

***ACOUSTIC PRESSURE SURVEY (BUILD-UP)***

***ENERGY INC  
ET AL 1-2-3-4  
100/01-02-003-04w5  
FIELD: SOUTH EAST AB  
FORMATION: X Sand***

***TEST DATES: MARCH 2012***

***DISTRIBUTION: John Smith,***

***PREPARED BY: Laura-Gene Haga, P.E.T***

***DATE: March 31, 2012***

**Sales & Engineering**  
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**CANADIAN NATURAL RESOURCES LIMITED**

**ACOUSTIC PRESSURE SURVEY (BUILD-UP)  
NORCEN ENCHANT 15-1-13-16  
100/15-01-013-16W4/0  
FIELD: ENCHANT  
POOL: ARCS FF & GG  
MARCH 2012**

**TEST SUMMARY:**

- u An PIT FL-1 was installed into the casing on 2012-03-15 at 17:55 hours. The fluid level was at 136.8 joints.
- u The well was shut-in on 2012-03-15 at 17:55 hours to start the build-up.
- u The build-up test was concluded on 2012-03-30 at 07:10 hours.
- u A final bottomhole pressure of 1835 kPa (absolute) was calculated at the mid-point of the producing interval after 349.3 hours of shut-in.
- u Since the rate of change in pressure during the last 6.0 hours of shut- in (1.1 kPa/hr) is less than 2 kPa/hour, this calculated bottomhole pressure is considered representative of a stabilized reservoir pressure by the EUB Guide 40.

**PRESSURE DATA CALCULATIONS:**

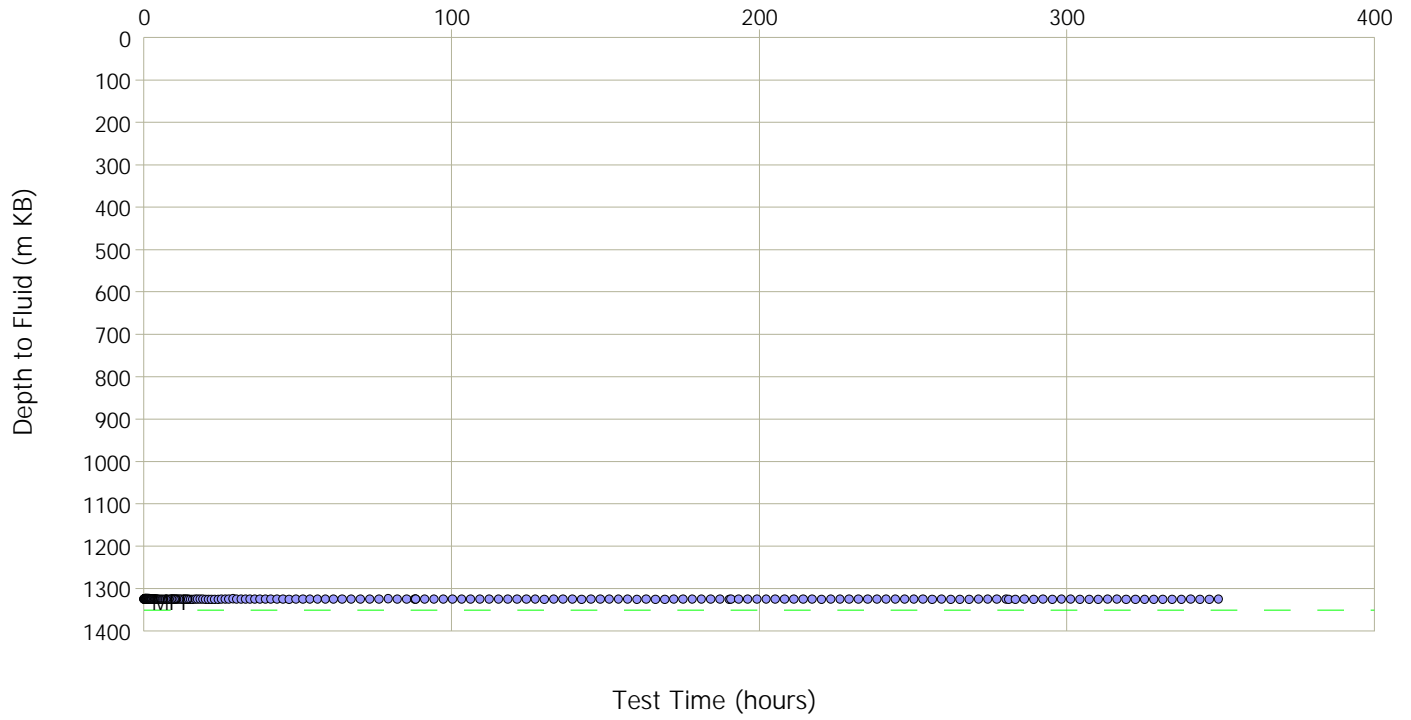
- u The bottomhole pressures were calculated using the following information:

Atmospheric Pressure	93.0 kPa
Formation Depth	1351.25 m KB
Oil Gravity	32.70° API
Water Gravity	1.050
Gas Gravity	1.030
Oil Production	1.00 m <sup>3</sup> /d
Water Production	0.06 m <sup>3</sup> /d
Bottomhole Temperature	35.0° C

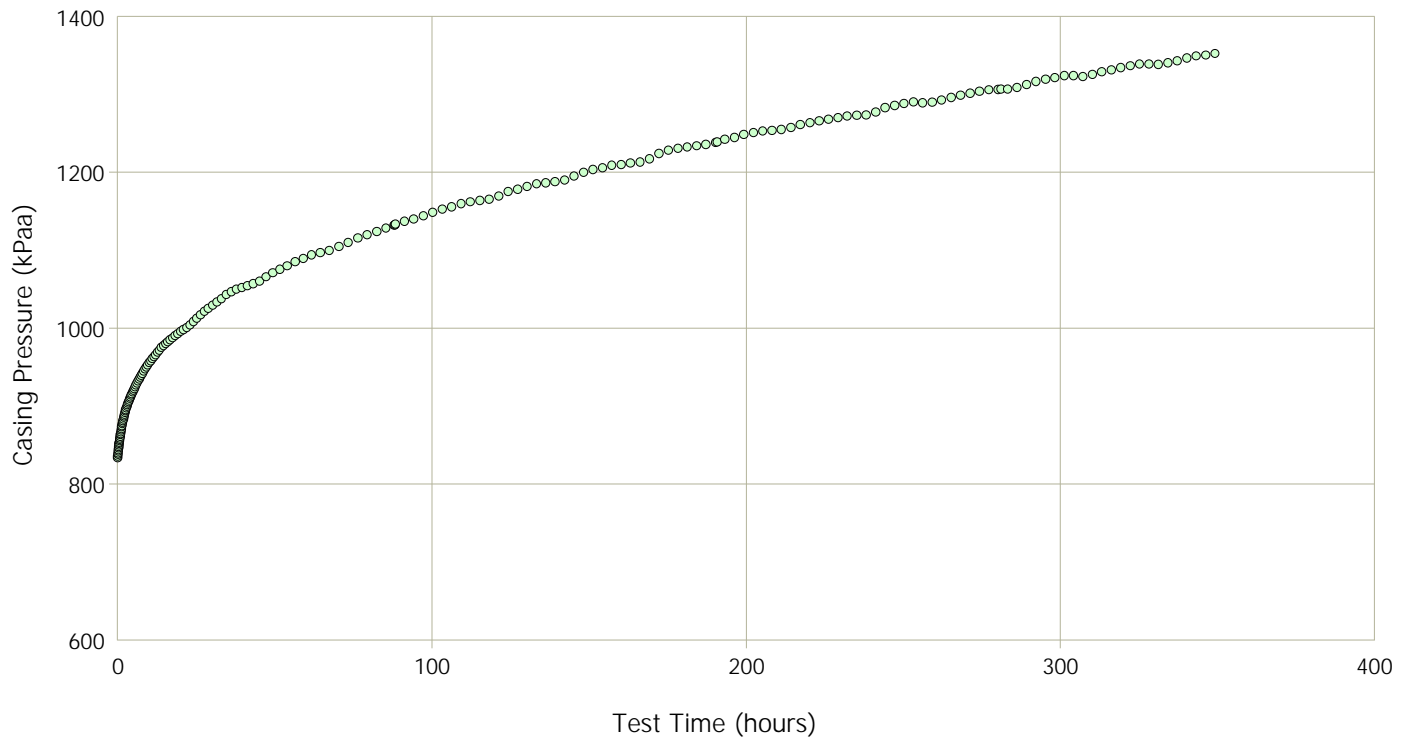
**ATTACHMENTS:**

ACOUSTIC WELLSOUNDER PRESSURE SURVEY DATA  
TYPE CURVE PRE-PLOT  
BOTTOMHOLE PRESSURE VERSUS TIME  
CASING PRESSURE VERSUS TIME  
FLUID LEVEL VERSUS TIME

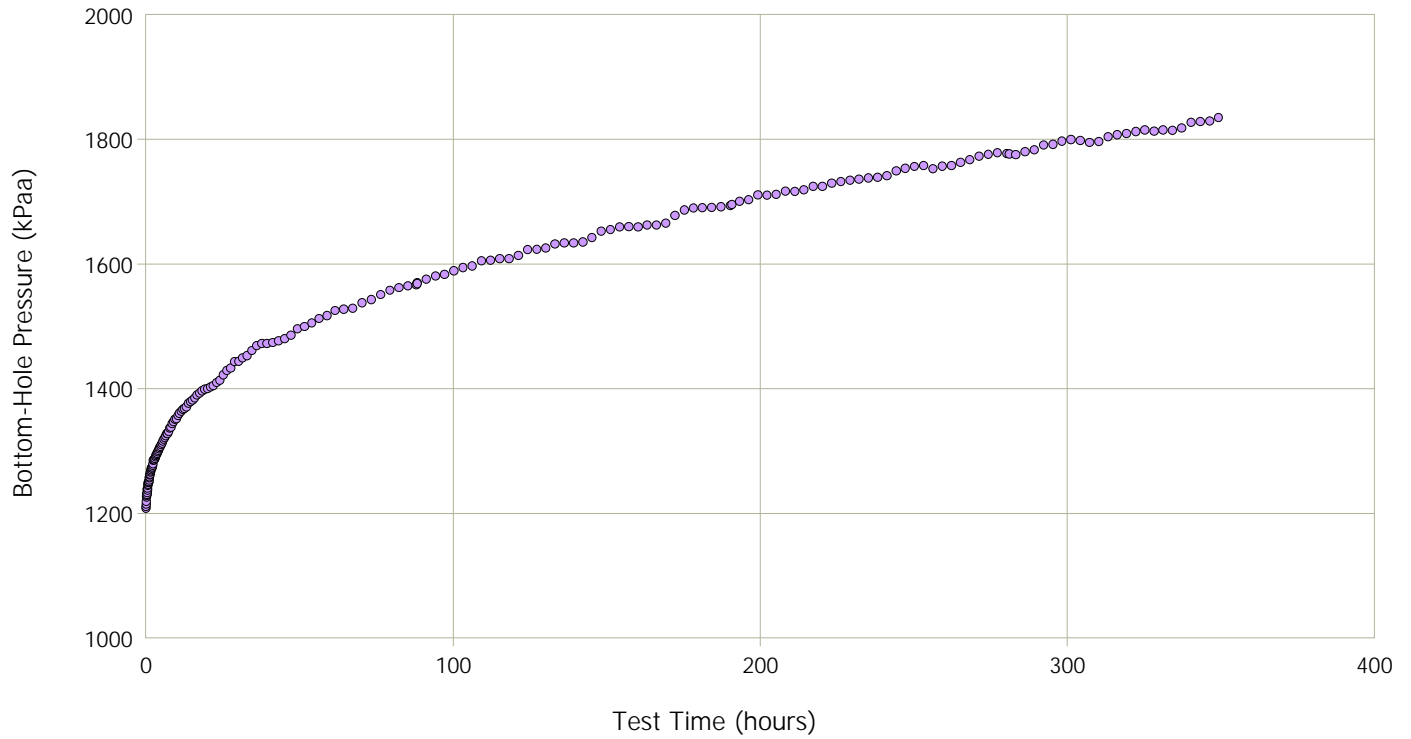
### Fluid Level vs. Time



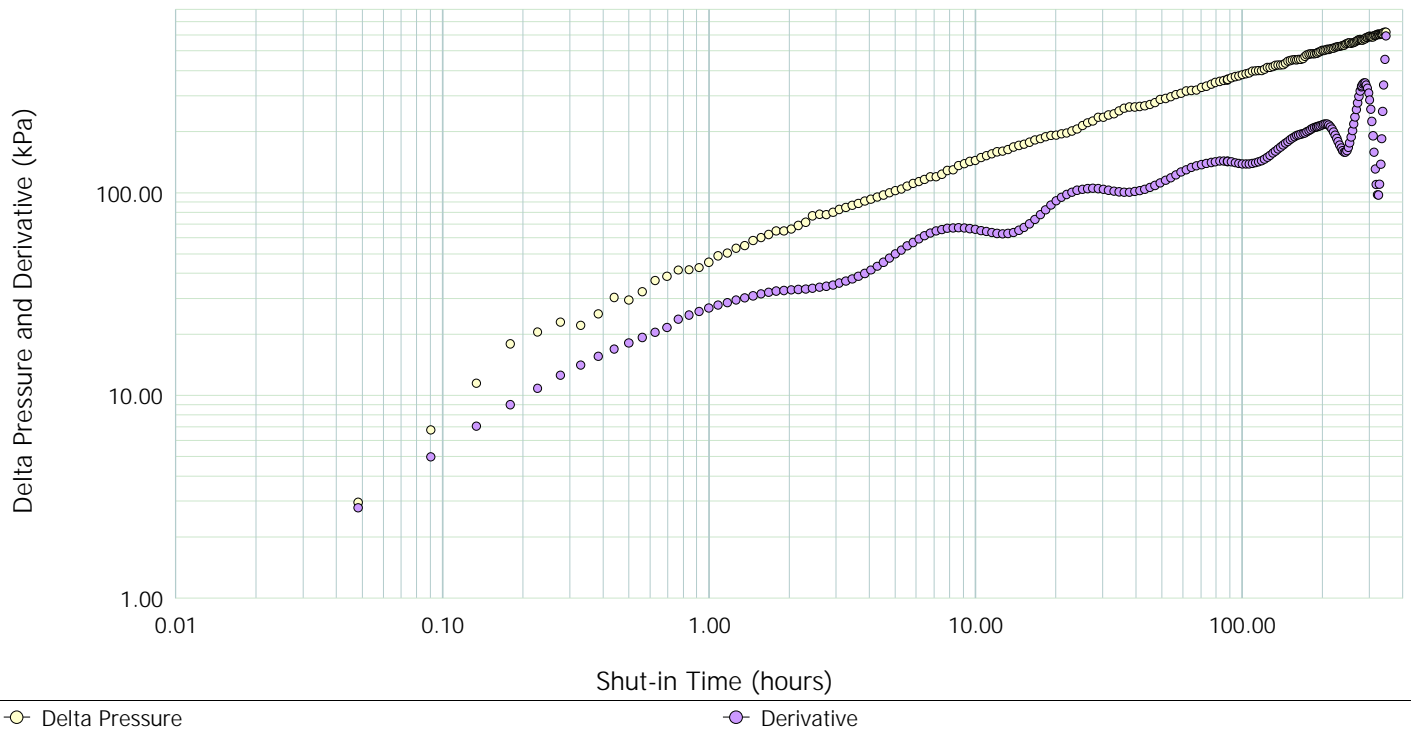
### Casing Pressure vs. Time



### Bottom-Hole Pressures vs. Time



### Diagnostic Log-Log Plot



○ Delta Pressure

○ Derivative

**Premier Intergrated Technologies Ltd.**  
**ACOUSTIC WELLSOUNDER PRESSURE SURVEY**

COMPANY: **ENERGY INC**  
 FIELD: **SOUTH EAST AB**  
 POOL NAME:

WELL NAME: **ET AL 1-2-3-4**  
 LOCATION: **100/01-02-003-04w5**  
 STATUS: **PUMPING CRUDE OIL**

**TUBING**

TOTAL JOINTS = **142.000**  
 TUBING BOTTOM = **1374.98** m KB  
 AVG. JOINT LENGTH = **9.651** m

**ELEVATIONS**

KELLY BUSHING (K.B.) = **781.70** m  
 GROUND LEVEL (G.L.) = **777.10** m  
 K.B. TO G.L. = **4.60** m

**PRODUCTION**

OIL RATE = **1.00** m<sup>3</sup>/d  
 WATER RATE = **0.06** m<sup>3</sup>/d  
 GAS RATE = **0.13** E<sup>3</sup>m<sup>3</sup>/d

**TEMPERATURES**

SURFACE TEMP. = **3.30** °C  
 RESERVOIR TEMP. = **35.00** °C

**FLUID PROPERTIES**

GAS GRAVITY = **1.030**  
 OIL GRAVITY = **32.700** °API  
 WATER GRAVITY = **1.050**

**PRODUCING INTERVAL**

TOP OF INTERVAL = **1340.50** m KB  
 BOTTOM OF INTERVAL = **1362.00** m KB  
 MID-POINT = **1351.25** m KB

WELL WAS SHUT-IN ON 2012-MAR-15 AT 17:55:15

SHOT #	SHOT DATE AND TIME	TEST TIME (hours)	JOINTS TO FLUID	COL HT. (m)			GRADIENT (kPa/m)			CSG. (kPaa)	GAS (kPa)	PRESSURE OIL (kPa)	EMUL. (kPa)	MPP (kPaa)
				GAS	OIL	EMUL.	GAS	OIL	EMUL.					
1	12-03-15 17:55:15	0.000	136.80	1320.2	15.7	10.8	0.117	8.296	8.397	833.8	153.9	130.1	90.3	1208.1
2	12-03-15 17:58:09	0.048	136.80	1320.2	15.7	10.8	0.117	8.296	8.397	836.0	154.4	130.1	90.6	1211.1
3	12-03-15 18:00:40	0.090	136.79	1320.1	15.7	10.9	0.117	8.296	8.396	838.5	154.8	130.1	91.5	1214.8
4	12-03-15 18:03:18	0.134	136.75	1319.7	15.7	11.2	0.118	8.296	8.396	840.1	155.1	130.1	94.3	1219.6
5	12-03-15 18:06:02	0.180	136.71	1319.3	15.7	11.6	0.118	8.296	8.396	842.6	155.6	130.1	97.8	1226.0
6	12-03-15 18:08:54	0.228	136.71	1319.3	15.7	11.7	0.118	8.296	8.396	844.5	155.9	130.1	98.0	1228.6
7	12-03-15 18:11:54	0.278	136.70	1319.3	15.7	11.7	0.118	8.296	8.396	846.4	156.3	130.1	98.3	1231.1
8	12-03-15 18:15:02	0.330	136.74	1319.6	15.7	11.4	0.119	8.295	8.396	848.1	156.7	130.1	95.4	1230.3
9	12-03-15 18:18:18	0.384	136.73	1319.6	15.7	11.4	0.119	8.295	8.396	850.3	157.1	130.1	95.8	1233.3
10	12-03-15 18:21:43	0.441	136.70	1319.2	15.7	11.8	0.119	8.295	8.395	852.2	157.4	130.1	98.7	1238.4
11	12-03-15 18:25:17	0.501	136.73	1319.6	15.7	11.4	0.120	8.295	8.395	853.8	157.8	130.1	95.8	1237.5
12	12-03-15 18:29:01	0.563	136.73	1319.5	15.7	11.5	0.120	8.295	8.395	856.0	158.2	130.1	96.1	1240.5
13	12-03-15 18:32:55	0.628	136.70	1319.2	15.7	11.8	0.120	8.295	8.395	857.7	158.5	130.1	98.7	1244.9
14	12-03-15 18:36:59	0.696	136.70	1319.2	15.7	11.7	0.120	8.295	8.395	859.3	158.9	130.1	98.4	1246.7
15	12-03-15 18:41:14	0.766	136.70	1319.2	15.7	11.8	0.121	8.295	8.395	861.5	159.3	130.1	98.7	1249.6
16	12-03-15 18:45:41	0.841	136.73	1319.5	15.7	11.5	0.121	8.294	8.395	863.7	159.8	130.1	96.1	1249.7
17	12-03-15 18:50:20	0.918	136.74	1319.6	15.7	11.4	0.121	8.294	8.395	865.0	160.1	130.1	95.6	1250.8
18	12-03-15 18:55:11	0.999	136.73	1319.6	15.7	11.4	0.122	8.294	8.395	867.2	160.5	130.1	95.7	1253.6
19	12-03-15 19:00:15	1.083	136.73	1319.5	15.7	11.5	0.122	8.294	8.394	869.7	161.0	130.1	96.2	1257.0
20	12-03-15 19:05:32	1.171	136.73	1319.6	15.7	11.4	0.122	8.294	8.394	871.3	161.3	130.1	95.8	1258.6
21	12-03-15 19:11:04	1.264	136.73	1319.5	15.7	11.4	0.123	8.294	8.394	873.5	161.7	130.1	95.9	1261.3
22	12-03-15 19:16:51	1.360	136.74	1319.6	15.7	11.4	0.123	8.294	8.394	875.2	162.1	130.1	95.5	1262.9
23	12-03-15 19:22:53	1.461	136.73	1319.5	15.7	11.4	0.123	8.293	8.394	877.7	162.6	130.1	95.8	1266.2
24	12-03-15 19:29:11	1.566	136.73	1319.6	15.7	11.4	0.123	8.293	8.394	879.6	162.9	130.1	95.6	1268.3
25	12-03-15 19:35:46	1.675	136.74	1319.6	15.7	11.4	0.124	8.293	8.394	881.5	163.3	130.1	95.4	1270.4
26	12-03-15 19:42:39	1.790	136.74	1319.6	15.7	11.4	0.124	8.293	8.394	883.7	163.8	130.1	95.4	1273.0
27	12-03-15 19:49:51	1.910	136.77	1319.9	15.7	11.0	0.124	8.293	8.393	885.9	164.2	130.1	92.7	1273.0
28	12-03-15 19:57:21	2.035	136.78	1320.0	15.7	11.0	0.125	8.293	8.393	887.5	164.6	130.1	92.2	1274.4
29	12-03-15 20:05:12	2.166	136.78	1320.0	15.7	11.0	0.125	8.293	8.393	889.7	165.0	130.2	92.2	1277.1
30	12-03-15 20:13:24	2.303	136.78	1320.0	15.7	11.0	0.125	8.292	8.393	891.9	165.5	130.2	92.1	1279.7
31	12-03-15 20:21:58	2.445	136.74	1319.7	15.7	11.3	0.126	8.292	8.393	894.1	165.9	130.2	94.9	1285.0
32	12-03-15 20:30:55	2.594	136.75	1319.7	15.7	11.2	0.126	8.292	8.393	895.7	166.2	130.2	94.3	1286.4
33	12-03-15 20:40:16	2.750	136.79	1320.1	15.7	10.9	0.126	8.292	8.393	897.9	166.7	130.2	91.5	1286.2
34	12-03-15 20:50:02	2.913	136.79	1320.1	15.7	10.9	0.127	8.292	8.393	899.8	167.1	130.2	91.1	1288.2
35	12-03-15 21:00:14	3.083	136.79	1320.1	15.7	10.9	0.127	8.292	8.392	902.0	167.5	130.2	91.1	1290.8
36	12-03-15 21:10:54	3.261	136.79	1320.1	15.7	10.8	0.127	8.292	8.392	904.0	167.9	130.2	90.7	1292.7

SHOT #	SHOT DATE AND TIME	TEST TIME (hours)	JOINTS TO FLUID	COL HT. (m)			GRADIENT (kPa/m)			CSG. (kPaa)	GAS (kPa)	PRESSURE OIL (kPa)	EMUL. (kPa)	MPP (kPaa)
				GAS	OIL	EMUL.	GAS	OIL	EMUL.					
37	12-03-15 21:22:02	3.446	136.80	1320.2	15.7	10.8	0.127	8.292	8.392	905.9	168.3	130.2	90.3	1294.7
38	12-03-15 21:33:40	3.640	136.80	1320.2	15.7	10.7	0.128	8.291	8.392	907.8	168.7	130.2	90.0	1296.6
39	12-03-15 21:45:49	3.843	136.80	1320.2	15.7	10.7	0.128	8.291	8.392	910.0	169.1	130.2	89.8	1299.1
40	12-03-15 21:58:31	4.054	136.81	1320.3	15.7	10.7	0.128	8.291	8.392	911.9	169.5	130.2	89.4	1301.0
41	12-03-15 22:11:47	4.276	136.81	1320.3	15.7	10.6	0.129	8.291	8.392	914.1	169.9	130.2	89.3	1303.5
42	12-03-15 22:25:39	4.507	136.82	1320.4	15.7	10.6	0.129	8.291	8.392	916.0	170.3	130.2	88.9	1305.4
43	12-03-15 22:40:08	4.748	136.82	1320.4	15.7	10.6	0.129	8.291	8.391	918.2	170.8	130.2	88.7	1307.9
44	12-03-15 22:55:16	5.000	136.82	1320.4	15.7	10.6	0.130	8.291	8.391	920.4	171.2	130.2	88.6	1310.4
45	12-03-15 23:11:04	5.264	136.83	1320.4	15.7	10.5	0.130	8.290	8.391	922.3	171.6	130.2	88.1	1312.3
46	12-03-15 23:27:35	5.539	136.82	1320.4	15.7	10.5	0.130	8.290	8.391	925.0	172.2	130.2	88.5	1315.9
47	12-03-15 23:44:50	5.826	136.82	1320.4	15.7	10.6	0.131	8.290	8.391	927.5	172.7	130.2	88.6	1318.9
48	12-03-16 00:02:51	6.127	136.82	1320.4	15.7	10.5	0.131	8.290	8.391	929.7	173.1	130.2	88.4	1321.4
49	12-03-16 00:21:41	6.441	136.82	1320.4	15.7	10.5	0.131	8.290	8.391	932.2	173.6	130.2	88.4	1324.4
50	12-03-16 00:41:21	6.768	136.82	1320.4	15.7	10.6	0.132	8.290	8.390	934.9	174.1	130.2	88.7	1328.0
51	12-03-16 01:01:54	7.111	136.85	1320.7	15.7	10.2	0.132	8.289	8.390	937.1	174.6	130.2	85.7	1327.7
52	12-03-16 01:23:22	7.469	136.85	1320.7	15.7	10.3	0.133	8.289	8.390	939.8	175.2	130.2	86.0	1331.3
53	12-03-16 01:45:48	7.843	136.82	1320.4	15.7	10.6	0.133	8.289	8.390	942.3	175.6	130.2	88.8	1337.0
54	12-03-16 02:09:14	8.233	136.85	1320.7	15.7	10.3	0.133	8.289	8.390	945.0	176.2	130.2	86.3	1337.8
55	12-03-16 02:33:43	8.641	136.81	1320.3	15.7	10.6	0.134	8.289	8.389	947.8	176.7	130.2	89.3	1344.1
56	12-03-16 02:59:18	9.068	136.81	1320.3	15.7	10.6	0.134	8.289	8.389	950.3	177.2	130.2	89.3	1347.0
57	12-03-16 03:26:01	9.513	136.81	1320.3	15.7	10.7	0.135	8.288	8.389	953.0	177.8	130.2	89.6	1350.6
58	12-03-16 03:53:56	9.978	136.83	1320.5	15.7	10.4	0.135	8.288	8.389	956.0	178.4	130.2	87.3	1352.0
59	12-03-16 04:23:06	10.464	136.80	1320.2	15.7	10.7	0.135	8.288	8.389	958.2	178.8	130.2	89.7	1357.0
60	12-03-16 04:53:34	10.972	136.80	1320.2	15.7	10.7	0.136	8.288	8.389	960.9	179.4	130.2	89.9	1360.5
61	12-03-16 05:25:24	11.503	136.80	1320.2	15.7	10.7	0.136	8.288	8.388	963.4	179.9	130.3	89.8	1363.4
62	12-03-16 05:58:39	12.057	136.80	1320.2	15.7	10.7	0.137	8.288	8.388	966.2	180.4	130.3	90.0	1366.9
63	12-03-16 06:33:24	12.636	136.83	1320.5	15.7	10.5	0.137	8.287	8.388	969.2	181.1	130.3	87.7	1368.2
64	12-03-16 07:09:42	13.241	136.83	1320.5	15.7	10.4	0.138	8.287	8.388	971.6	181.6	130.3	87.5	1371.0
65	12-03-16 07:47:37	13.873	136.82	1320.4	15.7	10.5	0.138	8.287	8.388	975.2	182.3	130.3	88.4	1376.2
66	12-03-16 08:27:14	14.533	136.82	1320.4	15.7	10.5	0.138	8.287	8.388	977.7	182.8	130.3	88.3	1379.0
67	12-03-16 09:08:38	15.223	136.82	1320.4	15.7	10.5	0.139	8.287	8.387	980.1	183.3	130.3	88.1	1381.8
68	12-03-16 09:51:52	15.944	136.82	1320.4	15.7	10.5	0.139	8.286	8.387	982.9	183.9	130.3	88.1	1385.1
69	12-03-16 10:37:03	16.697	136.80	1320.2	15.7	10.8	0.140	8.286	8.387	985.0	184.3	130.3	90.3	1389.9
70	12-03-16 11:24:14	17.483	136.80	1320.2	15.7	10.7	0.140	8.286	8.387	987.5	184.8	130.3	90.0	1392.6
71	12-03-16 12:13:33	18.305	136.80	1320.2	15.7	10.8	0.140	8.286	8.387	990.5	185.4	130.3	90.3	1396.5
72	12-03-16 13:05:04	19.164	136.80	1320.2	15.7	10.7	0.141	8.286	8.387	993.0	185.9	130.3	89.9	1399.1
73	12-03-16 13:58:53	20.061	136.83	1320.5	15.7	10.4	0.141	8.286	8.386	996.0	186.6	130.3	87.3	1400.2
74	12-03-16 14:55:06	20.998	136.84	1320.6	15.7	10.4	0.142	8.285	8.386	998.5	187.1	130.3	86.9	1402.8
75	12-03-16 15:53:50	21.976	136.85	1320.6	15.7	10.3	0.142	8.285	8.386	1000.7	187.5	130.3	86.2	1404.7
76	12-03-16 16:55:12	22.999	136.84	1320.6	15.7	10.4	0.143	8.285	8.386	1004.2	188.2	130.3	86.8	1409.6
77	12-03-16 17:59:19	24.068	136.86	1320.7	15.7	10.2	0.143	8.285	8.386	1008.6	189.2	130.3	85.4	1413.5
78	12-03-16 19:06:18	25.184	136.81	1320.3	15.7	10.6	0.144	8.284	8.385	1012.7	189.9	130.3	89.2	1422.1
79	12-03-16 20:16:16	26.350	136.79	1320.1	15.7	10.8	0.145	8.284	8.385	1017.4	190.9	130.3	90.7	1429.3
80	12-03-16 21:29:22	27.569	136.81	1320.3	15.7	10.6	0.145	8.284	8.385	1021.8	191.8	130.3	89.2	1433.1
81	12-03-16 22:45:45	28.842	136.74	1319.6	15.7	11.3	0.146	8.284	8.384	1025.3	192.4	130.3	95.0	1443.1
82	12-03-17 00:05:32	30.171	136.79	1320.1	15.7	10.8	0.146	8.283	8.384	1029.4	193.3	130.3	90.4	1443.5
83	12-03-17 01:28:54	31.561	136.78	1320.0	15.7	10.9	0.147	8.283	8.384	1033.5	194.2	130.3	91.2	1449.2
84	12-03-17 02:55:59	33.012	136.80	1320.2	15.7	10.7	0.148	8.283	8.384	1037.9	195.1	130.4	89.4	1452.8
85	12-03-17 04:26:58	34.529	136.78	1320.0	15.7	10.9	0.149	8.282	8.383	1043.1	196.1	130.4	91.2	1460.8
86	12-03-17 06:02:01	36.113	136.74	1319.7	15.7	11.2	0.149	8.282	8.383	1047.0	196.9	130.4	94.3	1468.5
87	12-03-17 07:41:20	37.768	136.75	1319.7	15.7	11.2	0.150	8.282	8.383	1050.3	197.5	130.4	94.0	1472.2
88	12-03-17 09:25:04	39.497	136.77	1319.9	15.7	11.0	0.150	8.282	8.383	1051.9	197.9	130.4	92.1	1472.3
89	12-03-17 11:13:28	41.304	136.79	1320.1	15.7	10.8	0.150	8.282	8.382	1054.4	198.5	130.4	90.9	1474.1
90	12-03-17 13:06:42	43.191	136.80	1320.2	15.7	10.7	0.151	8.281	8.382	1057.1	199.0	130.4	89.8	1476.4
91	12-03-17 15:05:00	45.163	136.81	1320.3	15.7	10.7	0.151	8.281	8.382	1060.4	199.7	130.4	89.3	1479.8
92	12-03-17 17:08:35	47.222	136.82	1320.4	15.7	10.5	0.152	8.281	8.382	1066.1	200.9	130.4	88.3	1485.8
93	12-03-17 19:17:43	49.374	136.77	1319.9	15.7	11.0	0.153	8.281	8.381	1071.3	201.9	130.4	92.3	1496.0
94	12-03-17 21:32:36	51.623	136.80	1320.2	15.7	10.7	0.154	8.280	8.381	1076.0	202.9	130.4	90.1	1499.4
95	12-03-17 23:53:32	53.971	136.79	1320.1	15.8	10.8	0.154	8.280	8.381	1080.4	203.8	130.4	90.3	1504.9
96	12-03-18 02:20:46	56.425	136.78	1320.0	15.8	10.9	0.155	8.280	8.380	1085.6	204.9	130.4	91.2	1512.1
97	12-03-18 04:54:35	58.989	136.78	1320.0	15.8	10.8	0.156	8.279	8.380	1089.7	205.8	130.4	90.9	1516.8
98	12-03-18 07:35:17	61.667	136.75	1319.7	15.8	11.2	0.157	8.279	8.380	1094.4	206.7	130.4	93.8	1525.3

SHOT #	SHOT DATE AND TIME	TEST TIME (hours)	JOINTS TO FLUID	COL HT. (m)			GRADIENT (kPa/m)			CSG. (kPaa)	GAS (kPa)	PRESSURE OIL (kPa)	EMUL. (kPa)	MPP (kPaa)
				GAS	OIL	EMUL.	GAS	OIL	EMUL.					
99	12-03-18 10:23:11	64.466	136.77	1319.9	15.8	11.0	0.157	8.279	8.380	1097.4	207.3	130.4	92.3	1527.4
100	12-03-18 13:18:35	67.389	136.79	1320.1	15.8	10.8	0.158	8.279	8.379	1100.1	207.9	130.4	90.3	1528.8
101	12-03-18 16:18:35	70.389	136.75	1319.8	15.8	11.1	0.158	8.278	8.379	1105.1	208.9	130.4	93.3	1537.7
102	12-03-18 19:18:35	73.389	136.78	1320.0	15.8	10.9	0.159	8.278	8.379	1110.5	210.1	130.5	91.4	1542.4
103	12-03-18 22:18:35	76.389	136.76	1319.8	15.8	11.0	0.160	8.277	8.378	1116.3	211.3	130.5	92.6	1550.6
104	12-03-19 01:18:35	79.389	136.73	1319.6	15.8	11.3	0.161	8.277	8.378	1120.4	212.1	130.5	95.0	1557.9
105	12-03-19 04:18:35	82.389	136.74	1319.6	15.8	11.3	0.161	8.277	8.378	1124.2	212.9	130.5	94.4	1562.0
106	12-03-19 07:18:35	85.389	136.77	1319.9	15.8	11.0	0.162	8.277	8.378	1128.9	213.9	130.5	92.0	1565.3
107	12-03-19 09:58:53	88.061	136.81	1320.3	15.8	10.6	0.163	8.276	8.377	1132.4	214.7	130.5	89.0	1566.7
108	12-03-19 10:16:53	88.361	136.77	1319.9	15.8	11.0	0.163	8.276	8.377	1133.0	214.8	130.5	91.9	1570.2
109	12-03-19 10:18:05	88.381	136.80	1320.2	15.8	10.7	0.163	8.276	8.377	1133.5	214.9	130.5	89.7	1568.6
110	12-03-19 13:10:15	91.250	136.77	1319.9	15.8	11.0	0.163	8.276	8.377	1137.4	215.7	130.5	92.3	1575.8
111	12-03-19 16:10:15	94.250	136.75	1319.7	15.8	11.2	0.164	8.276	8.377	1140.4	216.3	130.5	93.9	1581.1
112	12-03-19 19:10:15	97.250	136.78	1320.0	15.8	10.9	0.165	8.276	8.376	1144.5	217.2	130.5	91.2	1583.4
113	12-03-19 22:10:15	100.250	136.77	1319.9	15.8	10.9	0.165	8.275	8.376	1148.9	218.1	130.5	91.6	1589.1
114	12-03-20 01:10:15	103.250	136.77	1319.9	15.8	11.0	0.166	8.275	8.376	1153.0	219.0	130.5	91.8	1594.2
115	12-03-20 04:10:15	106.250	136.78	1320.0	15.8	10.8	0.166	8.275	8.376	1156.0	219.6	130.5	90.9	1597.0
116	12-03-20 07:10:15	109.250	136.74	1319.7	15.8	11.2	0.167	8.274	8.375	1160.1	220.4	130.5	93.9	1604.9
117	12-03-20 10:10:15	112.250	136.77	1319.9	15.8	11.0	0.167	8.274	8.375	1162.3	220.9	130.5	92.3	1606.0
118	12-03-20 13:10:15	115.250	136.76	1319.8	15.8	11.1	0.168	8.274	8.375	1163.9	221.2	130.5	92.9	1608.6
119	12-03-20 16:10:15	118.250	136.78	1320.0	15.8	10.8	0.168	8.274	8.375	1165.6	221.6	130.5	90.8	1608.5
120	12-03-20 19:10:15	121.250	136.78	1320.0	15.8	10.9	0.169	8.274	8.375	1169.7	222.5	130.5	91.2	1613.9
121	12-03-20 22:10:15	124.250	136.75	1319.7	15.8	11.1	0.169	8.273	8.374	1175.5	223.7	130.5	93.4	1623.0
122	12-03-21 01:10:15	127.250	136.79	1320.1	15.8	10.8	0.170	8.273	8.374	1178.5	224.4	130.6	90.0	1623.4
123	12-03-21 04:10:15	130.250	136.82	1320.4	15.8	10.5	0.171	8.273	8.374	1182.3	225.2	130.6	87.6	1625.7
124	12-03-21 07:10:15	133.250	136.79	1320.1	15.8	10.8	0.171	8.273	8.374	1185.6	225.9	130.6	90.1	1632.2
125	12-03-21 10:10:15	136.250	136.79	1320.1	15.8	10.8	0.171	8.273	8.374	1186.7	226.1	130.6	90.4	1633.8
126	12-03-21 13:10:15	139.250	136.81	1320.3	15.8	10.6	0.172	8.272	8.374	1188.3	226.5	130.6	88.6	1634.0
127	12-03-21 16:10:15	142.250	136.82	1320.4	15.8	10.4	0.172	8.272	8.373	1190.5	227.0	130.6	87.4	1635.4
128	12-03-21 19:10:15	145.250	136.81	1320.3	15.8	10.6	0.173	8.272	8.373	1195.2	227.9	130.6	88.7	1642.4
129	12-03-21 22:10:15	148.250	136.75	1319.7	15.8	11.1	0.173	8.272	8.373	1200.1	228.9	130.6	93.1	1652.7
130	12-03-22 01:10:15	151.250	136.78	1320.0	15.8	10.9	0.174	8.271	8.372	1203.9	229.7	130.6	90.9	1655.2
131	12-03-22 04:10:15	154.250	136.76	1319.8	15.8	11.1	0.174	8.271	8.372	1206.1	230.2	130.6	92.5	1659.4
132	12-03-22 07:10:15	157.250	136.80	1320.2	15.8	10.7	0.175	8.271	8.372	1209.2	230.9	130.6	89.6	1660.2
133	12-03-22 10:10:15	160.250	136.82	1320.4	15.8	10.4	0.175	8.271	8.372	1210.3	231.1	130.6	87.4	1659.4
134	12-03-22 13:10:15	163.250	136.81	1320.3	15.8	10.6	0.175	8.271	8.372	1211.9	231.5	130.6	88.6	1662.6
135	12-03-22 16:10:15	166.250	136.83	1320.5	15.8	10.4	0.176	8.271	8.372	1213.3	231.8	130.6	86.8	1662.4
136	12-03-22 19:10:15	169.250	136.85	1320.7	15.8	10.2	0.176	8.270	8.372	1217.4	232.7	130.6	85.0	1665.7
137	12-03-22 22:10:15	172.250	136.80	1320.2	15.8	10.6	0.177	8.270	8.371	1224.2	234.1	130.6	88.9	1677.8
138	12-03-23 01:10:15	175.250	136.76	1319.8	15.8	11.1	0.178	8.270	8.371	1228.3	234.9	130.6	92.7	1686.6
139	12-03-23 04:10:15	178.250	136.76	1319.8	15.8	11.0	0.178	8.270	8.371	1231.1	235.5	130.6	92.4	1689.6
140	12-03-23 07:10:15	181.250	136.78	1320.0	15.8	10.9	0.179	8.269	8.371	1232.7	235.9	130.6	91.0	1690.2
141	12-03-23 10:10:15	184.250	136.79	1320.1	15.8	10.7	0.179	8.269	8.370	1234.4	236.2	130.6	89.6	1690.9
142	12-03-23 13:10:15	187.250	136.81	1320.3	15.8	10.5	0.179	8.269	8.370	1236.0	236.6	130.6	88.3	1691.5
143	12-03-23 16:10:15	190.250	136.82	1320.4	15.8	10.5	0.180	8.269	8.370	1238.5	237.2	130.6	87.8	1694.1
144	12-03-23 16:45:15	190.833	136.81	1320.3	15.8	10.5	0.180	8.269	8.370	1239.3	237.3	130.6	88.0	1695.3
145	12-03-23 19:10:15	193.250	136.80	1320.2	15.8	10.6	0.180	8.269	8.370	1242.6	238.0	130.6	89.0	1700.3
146	12-03-23 22:10:15	196.250	136.81	1320.3	15.8	10.6	0.181	8.269	8.370	1245.1	238.5	130.6	88.6	1702.8
147	12-03-24 01:10:15	199.250	136.76	1319.8	15.8	11.0	0.181	8.268	8.369	1248.6	239.2	130.7	92.1	1710.6
148	12-03-24 04:10:15	202.250	136.80	1320.2	15.8	10.6	0.182	8.268	8.369	1251.1	239.8	130.7	88.9	1710.5
149	12-03-24 07:10:15	205.250	136.81	1320.3	15.8	10.5	0.182	8.268	8.369	1253.0	240.3	130.7	88.0	1711.9
150	12-03-24 10:10:15	208.250	136.77	1319.9	15.8	11.0	0.182	8.268	8.369	1254.1	240.4	130.7	91.7	1716.9
151	12-03-24 13:10:15	211.250	136.79	1320.1	15.8	10.8	0.182	8.268	8.369	1255.2	240.7	130.7	90.0	1716.5
152	12-03-24 16:10:15	214.250	136.79	1320.1	15.8	10.7	0.183	8.268	8.369	1257.7	241.2	130.7	89.7	1719.2
153	12-03-24 19:10:15	217.250	136.78	1320.0	15.8	10.8	0.183	8.267	8.369	1261.2	242.0	130.7	90.5	1724.4
154	12-03-24 22:10:15	220.250	136.82	1320.4	15.8	10.5	0.184	8.267	8.369	1263.7	242.6	130.7	87.5	1724.5
155	12-03-25 01:10:15	223.250	136.79	1320.1	15.8	10.8	0.184	8.267	8.368	1266.1	243.0	130.7	90.1	1729.9
156	12-03-25 04:10:15	226.250	136.79	1320.1	15.8	10.7	0.184	8.267	8.368	1268.3	243.5	130.7	89.5	1732.1
157	12-03-25 07:10:15	229.250	136.80	1320.2	15.8	10.6	0.185	8.267	8.368	1270.5	244.0	130.7	89.1	1734.3
158	12-03-25 10:10:15	232.250	136.81	1320.3	15.8	10.6	0.185	8.267	8.368	1272.4	244.4	130.7	88.3	1735.9
159	12-03-25 13:10:15	235.250	136.80	1320.2	15.8	10.7	0.185	8.267	8.368	1273.3	244.6	130.7	89.2	1737.7
160	12-03-25 16:10:15	238.250	136.79	1320.1	15.8	10.7	0.185	8.267	8.368	1273.8	244.7	130.7	89.8	1739.0



SHOT #	SHOT DATE AND TIME	TEST TIME (hours)	JOINTS TO FLUID	COL HT. (m)			GRADIENT (kPa/m)			CSG. (kPaa)	GAS (kPa)	PRESSURE OIL (kPa)	EMUL. (kPa)	MPP (kPaa)
				GAS	OIL	EMUL.	GAS	OIL	EMUL.					
161	12-03-25 19:10:15	241.250	136.81	1320.3	15.8	10.5	0.186	8.266	8.368	1277.4	245.5	130.7	88.1	1741.7
162	12-03-25 22:10:15	244.250	136.80	1320.2	15.8	10.6	0.187	8.266	8.367	1283.1	246.7	130.7	88.7	1749.2
163	12-03-26 01:10:15	247.250	136.80	1320.2	15.8	10.7	0.187	8.266	8.367	1286.1	247.4	130.7	89.2	1753.4
164	12-03-26 04:10:15	250.250	136.80	1320.2	15.8	10.7	0.188	8.266	8.367	1288.6	247.9	130.7	89.1	1756.3
165	12-03-26 07:10:15	253.250	136.81	1320.3	15.8	10.6	0.188	8.265	8.367	1290.5	248.3	130.7	88.5	1758.1
166	12-03-26 10:10:15	256.250	136.85	1320.7	15.8	10.1	0.188	8.265	8.367	1289.4	248.2	130.7	84.7	1753.0
167	12-03-26 13:10:15	259.250	136.81	1320.3	15.8	10.5	0.188	8.265	8.367	1290.0	248.2	130.7	88.2	1757.1
168	12-03-26 16:10:15	262.250	136.84	1320.6	15.8	10.2	0.188	8.265	8.367	1292.7	248.9	130.7	85.7	1758.0
169	12-03-26 19:10:15	265.250	136.83	1320.5	15.8	10.4	0.189	8.265	8.366	1296.0	249.5	130.7	86.6	1762.9
170	12-03-26 22:10:15	268.250	136.82	1320.4	15.8	10.4	0.189	8.265	8.366	1299.0	250.2	130.7	87.3	1767.2
171	12-03-27 01:10:15	271.250	136.79	1320.1	15.8	10.8	0.190	8.265	8.366	1301.5	250.7	130.7	90.1	1772.9
172	12-03-27 04:10:15	274.250	136.79	1320.1	15.8	10.8	0.190	8.264	8.366	1303.9	251.2	130.7	90.1	1776.0
173	12-03-27 07:10:15	277.250	136.79	1320.1	15.8	10.8	0.191	8.264	8.366	1306.1	251.7	130.7	89.9	1778.5
174	12-03-27 10:10:15	280.250	136.81	1320.3	15.8	10.5	0.191	8.264	8.366	1306.4	251.8	130.7	87.7	1776.7
175	12-03-27 11:04:39	281.157	136.82	1320.4	15.8	10.4	0.191	8.264	8.366	1306.7	251.8	130.7	87.3	1776.6
176	12-03-27 13:10:15	283.250	136.84	1320.6	15.8	10.3	0.191	8.264	8.366	1307.0	251.9	130.7	85.8	1775.5
177	12-03-27 16:10:15	286.250	136.81	1320.3	15.8	10.5	0.191	8.264	8.365	1308.9	252.3	130.7	88.2	1780.1
178	12-03-27 19:10:15	289.250	136.83	1320.5	15.8	10.4	0.192	8.264	8.365	1312.4	253.1	130.7	86.7	1783.0
179	12-03-27 22:10:15	292.250	136.80	1320.2	15.8	10.6	0.192	8.264	8.365	1316.8	254.0	130.8	88.9	1790.5
180	12-03-28 01:10:15	295.250	136.83	1320.5	15.8	10.4	0.193	8.263	8.365	1319.6	254.7	130.8	86.6	1791.6
181	12-03-28 04:10:15	298.250	136.79	1320.1	15.8	10.7	0.193	8.263	8.365	1321.8	255.1	130.8	89.3	1796.9
182	12-03-28 07:10:15	301.250	136.80	1320.2	15.8	10.7	0.194	8.263	8.364	1323.9	255.5	130.8	89.2	1799.5
183	12-03-28 10:10:15	304.250	136.82	1320.4	15.8	10.4	0.194	8.263	8.364	1324.2	255.7	130.8	87.1	1797.8
184	12-03-28 13:10:15	307.250	136.83	1320.5	15.8	10.3	0.193	8.263	8.364	1322.9	255.4	130.8	86.1	1795.1
185	12-03-28 16:10:15	310.250	136.86	1320.8	15.8	10.0	0.194	8.263	8.364	1325.6	256.0	130.8	83.9	1796.3
186	12-03-28 19:10:15	313.250	136.81	1320.3	15.8	10.5	0.194	8.263	8.364	1328.9	256.7	130.8	87.8	1804.1
187	12-03-28 22:10:15	316.250	136.81	1320.3	15.8	10.5	0.195	8.263	8.364	1331.3	257.2	130.8	88.1	1807.4
188	12-03-29 01:10:15	319.250	136.83	1320.5	15.8	10.3	0.195	8.262	8.364	1334.4	257.9	130.8	86.2	1809.2
189	12-03-29 04:10:15	322.250	136.83	1320.5	15.8	10.3	0.196	8.262	8.364	1336.8	258.4	130.8	86.5	1812.6
190	12-03-29 07:10:15	325.250	136.83	1320.5	15.8	10.3	0.196	8.262	8.363	1338.8	258.8	130.8	86.3	1814.7
191	12-03-29 10:10:15	328.250	136.86	1320.7	15.8	10.1	0.196	8.262	8.363	1339.0	258.9	130.8	84.3	1813.0
192	12-03-29 13:10:15	331.250	136.82	1320.4	15.8	10.4	0.196	8.262	8.363	1338.5	258.8	130.8	86.9	1815.0
193	12-03-29 16:10:15	334.250	136.86	1320.8	15.8	10.0	0.196	8.262	8.363	1340.4	259.3	130.8	84.0	1814.4
194	12-03-29 19:10:15	337.250	136.86	1320.7	15.8	10.1	0.197	8.262	8.363	1342.8	259.8	130.8	84.4	1817.8
195	12-03-29 22:10:15	340.250	136.80	1320.2	15.8	10.6	0.197	8.261	8.363	1346.7	260.5	130.8	89.0	1827.0
196	12-03-30 01:10:15	343.250	136.82	1320.4	15.8	10.4	0.198	8.261	8.363	1349.4	261.2	130.8	86.9	1828.3
197	12-03-30 04:10:15	346.250	136.83	1320.5	15.8	10.3	0.198	8.261	8.363	1350.8	261.5	130.8	86.2	1829.3
198	12-03-30 07:10:15	349.250	136.80	1320.2	15.8	10.7	0.198	8.261	8.362	1353.0	261.9	130.8	89.1	1834.8