	165.2	6660	161.4
5730	155.8	6210	177.3	6670	189.6
5740	174.8	6220	214.9	6680	219.1
5760	154.1	6210	162.2	6690	188.5
5770	126.4	6220	223.5	6700	157.8
5780	176.1	6250	148.9	6710	124.6
5790	166.5	6260	146.1	6720	225.2
5800	153.1	6270	202.3	6730	213.1
5810	157.8	6280	155.7	6750	265.3
5820	192.3	6290	176.3	6760	192.7
5830	141.5	6300	193.2	6770	284.1

Phillips Petroleum Company  
Roosevelt Well KGRA 9-1  
Beaver County, Utah  
Sec. 9, T27S, R9W

<u>Footage Interval</u>	<u>Weight in Grams</u>
6780	266.3
6790	185.9
6800	200.9
6810	230.9
6830	187.3
6840	280.0
6850	178.9
6860	169.9
6870	206.6
6875	168.8