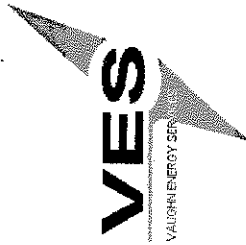




Company: Exxon
Lease/Well: FRU/197-33B6

Rig Name: H&P 321
State/County: Colorado/Rio Blanco
Latitude: 39.92

GRID North is 1.79 Degrees West of True North
VS-Azi: 0.00 Degrees



Depth Reference : KB = 0

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: fru297-33b6.ut
Minimum Curvature Method
Report Date/Time: 8/27/2010 / 13:14

Vaughn Energy Services
Rifle, Colorado
970-456-5936
Surveyor: Garry Fowler
FRU 197-33B6

Duplicate Copy
USP DR # 52014.005

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
200.00	1.16	298.59	199.99	0.97	-1.78	0.97	2.03	298.59	0.58
400.00	4.67	332.83	399.71	9.19	-7.28	9.19	11.72	321.60	1.88
600.00	8.62	336.43	598.32	30.18	-17.00	30.18	34.63	330.61	1.98
800.00	12.23	332.38	794.99	62.69	-32.81	62.69	70.76	332.37	1.84
1000.00	16.07	331.64	988.89	105.84	-55.79	105.84	119.64	332.20	1.92
1200.00	19.22	332.06	1179.45	159.29	-84.37	159.29	180.26	332.09	1.58
1400.00	20.42	331.12	1367.60	218.93	-116.65	218.93	248.07	331.95	0.62
1600.00	20.75	330.84	1554.83	280.42	-150.76	280.42	318.38	331.74	0.17
1800.00	20.46	331.57	1742.04	342.10	-184.67	342.10	388.76	331.64	0.19
2000.00	20.18	331.79	1929.59	403.24	-217.62	403.24	458.21	331.65	0.15
2200.00	20.24	329.74	2117.28	463.52	-251.36	463.52	527.29	331.53	0.36
2400.00	19.50	327.76	2305.38	521.64	-286.60	521.64	595.18	331.21	0.50
2600.00	20.66	328.01	2493.22	579.80	-323.10	579.80	663.75	330.87	0.58
2800.00	21.18	328.13	2680.03	640.41	-360.87	640.41	735.08	330.60	0.26
3000.00	21.34	327.29	2866.42	701.71	-399.61	701.71	807.52	330.34	0.17
3200.00	20.52	326.17	3053.22	761.45	-438.79	761.45	878.83	330.05	0.46
3400.00	20.51	326.45	3240.54	819.76	-477.67	819.76	948.78	329.77	0.05
3600.00	19.34	325.82	3428.56	876.36	-515.64	876.36	1016.81	329.53	0.59

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
3800.00	20.47	326.17	3616.61	932.81	-553.72	932.81	1084.78	329.31	0.57
4000.00	20.39	326.11	3804.03	990.79	-592.61	990.79	1154.49	329.12	0.04
4200.00	18.51	328.53	3992.61	1046.79	-628.62	1046.79	1221.04	329.01	1.02
4400.00	15.67	333.59	4183.77	1098.07	-657.21	1098.07	1279.72	329.10	1.60
4600.00	11.89	337.26	4377.99	1141.28	-677.20	1141.28	1327.07	329.32	1.94
4800.00	8.55	336.30	4574.79	1173.91	-691.14	1173.91	1362.25	329.51	1.67
5000.00	5.11	336.46	4773.34	1195.69	-700.68	1195.69	1385.87	329.63	1.72
5200.00	1.84	345.81	4972.94	1206.97	-705.02	1206.97	1397.80	329.71	1.65
5400.00	0.93	332.07	5172.88	1211.52	-706.57	1211.52	1402.51	329.75	0.48
5600.00	0.93	300.61	5372.86	1213.78	-708.73	1213.78	1405.55	329.72	0.25
5800.00	0.91	284.49	5572.83	1215.01	-711.67	1215.01	1408.09	329.64	0.13
6000.00	0.90	240.81	5772.81	1214.64	-714.58	1214.64	1409.25	329.53	0.34
6200.00	0.91	204.76	5972.79	1212.43	-716.62	1212.43	1408.38	329.41	0.28
6400.00	0.93	181.86	6172.76	1209.38	-717.34	1209.38	1406.11	329.33	0.18
6600.00	1.24	167.72	6372.73	1205.65	-716.93	1205.65	1402.70	329.26	0.21
6800.00	1.27	167.55	6572.68	1201.37	-715.99	1201.37	1398.55	329.21	0.02
7000.00	1.32	167.07	6772.63	1196.96	-715.00	1196.96	1394.25	329.15	0.02
7200.00	1.30	169.17	6972.57	1192.49	-714.06	1192.49	1389.93	329.09	0.03
7400.00	1.25	175.75	7172.52	1188.09	-713.47	1188.09	1385.85	329.01	0.08
7600.00	1.26	188.27	7372.48	1183.74	-713.62	1183.74	1382.21	328.92	0.14
7800.00	1.30	194.07	7572.43	1179.37	-714.49	1179.37	1378.92	328.79	0.07
8000.00	1.29	190.33	7772.38	1174.96	-715.44	1174.96	1375.64	328.66	0.04
8200.00	1.28	188.15	7972.33	1170.54	-716.16	1170.54	1372.24	328.54	0.02
8400.00	1.16	187.56	8172.28	1166.31	-716.74	1166.31	1368.94	328.43	0.06
8600.00	1.36	194.64	8372.23	1162.00	-717.61	1162.00	1365.73	328.30	0.12
8800.00	1.59	196.53	8572.17	1157.07	-719.09	1157.07	1362.32	328.14	0.13
9000.00	1.62	199.52	8772.09	1151.77	-720.92	1151.77	1358.79	327.96	0.02
9200.00	1.68	191.36	8972.00	1146.23	-722.45	1146.23	1354.90	327.78	0.12
9400.00	1.80	180.74	9171.91	1140.21	-723.07	1140.21	1350.15	327.62	0.17
9600.00	1.98	180.02	9371.80	1133.62	-723.11	1133.62	1344.61	327.47	0.09
9800.00	1.31	199.94	9571.72	1128.02	-723.89	1128.02	1340.31	327.31	0.44
10000.00	1.18	185.13	9771.68	1123.83	-724.85	1123.83	1337.31	327.18	0.17
10200.00	1.06	180.82	9971.64	1119.94	-726.06	1119.94	1334.15	327.08	0.08
10400.00	1.25	168.63	10171.60	1115.96	-724.65	1115.96	1330.59	327.00	0.16
10600.00	1.36	167.08	10371.55	1111.50	-723.69	1111.50	1326.34	326.93	0.06
10800.00	1.51	168.80	10571.48	1106.61	-722.65	1106.61	1321.67	326.85	0.08
11000.00	1.23	169.14	10771.43	1101.93	-721.74	1101.93	1317.25	326.78	0.14
11200.00	0.98	175.86	10971.39	1098.11	-721.21	1098.11	1313.77	326.70	0.14
11400.00	0.55	180.95	11171.37	1095.45	-721.10	1095.45	1311.48	326.64	0.22

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
11600.00	0.89	191.38	11371.35	1092.96	-721.42	1092.96	1309.59	326.57	0.18
11800.00	1.14	190.95	11571.32	1089.50	-722.11	1089.50	1307.07	326.46	0.12
12000.00	1.07	199.39	11771.29	1085.79	-723.10	1085.79	1304.54	326.34	0.09
12200.00	1.04	214.59	11971.25	1082.54	-724.75	1082.54	1302.75	326.20	0.14
12400.00	1.00	211.83	12171.22	1079.56	-726.70	1079.56	1301.36	326.05	0.03
12615.00	0.87	210.07	12386.19	1076.55	-728.51	1076.55	1299.88	325.91	0.06



Vaughn Energy Services
Rifle, Colorado
970-456-5936
Surveyor: Garry Fowler
FRU 197-33B6

