

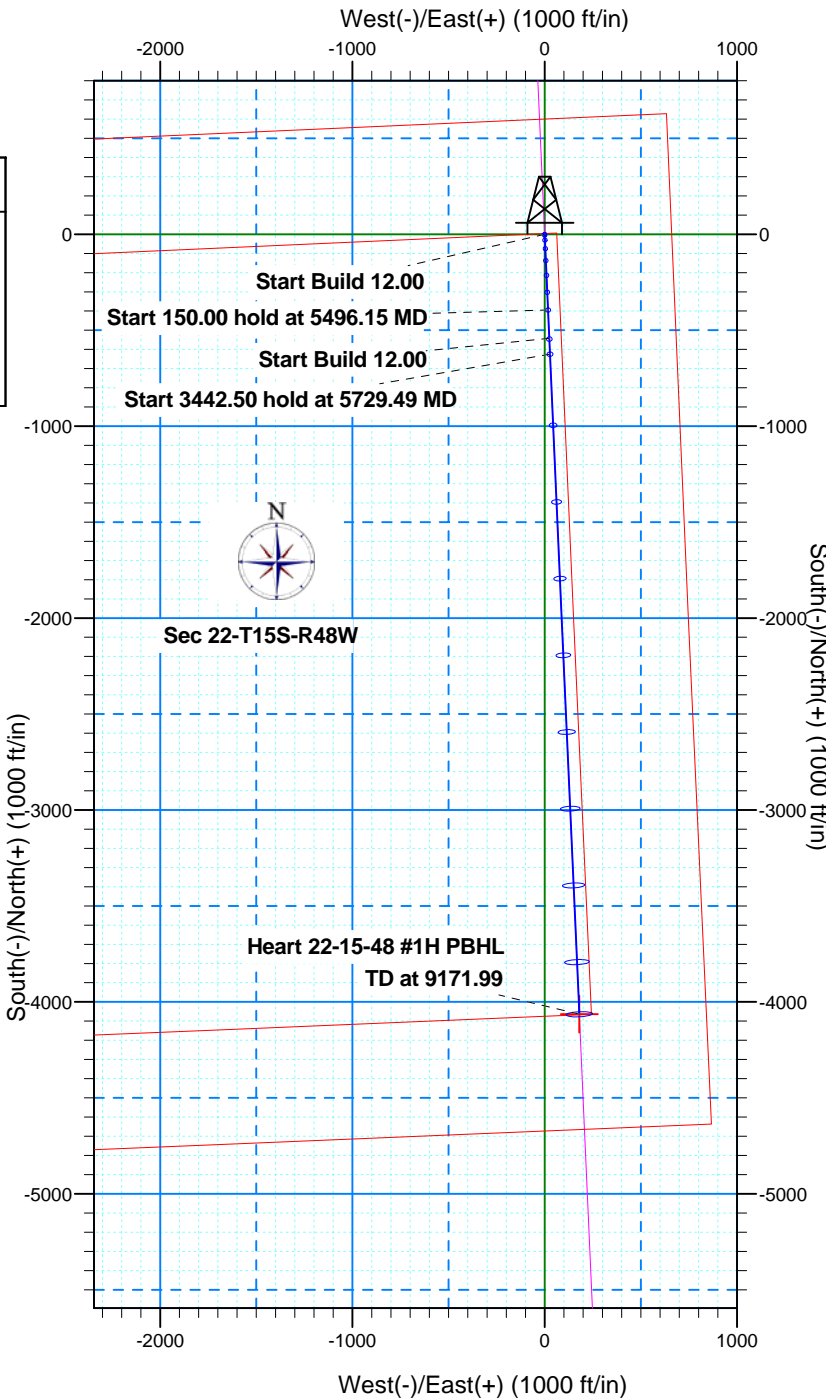
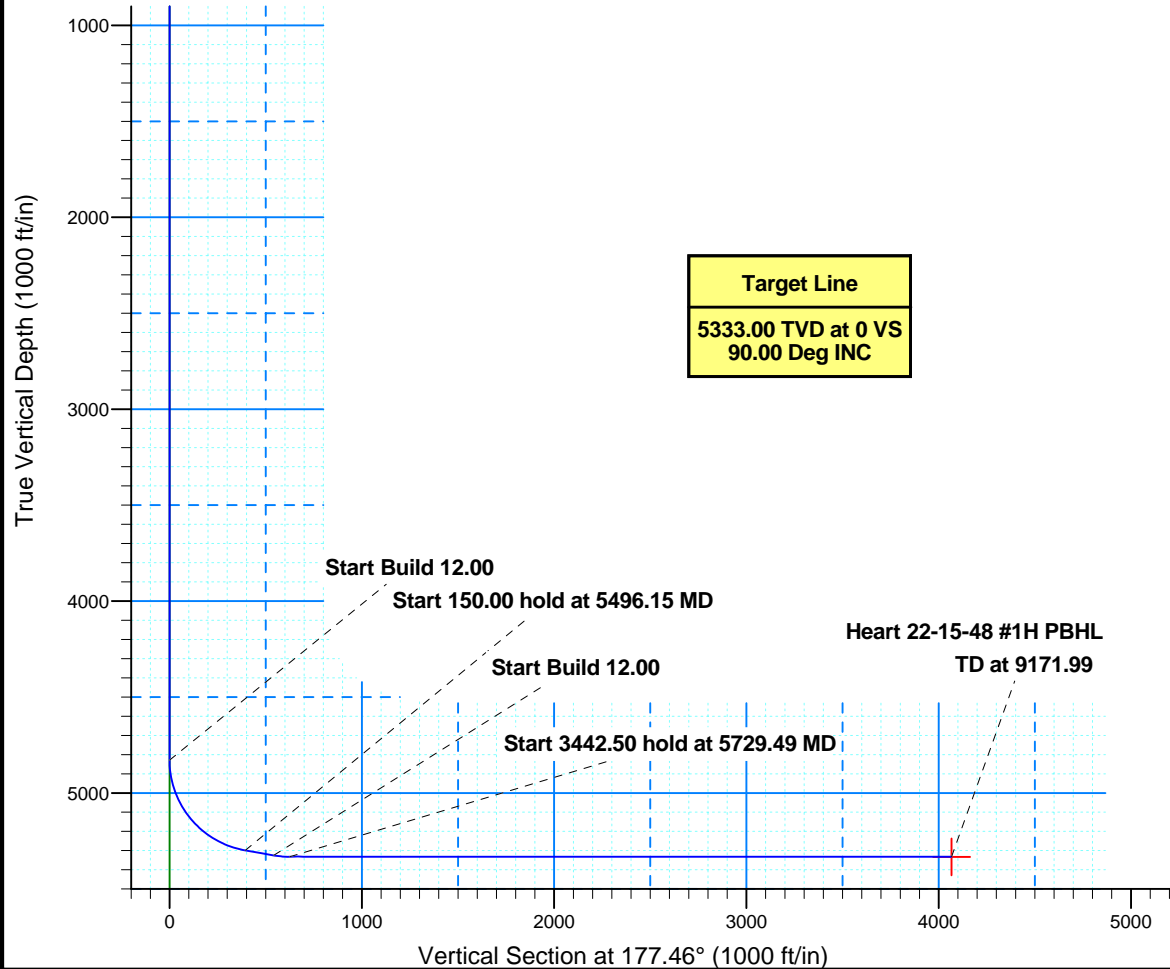
Chama Oil & Minerals

Cheyenne County, Colorado (NAD83)
Sec 22-T15S-R48W (Grid)
API#
Heart 22-15-48 #1H
600 FNL, 660 FEL
Job#
Plan 1
Nomac 14 (25')



WELL DETAILS: Heart 22-15-48 #1H			
Nomac 14 @ 4298.10ft (Nomac 14 (25'))			
Ground Level: 4273.10			
Northing	Easting	Latitude	Longitude
1339718.95	3781386.27	38° 44' 1.579 N	102° 45' 37.231 W

SECTION DETAILS									
Plan 1									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4829.49	0.00	0.00	4829.49	0.00	0.00	0.00	0.00	0.00
3	5496.15	80.00	177.46	5299.70	-394.17	17.48	12.00	177.46	394.55
4	5646.15	80.00	177.46	5325.75	-541.74	24.03	0.00	0.00	542.28
5	5729.49	90.00	177.46	5333.00	-624.57	27.70	12.00	0.00	625.19
6	9171.99	90.00	177.46	5333.00	-4063.69	180.24	0.00	0.00	4067.69



Job#
Nomac 14 (25')

Chama Oil & Minerals

Cheyenne County, Colorado (NAD83) Sec 22-T15S-R48W (Grid)

API#

Heart 22-15-48 #1H (600 FNL, 660 FEL)

Wellbore #1

Plan: Plan 1

Sperry Drilling Services Combo Report

18 June, 2013

Well Coordinates: 38° 44' 01.58" N
102° 45' 37.23" W

North American Datum 1983
Colorado Central Zone
1,339,718.95 N
3,781,386.27 E

Ground Level: 4,273.10 ft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well Heart 22-15-48 #1H
Nomac 14 @ 4298.10ft (Nomac 14 (25'))

N

Grid

API US New

Version: 2003.21 Build: 46

Report Version: Midcon Combo v1.20

HALLIBURTON

Plan Report for Heart 22-15-48 #1H - Plan 1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
0.00	0.00	0.00	1.72	-4,298.10	0.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
100.00	0.00	0.00	1.72	-4,198.10	100.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
200.00	0.00	0.00	1.72	-4,098.10	200.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
300.00	0.00	0.00	1.72	-3,998.10	300.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
400.00	0.00	0.00	1.72	-3,898.10	400.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
500.00	0.00	0.00	1.72	-3,798.10	500.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
600.00	0.00	0.00	1.72	-3,698.10	600.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
700.00	0.00	0.00	1.72	-3,598.10	700.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
800.00	0.00	0.00	1.72	-3,498.10	800.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
900.00	0.00	0.00	1.72	-3,398.10	900.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,000.00	0.00	0.00	1.72	-3,298.10	1,000.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,100.00	0.00	0.00	1.72	-3,198.10	1,100.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,200.00	0.00	0.00	1.72	-3,098.10	1,200.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,300.00	0.00	0.00	1.72	-2,998.10	1,300.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,400.00	0.00	0.00	1.72	-2,898.10	1,400.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,500.00	0.00	0.00	1.72	-2,798.10	1,500.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,600.00	0.00	0.00	1.72	-2,698.10	1,600.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,700.00	0.00	0.00	1.72	-2,598.10	1,700.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,800.00	0.00	0.00	1.72	-2,498.10	1,800.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
1,900.00	0.00	0.00	1.72	-2,398.10	1,900.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,000.00	0.00	0.00	1.72	-2,298.10	2,000.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,100.00	0.00	0.00	1.72	-2,198.10	2,100.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,200.00	0.00	0.00	1.72	-2,098.10	2,200.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,300.00	0.00	0.00	1.72	-1,998.10	2,300.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,400.00	0.00	0.00	1.72	-1,898.10	2,400.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,500.00	0.00	0.00	1.72	-1,798.10	2,500.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,600.00	0.00	0.00	1.72	-1,698.10	2,600.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,700.00	0.00	0.00	1.72	-1,598.10	2,700.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,800.00	0.00	0.00	1.72	-1,498.10	2,800.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
2,900.00	0.00	0.00	1.72	-1,398.10	2,900.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,000.00	0.00	0.00	1.72	-1,298.10	3,000.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,100.00	0.00	0.00	1.72	-1,198.10	3,100.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,200.00	0.00	0.00	1.72	-1,098.10	3,200.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,300.00	0.00	0.00	1.72	-998.10	3,300.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,400.00	0.00	0.00	1.72	-898.10	3,400.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,500.00	0.00	0.00	1.72	-798.10	3,500.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,600.00	0.00	0.00	1.72	-698.10	3,600.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,700.00	0.00	0.00	1.72	-598.10	3,700.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	
3,800.00	0.00	0.00	1.72	-498.10	3,800.00	0.00	N 0.00	E 1,339,718.95	3,781,386.27	0.00	0.00	

Plan Report for Heart 22-15-48 #1H - Plan 1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
North	East	North	East	North	East	North	East	North	East			
3,900.00	0.00	0.00	1.72	-398.10	3,900.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,000.00	0.00	0.00	1.72	-298.10	4,000.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,100.00	0.00	0.00	1.72	-198.10	4,100.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,200.00	0.00	0.00	1.72	-98.10	4,200.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,300.00	0.00	0.00	1.72	1.90	4,300.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,400.00	0.00	0.00	1.72	101.90	4,400.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,500.00	0.00	0.00	1.72	201.90	4,500.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,600.00	0.00	0.00	1.72	301.90	4,600.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,700.00	0.00	0.00	1.72	401.90	4,700.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,800.00	0.00	0.00	1.72	501.90	4,800.00	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	
4,829.49	0.00	0.00	1.72	531.39	4,829.49	0.00 N	0.00 E	1,339,718.95	3,781,386.27	0.00	0.00	Start Build 12.00
4,850.00	2.46	177.46	179.18	551.89	4,849.99	0.44 S	0.02 E	1,339,718.51	3,781,386.28	12.00	0.44	
4,875.00	5.46	177.46	179.18	576.83	4,874.93	2.17 S	0.10 E	1,339,716.78	3,781,386.36	12.00	2.17	
4,900.00	8.46	177.46	179.18	601.64	4,899.74	5.19 S	0.23 E	1,339,713.76	3,781,386.50	12.00	5.20	
4,925.00	11.46	177.46	179.18	626.26	4,924.36	9.51 S	0.42 E	1,339,709.44	3,781,386.69	12.00	9.52	
4,950.00	14.46	177.46	179.18	650.62	4,948.72	15.11 S	0.67 E	1,339,703.83	3,781,386.94	12.00	15.13	
4,975.00	17.46	177.46	179.18	674.66	4,972.76	21.98 S	0.97 E	1,339,696.97	3,781,387.24	12.00	22.00	
5,000.00	20.46	177.46	179.18	698.30	4,996.40	30.10 S	1.33 E	1,339,688.85	3,781,387.60	12.00	30.12	
5,025.00	23.46	177.46	179.18	721.48	5,019.58	39.43 S	1.75 E	1,339,679.51	3,781,388.01	12.00	39.47	
5,050.00	26.46	177.46	179.18	744.14	5,042.24	49.97 S	2.22 E	1,339,668.98	3,781,388.48	12.00	50.02	
5,075.00	29.46	177.46	179.18	766.22	5,064.32	61.68 S	2.74 E	1,339,657.27	3,781,389.00	12.00	61.74	
5,100.00	32.46	177.46	179.18	787.66	5,085.76	74.53 S	3.31 E	1,339,644.42	3,781,389.57	12.00	74.60	
5,125.00	35.46	177.46	179.18	808.39	5,106.49	88.48 S	3.92 E	1,339,630.47	3,781,390.19	12.00	88.57	
5,150.00	38.46	177.46	179.18	828.37	5,126.47	103.50 S	4.59 E	1,339,615.45	3,781,390.86	12.00	103.60	
5,175.00	41.46	177.46	179.18	847.52	5,145.62	119.53 S	5.30 E	1,339,599.41	3,781,391.57	12.00	119.65	
5,200.00	44.46	177.46	179.18	865.82	5,163.92	136.55 S	6.06 E	1,339,582.39	3,781,392.32	12.00	136.69	
5,225.00	47.46	177.46	179.18	883.19	5,181.29	154.51 S	6.85 E	1,339,564.44	3,781,393.12	12.00	154.66	
5,250.00	50.46	177.46	179.18	899.61	5,197.71	173.34 S	7.69 E	1,339,545.61	3,781,393.95	12.00	173.51	
5,275.00	53.46	177.46	179.18	915.01	5,213.11	193.01 S	8.56 E	1,339,525.94	3,781,394.83	12.00	193.20	
5,300.00	56.46	177.46	179.18	929.36	5,227.46	213.46 S	9.47 E	1,339,505.49	3,781,395.73	12.00	213.67	
5,325.00	59.46	177.46	179.18	942.62	5,240.72	234.63 S	10.41 E	1,339,484.32	3,781,396.67	12.00	234.86	
5,350.00	62.46	177.46	179.18	954.76	5,252.86	256.46 S	11.38 E	1,339,462.49	3,781,397.64	12.00	256.71	
5,375.00	65.46	177.46	179.18	965.73	5,263.83	278.90 S	12.37 E	1,339,440.05	3,781,398.64	12.00	279.17	
5,400.00	68.46	177.46	179.18	975.51	5,273.61	301.88 S	13.39 E	1,339,417.07	3,781,399.65	12.00	302.17	
5,425.00	71.46	177.46	179.18	984.08	5,282.18	325.34 S	14.43 E	1,339,393.61	3,781,400.70	12.00	325.66	
5,450.00	74.46	177.46	179.18	991.40	5,289.50	349.22 S	15.49 E	1,339,369.73	3,781,401.75	12.00	349.56	
5,475.00	77.46	177.46	179.18	997.47	5,295.57	373.44 S	16.56 E	1,339,345.51	3,781,402.83	12.00	373.81	
5,496.15	80.00	177.46	179.18	1,001.60	5,299.70	394.17 S	17.48 E	1,339,324.78	3,781,403.75	12.00	394.55	Start 150.00 hold at 5496.15 MD
5,500.00	80.00	177.46	179.18	1,002.27	5,300.37	397.95 S	17.65 E	1,339,321.00	3,781,403.92	0.00	398.34	

Plan Report for Heart 22-15-48 #1H - Plan 1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
North	East	North	East	North	East	North	East	North	East			
5,600.00	80.00	177.46	179.18	1,019.63	5,317.73	496.33 S	22.01 E	1,339,222.62	3,781,408.28	0.00	496.82	
5,646.15	80.00	177.46	179.18	1,027.65	5,325.75	541.74 S	24.03 E	1,339,177.21	3,781,410.29	0.00	542.28	Start Build 12.00
5,650.00	80.46	177.46	179.18	1,028.30	5,326.40	545.53 S	24.20 E	1,339,173.42	3,781,410.46	12.00	546.07	
5,675.00	83.46	177.46	179.18	1,031.79	5,329.89	570.26 S	25.29 E	1,339,148.69	3,781,411.56	12.00	570.82	
5,700.00	86.46	177.46	179.18	1,033.99	5,332.09	595.13 S	26.40 E	1,339,123.82	3,781,412.66	12.00	595.72	
5,725.00	89.46	177.46	179.18	1,034.88	5,332.98	620.09 S	27.50 E	1,339,098.86	3,781,413.77	12.00	620.70	
5,729.49	90.00	177.46	179.18	1,034.90	5,333.00	624.57 S	27.70 E	1,339,094.38	3,781,413.97	12.00	625.19	Start 3442.50 hold at 5729.49 MD
5,800.00	90.00	177.46	179.18	1,034.90	5,333.00	695.02 S	30.83 E	1,339,023.93	3,781,417.09	0.00	695.70	
5,900.00	90.00	177.46	179.18	1,034.90	5,333.00	794.92 S	35.26 E	1,338,924.03	3,781,421.52	0.00	795.70	
6,000.00	90.00	177.46	179.18	1,034.90	5,333.00	894.82 S	39.69 E	1,338,824.13	3,781,425.95	0.00	895.70	
6,100.00	90.00	177.46	179.18	1,034.90	5,333.00	994.72 S	44.12 E	1,338,724.23	3,781,430.39	0.00	995.70	
6,200.00	90.00	177.46	179.18	1,034.90	5,333.00	1,094.62 S	48.55 E	1,338,624.33	3,781,434.82	0.00	1,095.70	
6,300.00	90.00	177.46	179.18	1,034.90	5,333.00	1,194.52 S	52.98 E	1,338,524.43	3,781,439.25	0.00	1,195.70	
6,400.00	90.00	177.46	179.18	1,034.90	5,333.00	1,294.43 S	57.41 E	1,338,424.53	3,781,443.68	0.00	1,295.70	
6,500.00	90.00	177.46	179.18	1,034.90	5,333.00	1,394.33 S	61.84 E	1,338,324.62	3,781,448.11	0.00	1,395.70	
6,600.00	90.00	177.46	179.18	1,034.90	5,333.00	1,494.23 S	66.28 E	1,338,224.72	3,781,452.54	0.00	1,495.70	
6,700.00	90.00	177.46	179.18	1,034.90	5,333.00	1,594.13 S	70.71 E	1,338,124.82	3,781,456.97	0.00	1,595.70	
6,800.00	90.00	177.46	179.18	1,034.90	5,333.00	1,694.03 S	75.14 E	1,338,024.92	3,781,461.40	0.00	1,695.70	
6,900.00	90.00	177.46	179.18	1,034.90	5,333.00	1,793.93 S	79.57 E	1,337,925.02	3,781,465.83	0.00	1,795.70	
7,000.00	90.00	177.46	179.18	1,034.90	5,333.00	1,893.84 S	84.00 E	1,337,825.12	3,781,470.27	0.00	1,895.70	
7,100.00	90.00	177.46	179.18	1,034.90	5,333.00	1,993.74 S	88.43 E	1,337,725.21	3,781,474.70	0.00	1,995.70	
7,200.00	90.00	177.46	179.18	1,034.90	5,333.00	2,093.64 S	92.86 E	1,337,625.31	3,781,479.13	0.00	2,095.70	
7,300.00	90.00	177.46	179.18	1,034.90	5,333.00	2,193.54 S	97.29 E	1,337,525.41	3,781,483.56	0.00	2,195.70	
7,400.00	90.00	177.46	179.18	1,034.90	5,333.00	2,293.44 S	101.72 E	1,337,425.51	3,781,487.99	0.00	2,295.70	
7,500.00	90.00	177.46	179.18	1,034.90	5,333.00	2,393.35 S	106.16 E	1,337,325.61	3,781,492.42	0.00	2,395.70	
7,600.00	90.00	177.46	179.18	1,034.90	5,333.00	2,493.25 S	110.59 E	1,337,225.71	3,781,496.85	0.00	2,495.70	
7,700.00	90.00	177.46	179.18	1,034.90	5,333.00	2,593.15 S	115.02 E	1,337,125.80	3,781,501.28	0.00	2,595.70	
7,800.00	90.00	177.46	179.18	1,034.90	5,333.00	2,693.05 S	119.45 E	1,337,025.90	3,781,505.71	0.00	2,695.70	
7,900.00	90.00	177.46	179.18	1,034.90	5,333.00	2,792.95 S	123.88 E	1,336,926.00	3,781,510.15	0.00	2,795.70	
8,000.00	90.00	177.46	179.18	1,034.90	5,333.00	2,892.85 S	128.31 E	1,336,826.10	3,781,514.58	0.00	2,895.70	
8,100.00	90.00	177.46	179.18	1,034.90	5,333.00	2,992.76 S	132.74 E	1,336,726.20	3,781,519.01	0.00	2,995.70	
8,200.00	90.00	177.46	179.18	1,034.90	5,333.00	3,092.66 S	137.17 E	1,336,626.30	3,781,523.44	0.00	3,095.70	
8,300.00	90.00	177.46	179.18	1,034.90	5,333.00	3,192.56 S	141.60 E	1,336,526.40	3,781,527.87	0.00	3,195.70	
8,400.00	90.00	177.46	179.18	1,034.90	5,333.00	3,292.46 S	146.04 E	1,336,426.49	3,781,532.30	0.00	3,295.70	
8,500.00	90.00	177.46	179.18	1,034.90	5,333.00	3,392.36 S	150.47 E	1,336,326.59	3,781,536.73	0.00	3,395.70	
8,600.00	90.00	177.46	179.18	1,034.90	5,333.00	3,492.26 S	154.90 E	1,336,226.69	3,781,541.16	0.00	3,495.70	
8,700.00	90.00	177.46	179.18	1,034.90	5,333.00	3,592.17 S	159.33 E	1,336,126.79	3,781,545.59	0.00	3,595.70	
8,800.00	90.00	177.46	179.18	1,034.90	5,333.00	3,692.07 S	163.76 E	1,336,026.89	3,781,550.02	0.00	3,695.70	
8,900.00	90.00	177.46	179.18	1,034.90	5,333.00	3,791.97 S	168.19 E	1,335,926.99	3,781,554.46	0.00	3,795.70	

Plan Report for Heart 22-15-48 #1H - Plan 1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Map Coordinates (ft)		Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
						Northing (ft)	Easting (ft)	Northing (ft)	Easting (ft)			
9,000.00	90.00	177.46	179.18	1,034.90	5,333.00	3,891.87 S	172.62 E	1,335,827.08	3,781,558.89	0.00	3,895.70	
9,100.00	90.00	177.46	179.18	1,034.90	5,333.00	3,991.77 S	177.05 E	1,335,727.18	3,781,563.32	0.00	3,995.70	
9,171.99	90.00	177.46	179.18	1,034.90	5,333.00	4,063.69 S	180.24 E	1,335,655.26	3,781,566.51	0.00	4,067.69	TD at 9171.99

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Comment
+	-	+N-S	+E-W	
4,829.49	4,829.49	0.00	0.00	Start Build 12.00
5,496.15	5,299.70	-394.17	17.48	Start 150.00 hold at 5496.15 MD
5,646.15	5,325.75	-541.74	24.03	Start Build 12.00
5,729.49	5,333.00	-624.57	27.70	Start 3442.50 hold at 5729.49 MD
9,171.99	5,333.00	-4,063.69	180.24	TD at 9171.99

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin (ft)		Start TVD (ft)
+N	-S	+E	-W			
TD	No Target (Freehand)	177.46	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	9,171.99	Plan 1	MWD+SC

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	North (ft)	East (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Heart 22-15-48 #1H PBHL (600 FSL, 660 FEL)									
	0.00	0.00	5,333.00	-4,063.69	180.24	1,335,655.26	3,781,566.51	38° 43' 21.374 N	102° 45' 36.504 W
- plan hits target center									
- Point									

Plan Report for Heart 22-15-48 #1H - Plan 1

Directional Difficulty Index

Average Dogleg over Survey: 0.98 °/100ft

Maximum Dogleg over Survey: 12.00 °/100ft at 5,496.15 ft

Net Tortosity applicable to Plans: 0.98 °/100ft

Directional Difficulty Index: 5.966

Audit Info

North Reference Sheet for Sec 22-T15S-R48W (Grid) - Heart 22-15-48 #1H - Wellbore #1

All data is in Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to Nomac 14 @ 4298.10ft (Nomac 14 (25')). Northing and Easting are relative to Heart 22-15-48 #1H

Coordinate System is US State Plane 1983, Colorado Central Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995633

Grid Coordinates of Well: 1,339,718.95 ft N, 3,781,386.27 ft E

Geographical Coordinates of Well: 38° 44' 01.58" N, 102° 45' 37.23" W

Grid Convergence at Surface is: 1.73°

Based upon Minimum Curvature type calculations, at a Measured Depth of 9,171.99ft
the Bottom Hole Displacement is 4,067.69ft in the Direction of 177.46° (Grid).

Magnetic Convergence at surface is: -5.72° (18 June 2013, , BGGM2013)

