



Company: Exxon  
Lease/Well: FRU/197-33B1

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: fru 197-33b1.ut  
Minimum Curvature Method  
Report Date/Time: 8/25/2010 / 10:31

Vaughn Energy Services  
Rifle, Colorado  
970-456-5936  
Surveyor: Garry Fowler  
FRU 197-33B1

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	2.69	349.69	199.93	4.62	-0.84	4.62	4.69	349.69	1.34
400.00	5.93	5.93	399.34	19.52	-0.61	19.52	19.53	358.20	1.72
600.00	8.17	1.35	597.82	44.00	0.79	44.00	44.01	1.03	1.15
800.00	14.16	3.04	793.94	82.67	2.42	82.67	82.71	1.68	3.00
1000.00	15.73	3.47	987.17	134.17	5.36	134.17	134.27	2.29	0.79
1200.00	18.26	3.43	1178.42	192.51	8.88	192.51	192.72	2.64	1.27
1400.00	23.73	4.59	1365.08	263.96	13.98	263.96	264.33	3.03	2.74
1600.00	24.69	5.04	1547.48	345.68	20.87	345.68	346.31	3.45	0.49
1800.00	24.96	5.45	1729.00	429.30	28.54	429.30	430.25	3.80	0.16
2000.00	25.00	5.83	1910.29	513.35	36.85	513.35	514.67	4.11	0.08
2200.00	25.26	5.51	2091.36	597.87	45.24	597.87	599.58	4.33	0.15
2400.00	24.78	4.42	2272.59	682.14	52.56	682.14	684.16	4.41	0.33
2600.00	23.85	4.67	2454.85	764.23	59.09	764.23	766.51	4.42	0.47
2800.00	24.76	4.24	2637.12	846.30	65.47	846.30	848.82	4.42	0.46
3000.00	25.34	3.60	2818.31	930.78	71.26	930.78	933.50	4.38	0.32
3200.00	25.31	3.03	2999.09	1016.18	76.21	1016.18	1019.04	4.29	0.12
3400.00	25.09	2.79	3180.06	1101.23	80.53	1101.23	1104.17	4.18	0.12
3600.00	24.52	3.07	3361.60	1185.03	84.82	1185.03	1188.06	4.09	0.29
3800.00	23.87	1.20	3544.04	1266.93	87.89	1266.93	1269.97	3.97	0.50
4000.00	24.20	1.94	3726.70	1348.35	90.12	1348.35	1351.36	3.82	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
4200.00	22.10	1.78	3910.58	1426.94	92.68	1426.94	1429.94	3.72	1.05
4400.00	20.42	2.05	4096.96	1499.41	95.09	1499.41	1502.43	3.63	0.84
4600.00	16.73	3.58	4286.51	1563.03	98.14	1563.03	1566.11	3.59	1.86
4800.00	13.80	3.61	4479.44	1615.58	101.44	1615.58	1618.76	3.59	1.47
5000.00	10.86	0.77	4674.80	1658.24	103.20	1658.24	1661.44	3.56	1.50
5200.00	7.67	356.98	4872.17	1690.41	102.75	1690.41	1693.53	3.48	1.62
5400.00	3.75	326.86	5071.18	1709.23	98.47	1709.23	1712.06	3.30	2.40
5600.00	0.04	295.34	5271.03	1714.74	94.83	1714.74	1717.36	3.17	1.86
5800.00	0.27	242.48	5471.03	1714.55	94.35	1714.55	1717.14	3.15	0.12
6000.00	0.35	183.75	5671.03	1713.72	93.89	1713.72	1716.29	3.14	0.16
6200.00	1.16	168.82	5871.01	1711.13	94.24	1711.13	1713.72	3.15	0.42
6400.00	1.78	182.39	6070.95	1706.03	94.51	1706.03	1708.65	3.17	0.35
6600.00	1.90	212.13	6270.85	1700.12	92.61	1700.12	1702.64	3.12	0.48
6800.00	2.40	205.98	6470.71	1693.54	89.01	1693.54	1695.88	3.01	0.28
7000.00	2.04	206.16	6670.55	1686.58	85.61	1686.58	1688.75	2.91	0.18
7200.00	1.23	190.29	6870.47	1681.28	83.66	1681.28	1683.36	2.85	0.46
7400.00	1.13	188.31	7070.43	1677.22	82.99	1677.22	1679.27	2.83	0.05
7600.00	1.44	187.16	7270.38	1672.77	82.39	1672.77	1674.80	2.82	0.16
7800.00	1.85	163.12	7470.30	1667.19	83.01	1667.19	1669.26	2.85	0.40
8000.00	2.06	154.13	7670.18	1660.87	85.52	1660.87	1663.07	2.95	0.19
8200.00	2.01	150.13	7870.06	1654.59	88.83	1654.59	1656.98	3.07	0.08
8400.00	1.99	140.76	8069.94	1648.86	92.77	1648.86	1651.47	3.22	0.16
8600.00	2.13	138.70	8269.81	1643.38	97.42	1643.38	1646.27	3.39	0.08
8800.00	2.33	145.73	8469.66	1637.23	102.17	1637.23	1640.41	3.57	0.17
9000.00	2.33	159.43	8669.49	1630.06	105.88	1630.06	1633.50	3.72	0.28
9200.00	2.16	162.69	8869.34	1622.67	108.43	1622.67	1626.28	3.82	0.11
9400.00	2.17	166.39	9069.20	1615.39	110.44	1615.39	1619.16	3.91	0.07
9600.00	2.21	170.89	9269.05	1607.89	111.95	1607.89	1611.78	3.98	0.09
9800.00	2.37	172.64	9468.89	1599.98	113.09	1599.98	1603.97	4.04	0.08
10000.00	2.65	177.65	9668.70	1591.26	113.81	1591.26	1595.33	4.09	0.18
10200.00	2.54	182.77	9868.49	1582.21	113.78	1582.21	1586.30	4.11	0.13
10400.00	1.97	189.25	10068.34	1574.40	113.02	1574.40	1578.45	4.11	0.31
10600.00	1.88	186.49	10268.23	1567.75	112.09	1567.75	1571.75	4.09	0.06
10800.00	1.73	182.32	10468.13	1561.47	111.60	1561.47	1565.45	4.09	0.10
11000.00	1.56	171.88	10668.04	1555.76	111.86	1555.76	1559.77	4.11	0.17
11200.00	1.32	202.87	10867.98	1550.94	111.35	1550.94	1554.93	4.11	0.40
11400.00	1.20	218.69	11067.94	1547.18	109.14	1547.18	1551.02	4.04	0.18
11600.00	1.65	218.49	11267.87	1543.28	106.03	1543.28	1546.92	3.93	0.22
11800.00	1.89	219.56	11467.78	1538.48	102.14	1538.48	1541.87	3.80	0.12
12000.00	1.62	221.19	11667.68	1533.80	98.17	1533.80	1536.94	3.66	0.14
12200.00	1.50	220.24	11867.61	1529.67	94.61	1529.67	1532.59	3.54	0.06
12400.00	1.64	213.66	12067.53	1525.29	91.33	1525.29	1528.02	3.43	0.11

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
12600.00	1.74	211.71	12267.45	1520.32	88.15	1520.32	1522.88	3.32	0.06
12762.00	1.77	206.58	12429.37	1515.99	85.73	1515.99	1518.42	3.24	0.10