

Chama Oil & Minerals

Cheyenne County, Colorado (NAD83)

Sec 20-T15S-R48W

API#

Nicolarsen 20-15-48 #1H

600 FNL, 660 FWL

Job#

Plan 1

Nomac 14

HALLIBURTON

Sperry Drilling

WELL DETAILS: Nicolarsen 20-15-48 #1H

Nomac 14 @ 4306.90ft (Nomac 14 (25'))

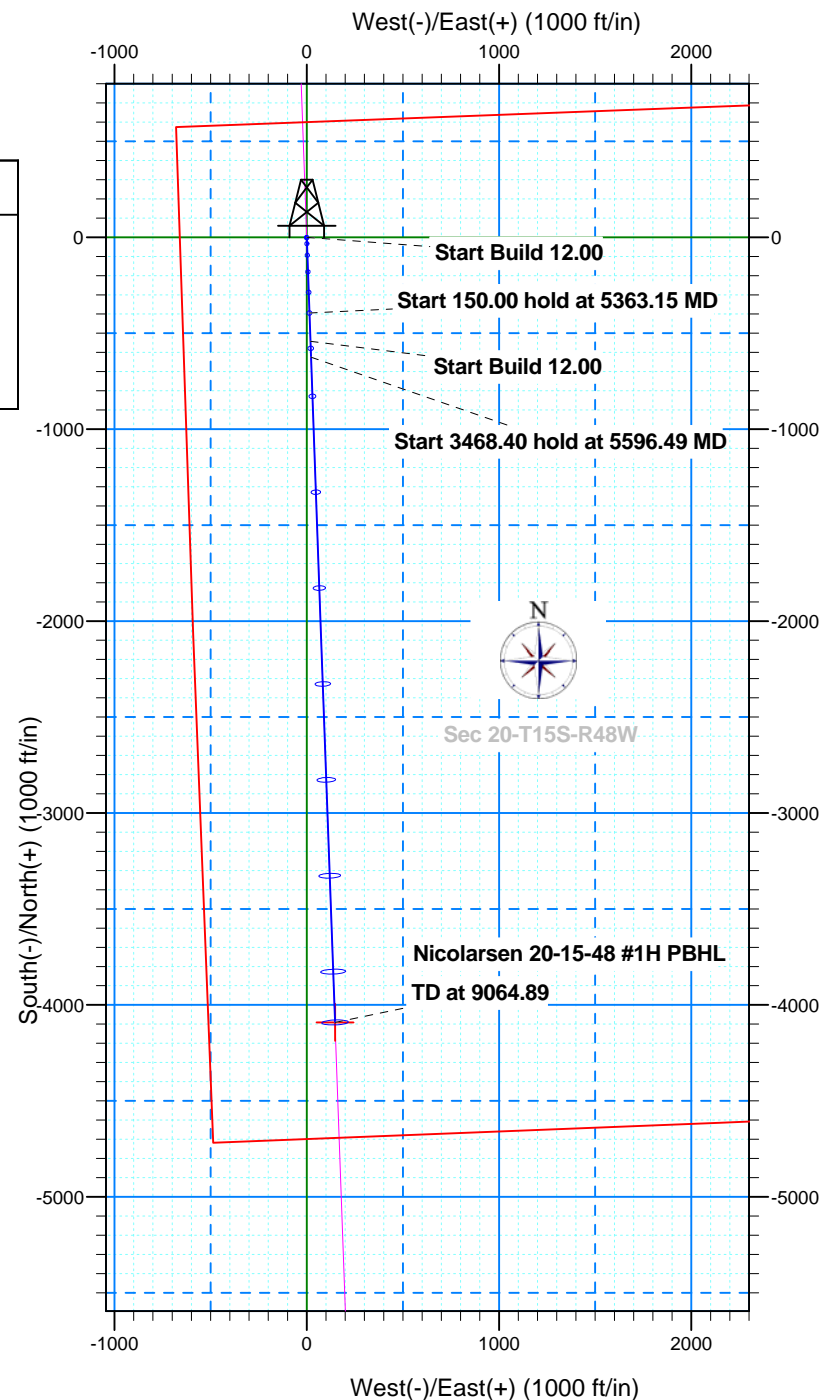
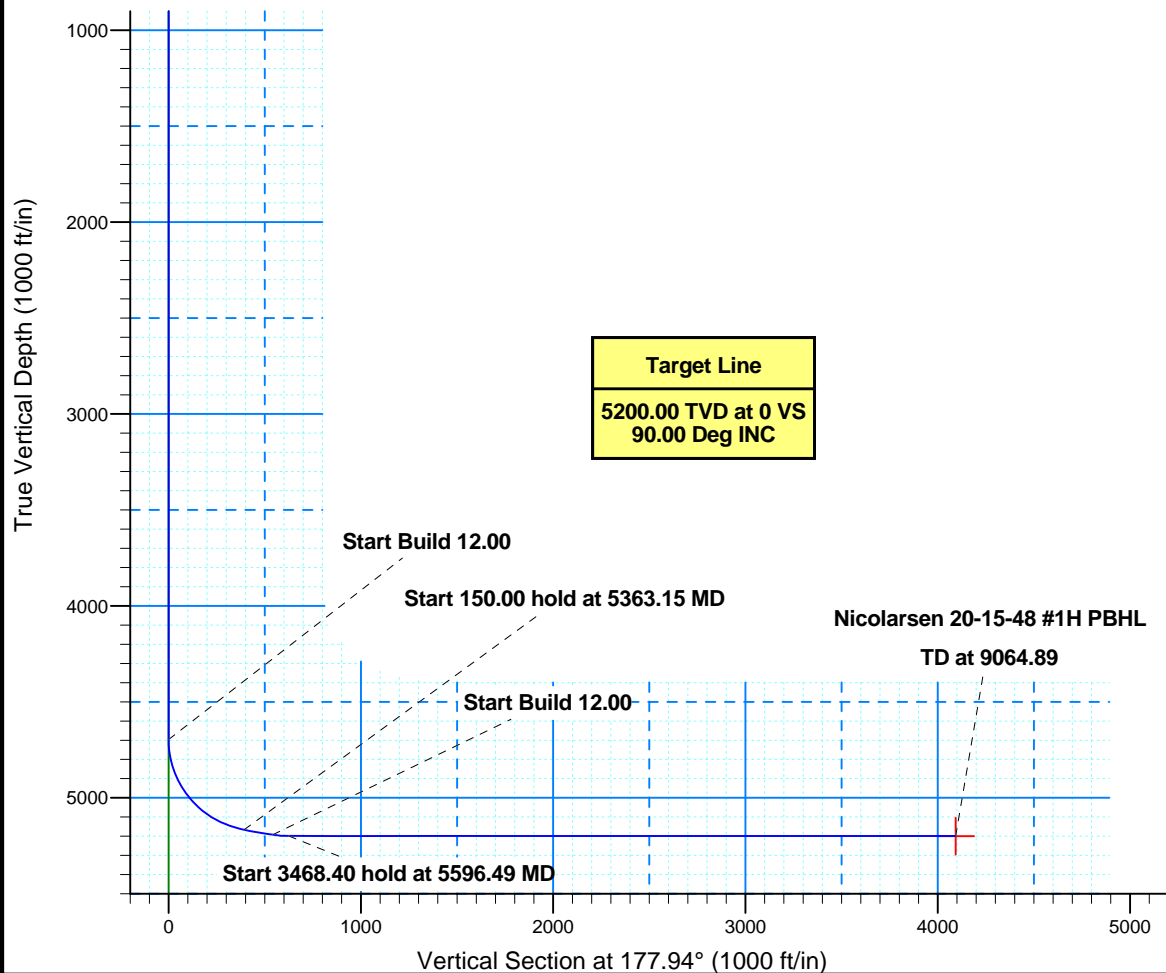
Ground Level: 4281.90

Northing	Easting	Latitude	Longitude
1339145.24	3766957.25	38° 44' 0.171 N	102° 48' 39.463 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	4696.49	0.00	0.00	4696.49	0.00	0.00	0.00	0.00	0.00
3	5363.15	80.00	177.94	5166.70	-394.30	14.21	12.00	177.94	394.55
4	5513.15	80.00	177.94	5192.75	-541.92	19.52	0.00	0.00	542.28
5	5596.49	90.00	177.94	5200.00	-624.78	22.51	12.00	0.00	625.19
6	9064.89	90.00	177.94	5200.00	-4090.93	147.39	0.00	0.00	4093.59



Job#
Nomac 14 (25')

Chama Oil & Minerals

Cheyenne County, Colorado (NAD83) Sec 20-T15S-R48W

API#

Nicolarsen 20-15-48 #1H (600 FNL, 660 FWL)

Wellbore #1

Plan: Plan 1

Sperry Drilling Services Combo Report

10 June, 2013

Well Coordinates: 38° 44' 00.17" N
102° 48' 39.46" W

North American Datum 1983
Colorado Central Zone
1,339,145.24 N
3,766,957.25 E

Ground Level: 4,281.90 ft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well Nicolarsen 20-15-48 #1H

Nomac 14 @ 4306.90ft (Nomac 14 (25'))

N

Grid

API US New

Version: 2003.21 Build: 46

Report Version: Midcon Combo v1.10

HALLIBURTON

Plan Report for Nicolarsen 20-15-48 #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	1.69	-4,306.90	0.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
100.00	0.00	0.00	1.69	-4,206.90	100.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
200.00	0.00	0.00	1.69	-4,106.90	200.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
300.00	0.00	0.00	1.69	-4,006.90	300.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
400.00	0.00	0.00	1.69	-3,906.90	400.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
500.00	0.00	0.00	1.69	-3,806.90	500.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
600.00	0.00	0.00	1.69	-3,706.90	600.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
700.00	0.00	0.00	1.69	-3,606.90	700.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
800.00	0.00	0.00	1.69	-3,506.90	800.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
900.00	0.00	0.00	1.69	-3,406.90	900.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,000.00	0.00	0.00	1.69	-3,306.90	1,000.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,100.00	0.00	0.00	1.69	-3,206.90	1,100.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,200.00	0.00	0.00	1.69	-3,106.90	1,200.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,300.00	0.00	0.00	1.69	-3,006.90	1,300.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,400.00	0.00	0.00	1.69	-2,906.90	1,400.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,500.00	0.00	0.00	1.69	-2,806.90	1,500.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,600.00	0.00	0.00	1.69	-2,706.90	1,600.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,700.00	0.00	0.00	1.69	-2,606.90	1,700.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,800.00	0.00	0.00	1.69	-2,506.90	1,800.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
1,900.00	0.00	0.00	1.69	-2,406.90	1,900.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,000.00	0.00	0.00	1.69	-2,306.90	2,000.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,100.00	0.00	0.00	1.69	-2,206.90	2,100.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,200.00	0.00	0.00	1.69	-2,106.90	2,200.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,300.00	0.00	0.00	1.69	-2,006.90	2,300.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,400.00	0.00	0.00	1.69	-1,906.90	2,400.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,500.00	0.00	0.00	1.69	-1,806.90	2,500.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,600.00	0.00	0.00	1.69	-1,706.90	2,600.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,700.00	0.00	0.00	1.69	-1,606.90	2,700.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,800.00	0.00	0.00	1.69	-1,506.90	2,800.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
2,900.00	0.00	0.00	1.69	-1,406.90	2,900.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,000.00	0.00	0.00	1.69	-1,306.90	3,000.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,100.00	0.00	0.00	1.69	-1,206.90	3,100.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,200.00	0.00	0.00	1.69	-1,106.90	3,200.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,300.00	0.00	0.00	1.69	-1,006.90	3,300.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,400.00	0.00	0.00	1.69	-906.90	3,400.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,500.00	0.00	0.00	1.69	-806.90	3,500.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,600.00	0.00	0.00	1.69	-706.90	3,600.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,700.00	0.00	0.00	1.69	-606.90	3,700.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
3,800.00	0.00	0.00	1.69	-506.90	3,800.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	

Plan Report for Nicolarsen 20-15-48 #1H - Plan 1

Measured Depth (ft)	Inclination (°)	Grid Azimuth (°)	True Azimuth (°)	TVD below System (ft)	Vertical Depth (ft)	Local Coordinates Northing (ft)	Local Coordinates Easting (ft)	Map Coordinates Northing (ft)	Map Coordinates Easting (ft)	Dogleg Rate (°/100ft)	Vertical Section (ft)	Comments
3,900.00	0.00	0.00	1.69	-406.90	3,900.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,000.00	0.00	0.00	1.69	-306.90	4,000.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,100.00	0.00	0.00	1.69	-206.90	4,100.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,200.00	0.00	0.00	1.69	-106.90	4,200.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,300.00	0.00	0.00	1.69	-6.90	4,300.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,400.00	0.00	0.00	1.69	93.10	4,400.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,500.00	0.00	0.00	1.69	193.10	4,500.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,600.00	0.00	0.00	1.69	293.10	4,600.00	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	
4,696.49	0.00	0.00	1.69	389.59	4,696.49	0.00 N	0.00 E	1,339,145.24	3,766,957.25	0.00	0.00	Start Build 12.00
4,700.00	0.42	177.94	179.63	393.10	4,700.00	0.01 S	0.00 E	1,339,145.23	3,766,957.25	12.00	0.01	
4,725.00	3.42	177.94	179.63	418.08	4,724.98	0.85 S	0.03 E	1,339,144.39	3,766,957.28	12.00	0.85	
4,750.00	6.42	177.94	179.63	442.99	4,749.89	2.99 S	0.11 E	1,339,142.25	3,766,957.36	12.00	3.00	
4,775.00	9.42	177.94	179.63	467.75	4,774.65	6.44 S	0.23 E	1,339,138.80	3,766,957.48	12.00	6.44	
4,800.00	12.42	177.94	179.63	492.29	4,799.19	11.17 S	0.40 E	1,339,134.07	3,766,957.65	12.00	11.18	
4,825.00	15.42	177.94	179.63	516.55	4,823.45	17.18 S	0.62 E	1,339,128.06	3,766,957.87	12.00	17.19	
4,850.00	18.42	177.94	179.63	540.47	4,847.37	24.45 S	0.88 E	1,339,120.79	3,766,958.13	12.00	24.47	
4,875.00	21.42	177.94	179.63	563.97	4,870.87	32.96 S	1.19 E	1,339,112.28	3,766,958.44	12.00	32.98	
4,900.00	24.42	177.94	179.63	586.99	4,893.89	42.69 S	1.54 E	1,339,102.55	3,766,958.79	12.00	42.72	
4,925.00	27.42	177.94	179.63	609.48	4,916.38	53.61 S	1.93 E	1,339,091.63	3,766,959.18	12.00	53.65	
4,950.00	30.42	177.94	179.63	631.36	4,938.26	65.69 S	2.37 E	1,339,079.55	3,766,959.62	12.00	65.74	
4,975.00	33.42	177.94	179.63	652.57	4,959.47	78.90 S	2.84 E	1,339,066.34	3,766,960.09	12.00	78.95	
5,000.00	36.42	177.94	179.63	673.07	4,979.97	93.20 S	3.36 E	1,339,052.04	3,766,960.61	12.00	93.26	
5,025.00	39.42	177.94	179.63	692.79	4,999.69	108.56 S	3.91 E	1,339,036.69	3,766,961.16	12.00	108.63	
5,050.00	42.42	177.94	179.63	711.68	5,018.58	124.92 S	4.50 E	1,339,020.32	3,766,961.75	12.00	125.00	
5,075.00	45.42	177.94	179.63	729.68	5,036.58	142.25 S	5.12 E	1,339,002.99	3,766,962.38	12.00	142.34	
5,100.00	48.42	177.94	179.63	746.75	5,053.65	160.49 S	5.78 E	1,338,984.75	3,766,963.03	12.00	160.60	
5,125.00	51.42	177.94	179.63	762.85	5,069.75	179.61 S	6.47 E	1,338,965.63	3,766,963.72	12.00	179.72	
5,150.00	54.42	177.94	179.63	777.92	5,084.82	199.54 S	7.19 E	1,338,945.70	3,766,964.44	12.00	199.67	
5,175.00	57.42	177.94	179.63	791.93	5,098.83	220.23 S	7.93 E	1,338,925.01	3,766,965.18	12.00	220.37	
5,200.00	60.42	177.94	179.63	804.83	5,111.73	241.62 S	8.71 E	1,338,903.62	3,766,965.96	12.00	241.78	
5,225.00	63.42	177.94	179.63	816.59	5,123.49	263.66 S	9.50 E	1,338,881.58	3,766,966.75	12.00	263.84	
5,250.00	66.42	177.94	179.63	827.19	5,134.09	286.29 S	10.31 E	1,338,858.95	3,766,967.56	12.00	286.48	
5,275.00	69.42	177.94	179.63	836.59	5,143.49	309.44 S	11.15 E	1,338,835.80	3,766,968.40	12.00	309.64	
5,300.00	72.42	177.94	179.63	844.76	5,151.66	333.05 S	12.00 E	1,338,812.19	3,766,969.25	12.00	333.26	
5,325.00	75.42	177.94	179.63	851.68	5,158.58	357.05 S	12.86 E	1,338,788.19	3,766,970.11	12.00	357.28	
5,350.00	78.42	177.94	179.63	857.34	5,164.24	381.39 S	13.74 E	1,338,763.86	3,766,970.99	12.00	381.63	
5,363.15	80.00	177.94	179.63	859.80	5,166.70	394.30 S	14.21 E	1,338,750.94	3,766,971.46	12.00	394.55	Start 150.00 hold at 5363.15 MD
5,400.00	80.00	177.94	179.63	866.20	5,173.10	430.56 S	15.51 E	1,338,714.68	3,766,972.76	0.00	430.84	
5,500.00	80.00	177.94	179.63	883.56	5,190.46	528.98 S	19.06 E	1,338,616.26	3,766,976.31	0.00	529.32	

Plan Report for Nicolarsen 20-15-48 #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
5,513.15	80.00	177.94	179.63	885.85	5,192.75	541.92 S	19.52 E	1,338,603.32	3,766,976.77	0.00	542.28	Start Build 12.00
5,525.00	81.42	177.94	179.63	887.76	5,194.66	553.61 S	19.95 E	1,338,591.64	3,766,977.20	12.00	553.97	
5,550.00	84.42	177.94	179.63	890.84	5,197.74	578.40 S	20.84 E	1,338,566.85	3,766,978.09	12.00	578.77	
5,575.00	87.42	177.94	179.63	892.62	5,199.52	603.31 S	21.74 E	1,338,541.93	3,766,978.99	12.00	603.71	
5,596.49	90.00	177.94	179.63	893.10	5,200.00	624.78 S	22.51 E	1,338,520.46	3,766,979.76	12.00	625.19	Start 3468.40 hold at 5596.49 MD
5,600.00	90.00	177.94	179.63	893.10	5,200.00	628.29 S	22.64 E	1,338,516.95	3,766,979.89	0.00	628.70	
5,700.00	90.00	177.94	179.63	893.10	5,200.00	728.23 S	26.24 E	1,338,417.02	3,766,983.49	0.00	728.70	
5,800.00	90.00	177.94	179.63	893.10	5,200.00	828.16 S	29.84 E	1,338,317.08	3,766,987.09	0.00	828.70	
5,900.00	90.00	177.94	179.63	893.10	5,200.00	928.10 S	33.44 E	1,338,217.15	3,766,990.69	0.00	928.70	
6,000.00	90.00	177.94	179.63	893.10	5,200.00	1,028.03 S	37.04 E	1,338,117.21	3,766,994.29	0.00	1,028.70	
6,100.00	90.00	177.94	179.63	893.10	5,200.00	1,127.97 S	40.64 E	1,338,017.28	3,766,997.89	0.00	1,128.70	
6,200.00	90.00	177.94	179.63	893.10	5,200.00	1,227.90 S	44.24 E	1,337,917.34	3,767,001.49	0.00	1,228.70	
6,300.00	90.00	177.94	179.63	893.10	5,200.00	1,327.84 S	47.84 E	1,337,817.41	3,767,005.09	0.00	1,328.70	
6,400.00	90.00	177.94	179.63	893.10	5,200.00	1,427.77 S	51.44 E	1,337,717.47	3,767,008.69	0.00	1,428.70	
6,500.00	90.00	177.94	179.63	893.10	5,200.00	1,527.71 S	55.04 E	1,337,617.54	3,767,012.29	0.00	1,528.70	
6,600.00	90.00	177.94	179.63	893.10	5,200.00	1,627.64 S	58.64 E	1,337,517.60	3,767,015.89	0.00	1,628.70	
6,700.00	90.00	177.94	179.63	893.10	5,200.00	1,727.58 S	62.24 E	1,337,417.67	3,767,019.49	0.00	1,728.70	
6,800.00	90.00	177.94	179.63	893.10	5,200.00	1,827.51 S	65.84 E	1,337,317.73	3,767,023.09	0.00	1,828.70	
6,900.00	90.00	177.94	179.63	893.10	5,200.00	1,927.45 S	69.44 E	1,337,217.80	3,767,026.69	0.00	1,928.70	
7,000.00	90.00	177.94	179.63	893.10	5,200.00	2,027.38 S	73.04 E	1,337,117.86	3,767,030.29	0.00	2,028.70	
7,100.00	90.00	177.94	179.63	893.10	5,200.00	2,127.32 S	76.64 E	1,337,017.93	3,767,033.89	0.00	2,128.70	
7,200.00	90.00	177.94	179.63	893.10	5,200.00	2,227.25 S	80.24 E	1,336,917.99	3,767,037.49	0.00	2,228.70	
7,300.00	90.00	177.94	179.63	893.10	5,200.00	2,327.19 S	83.84 E	1,336,818.06	3,767,041.09	0.00	2,328.70	
7,400.00	90.00	177.94	179.63	893.10	5,200.00	2,427.12 S	87.44 E	1,336,718.12	3,767,044.69	0.00	2,428.70	
7,500.00	90.00	177.94	179.63	893.10	5,200.00	2,527.06 S	91.04 E	1,336,618.19	3,767,048.29	0.00	2,528.70	
7,600.00	90.00	177.94	179.63	893.10	5,200.00	2,626.99 S	94.64 E	1,336,518.25	3,767,051.89	0.00	2,628.70	
7,700.00	90.00	177.94	179.63	893.10	5,200.00	2,726.93 S	98.24 E	1,336,418.32	3,767,055.49	0.00	2,728.70	
7,800.00	90.00	177.94	179.63	893.10	5,200.00	2,826.86 S	101.84 E	1,336,318.38	3,767,059.09	0.00	2,828.70	
7,900.00	90.00	177.94	179.63	893.10	5,200.00	2,926.80 S	105.45 E	1,336,218.45	3,767,062.70	0.00	2,928.70	
8,000.00	90.00	177.94	179.63	893.10	5,200.00	3,026.73 S	109.05 E	1,336,118.51	3,767,066.30	0.00	3,028.70	
8,100.00	90.00	177.94	179.63	893.10	5,200.00	3,126.67 S	112.65 E	1,336,018.58	3,767,069.90	0.00	3,128.70	
8,200.00	90.00	177.94	179.63	893.10	5,200.00	3,226.61 S	116.25 E	1,335,918.64	3,767,073.50	0.00	3,228.70	
8,300.00	90.00	177.94	179.63	893.10	5,200.00	3,326.54 S	119.85 E	1,335,818.71	3,767,077.10	0.00	3,328.70	
8,400.00	90.00	177.94	179.63	893.10	5,200.00	3,426.48 S	123.45 E	1,335,718.77	3,767,080.70	0.00	3,428.70	
8,500.00	90.00	177.94	179.63	893.10	5,200.00	3,526.41 S	127.05 E	1,335,618.84	3,767,084.30	0.00	3,528.70	
8,600.00	90.00	177.94	179.63	893.10	5,200.00	3,626.35 S	130.65 E	1,335,518.90	3,767,087.90	0.00	3,628.70	
8,700.00	90.00	177.94	179.63	893.10	5,200.00	3,726.28 S	134.25 E	1,335,418.97	3,767,091.50	0.00	3,728.70	
8,800.00	90.00	177.94	179.63	893.10	5,200.00	3,826.22 S	137.85 E	1,335,319.03	3,767,095.10	0.00	3,828.70	
8,900.00	90.00	177.94	179.63	893.10	5,200.00	3,926.15 S	141.45 E	1,335,219.10	3,767,098.70	0.00	3,928.70	

Plan Report for Nicolarsen 20-15-48 #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			
9,000.00	90.00	177.94	179.63	893.10	5,200.00	4,026.09 S	145.05 E	1,335,119.16	3,767,102.30	0.00	4,028.70	
9,064.89	90.00	177.94	179.63	893.10	5,200.00	4,090.93 S	147.39 E	1,335,054.32	3,767,104.64	0.00	4,093.59	TD at 9064.89

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Comment
+N/-S	+E/-W			
4,696.49	4,696.49	0.00	0.00	Start Build 12.00
5,363.15	5,166.70	-394.30	14.21	Start 150.00 hold at 5363.15 MD
5,513.15	5,192.75	-541.92	19.52	Start Build 12.00
5,596.49	5,200.00	-624.78	22.51	Start 3468.40 hold at 5596.49 MD
9,064.89	5,200.00	-4,090.93	147.39	TD at 9064.89

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin (ft)		Start TVD (ft)
+N/-S	+E/-W					
TD	No Target (Freehand)	177.94	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	9,064.89	Plan 1	MWD+SC

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Nicolarsen 20-15-48 #1H PBHL (600 FSL, 660 FWL)									
	0.00	0.00	5,200.00	-4,090.93	147.39	1,335,054.32	3,767,104.64	38° 43' 19.708 N	102° 48' 39.132 W
- plan hits target center									
- Point									

Plan Report for Nicolarsen 20-15-48 #1H - Plan 1

Directional Difficulty Index

Average Dogleg over Survey: 0.00 °/100ft

Maximum Dogleg over Survey: 0.00 °/100ft at 0.00 ft

Net Tortosity applicable to Plans: 0.00 °/100ft

Directional Difficulty Index: 5.973

Audit Info

North Reference Sheet for Sec 20-T15S-R48W - Nicolarsen 20-15-48 #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 @ 4306.90ft (Nomac 14 (25')). Northing and Easting are relative to Nicolarsen 20-15-48 #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: 0.99995637

Grid Coordinates of Well: 1,339,145.24 ft N, 3,766,957.25 ft E

Geographical Coordinates of Well: 38° 44' 00.17" N, 102° 48' 39.46" W

Grid Convergence at Surface is: 1.70°

Based upon Minimum Curvature type calculations, at a Measured Depth of 9,064.89ft
the Bottom Hole Displacement is 4,093.59ft in the Direction of 177.94° (Grid).

Magnetic Convergence at surface is: -5.79° (10 June 2013, , BGGM2013)

