

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 18-T3N-R67W

ELLIOTT 30N-18HZ

Plan A

Plan: Plan A0 Permit

Sperry Drilling Services

Proposal Report

26 August, 2013

Well Coordinates: 1,327,652.03 N, 3,160,432.32 E (40° 13' 52.95" N, 104° 55' 31.40" W)

Ground Level: 4,836.00 ft

Local Coordinate Origin:	Centered on Well ELLIOTT 30N-18HZ
Viewing Datum:	RKB = 17' @ 4853.00ft (Drilling Rig)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 18-T3N-R67W
 Well: ELLIOTT 30N-18HZ
 Wellbore: Plan A
 Design: Plan A0 Permit

Anadarko Petroleum Corp.

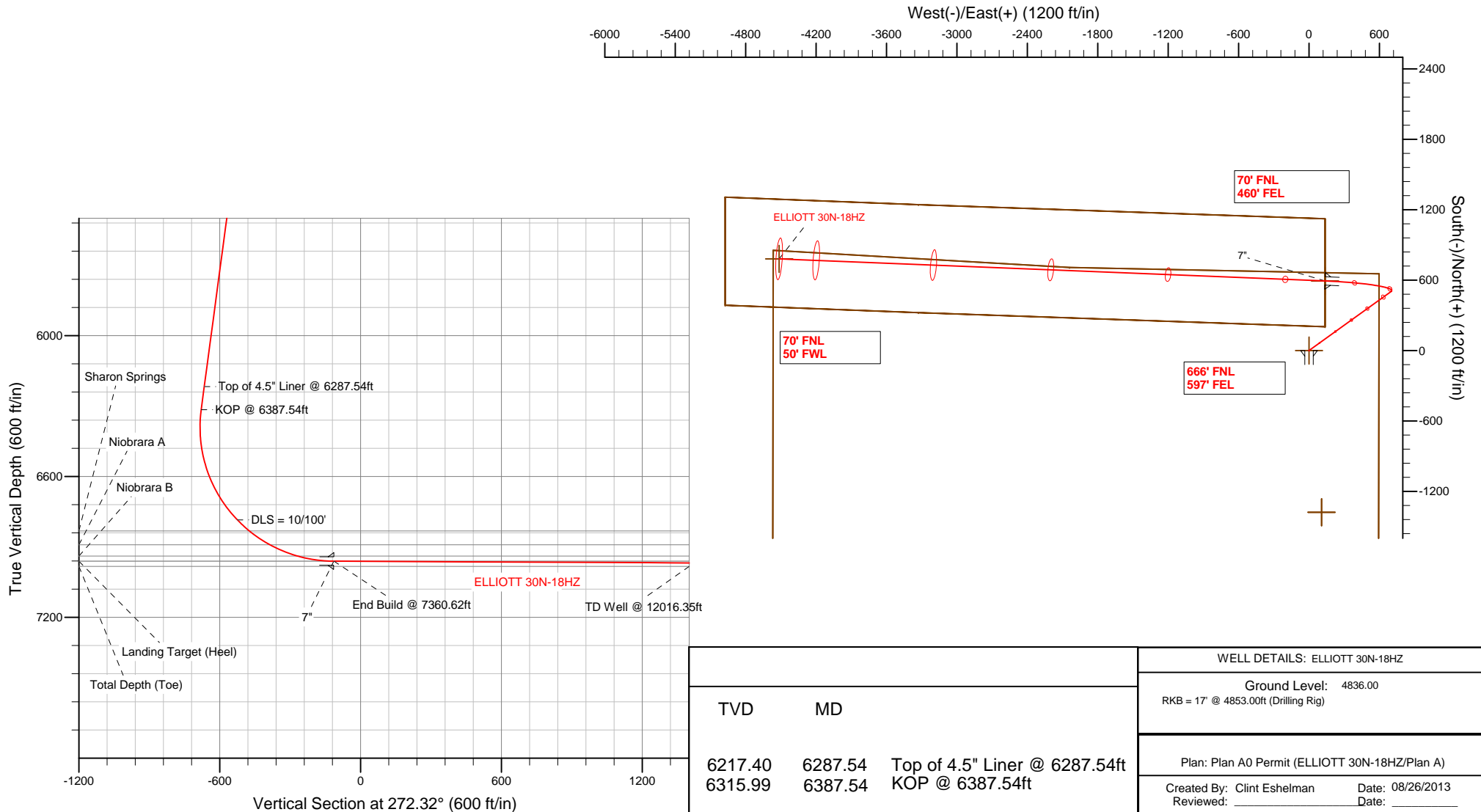


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1482.05	9.64	54.27	1479.78	23.63	32.84	2.00	54.27	-31.86	
4	6387.54	9.64	54.27	6315.98	503.42	699.73	0.00	0.00	-678.78	
5	7360.62	89.73	272.32	6961.00	593.45	137.65	10.00	-141.58	-113.51	ELLIOTT 30N-18HZ_CP
6	12016.35	89.73	272.32	6983.00	781.85	-4514.21	0.00	0.00	4542.16	ELLIOTT 30N-18HZ_BHL

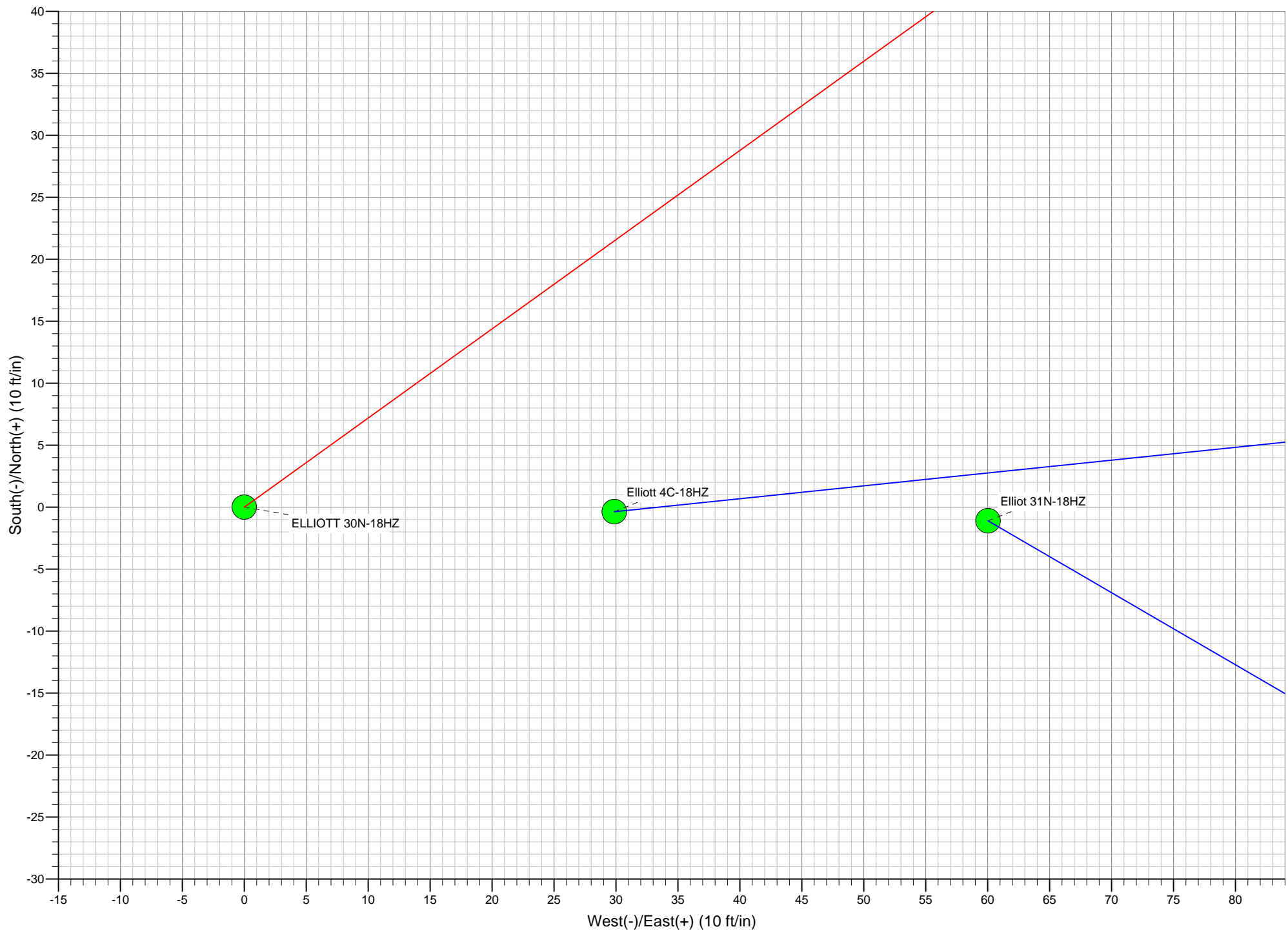
WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
ELLIOTT 30N-18HZ_LD	0.00	-1377.05	107.78	40.227596	-104.925002	Polygon
ELLIOTT 30N-18HZ_SHL	0.00	0.00	0.00	40.231376	-104.925388	Point
ELLIOTT_SEC	0.00	-1377.05	107.78	40.227596	-104.925002	Polygon
ELLIOTT 30N-18HZ_CP	6961.00	593.45	137.65	40.233005	-104.924895	Point
ELLIOTT 30N-18HZ_BHL	6983.00	781.85	-4514.21	40.233521	-104.941556	Point



WELL DETAILS: ELLIOTT 30N-18HZ	
Ground Level: 4836.00 RKB = 17' @ 4853.00ft (Drilling Rig)	
Plan: Plan A0 Permit (ELLIOTT 30N-18HZ/Plan A)	
Created By: Clint Eshelman	Date: 08/26/2013
Reviewed:	Date:

TVD	MD	Target
6217.40	6287.54	Top of 4.5" Liner @ 6287.54ft
6315.99	6387.54	KOP @ 6387.54ft



Plan Report for ELLIOTT 30N-18HZ - Plan A0 Permit

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ELLIOTT 30C-18HZ_LD - ELLIOTT 30C-18HZ_SHL - ELLIOTT_SEC										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base										
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 1000.00ft										
1,100.00	2.00	54.27	1,099.98	1.02	1.42	-1.37	2.00	2.00	0.00	54.27
1,200.00	4.00	54.27	1,199.84	4.08	5.66	-5.50	2.00	2.00	0.00	0.00
1,300.00	6.00	54.27	1,299.45	9.17	12.74	-12.36	2.00	2.00	0.00	0.00
1,400.00	8.00	54.27	1,398.70	16.28	22.63	-21.95	2.00	2.00	0.00	0.00
1,482.05	9.64	54.27	1,479.78	23.63	32.84	-31.86	2.00	2.00	0.00	0.00
End Nudge @ 1482.05ft										
1,500.00	9.64	54.27	1,497.47	25.39	35.28	-34.23	0.00	0.00	0.00	0.00
1,600.00	9.64	54.27	1,596.06	35.17	48.88	-47.42	0.00	0.00	0.00	0.00
1,700.00	9.64	54.27	1,694.65	44.95	62.47	-60.60	0.00	0.00	0.00	0.00
1,800.00	9.64	54.27	1,793.24	54.73	76.07	-73.79	0.00	0.00	0.00	0.00
1,900.00	9.64	54.27	1,891.83	64.51	89.66	-86.98	0.00	0.00	0.00	0.00
2,000.00	9.64	54.27	1,990.41	74.29	103.26	-100.17	0.00	0.00	0.00	0.00
2,100.00	9.64	54.27	2,089.00	84.07	116.85	-113.35	0.00	0.00	0.00	0.00
2,200.00	9.64	54.27	2,187.59	93.85	130.45	-126.54	0.00	0.00	0.00	0.00
2,300.00	9.64	54.27	2,286.18	103.63	144.04	-139.73	0.00	0.00	0.00	0.00
2,400.00	9.64	54.27	2,384.76	113.41	157.64	-152.92	0.00	0.00	0.00	0.00
2,500.00	9.64	54.27	2,483.35	123.19	171.23	-166.10	0.00	0.00	0.00	0.00
2,600.00	9.64	54.27	2,581.94	132.97	184.83	-179.29	0.00	0.00	0.00	0.00
2,700.00	9.64	54.27	2,680.53	142.75	198.42	-192.48	0.00	0.00	0.00	0.00
2,800.00	9.64	54.27	2,779.11	152.53	212.01	-205.67	0.00	0.00	0.00	0.00
2,900.00	9.64	54.27	2,877.70	162.32	225.61	-218.85	0.00	0.00	0.00	0.00
3,000.00	9.64	54.27	2,976.29	172.10	239.20	-232.04	0.00	0.00	0.00	0.00
3,100.00	9.64	54.27	3,074.88	181.88	252.80	-245.23	0.00	0.00	0.00	0.00
3,200.00	9.64	54.27	3,173.46	191.66	266.39	-258.42	0.00	0.00	0.00	0.00
3,300.00	9.64	54.27	3,272.05	201.44	279.99	-271.60	0.00	0.00	0.00	0.00
3,400.00	9.64	54.27	3,370.64	211.22	293.58	-284.79	0.00	0.00	0.00	0.00
3,500.00	9.64	54.27	3,469.23	221.00	307.18	-297.98	0.00	0.00	0.00	0.00
3,576.86	9.64	54.27	3,545.00	228.52	317.63	-308.12	0.00	0.00	0.00	0.00
Parkman										
3,600.00	9.64	54.27	3,567.82	230.78	320.77	-311.17	0.00	0.00	0.00	0.00
3,700.00	9.64	54.27	3,666.40	240.56	334.37	-324.35	0.00	0.00	0.00	0.00
3,800.00	9.64	54.27	3,764.99	250.34	347.96	-337.54	0.00	0.00	0.00	0.00
3,900.00	9.64	54.27	3,863.58	260.12	361.56	-350.73	0.00	0.00	0.00	0.00
4,000.00	9.64	54.27	3,962.17	269.90	375.15	-363.92	0.00	0.00	0.00	0.00
4,037.36	9.64	54.27	3,999.00	273.56	380.23	-368.84	0.00	0.00	0.00	0.00
Sussex										
4,100.00	9.64	54.27	4,060.75	279.68	388.75	-377.10	0.00	0.00	0.00	0.00
4,200.00	9.64	54.27	4,159.34	289.46	402.34	-390.29	0.00	0.00	0.00	0.00
4,300.00	9.64	54.27	4,257.93	299.25	415.93	-403.48	0.00	0.00	0.00	0.00
4,400.00	9.64	54.27	4,356.52	309.03	429.53	-416.67	0.00	0.00	0.00	0.00
4,500.00	9.64	54.27	4,455.10	318.81	443.12	-429.86	0.00	0.00	0.00	0.00

Plan Report for ELLIOTT 30N-18HZ - Plan A0 Permit

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
4,600.00	9.64	54.27	4,553.69	328.59	456.72	-443.04	0.00	0.00	0.00	0.00
4,700.00	9.64	54.27	4,652.28	338.37	470.31	-456.23	0.00	0.00	0.00	0.00
4,800.00	9.64	54.27	4,750.87	348.15	483.91	-469.42	0.00	0.00	0.00	0.00
4,900.00	9.64	54.27	4,849.45	357.93	497.50	-482.61	0.00	0.00	0.00	0.00
5,000.00	9.64	54.27	4,948.04	367.71	511.10	-495.79	0.00	0.00	0.00	0.00
5,100.00	9.64	54.27	5,046.63	377.49	524.69	-508.98	0.00	0.00	0.00	0.00
5,200.00	9.64	54.27	5,145.22	387.27	538.29	-522.17	0.00	0.00	0.00	0.00
5,300.00	9.64	54.27	5,243.81	397.05	551.88	-535.36	0.00	0.00	0.00	0.00
5,400.00	9.64	54.27	5,342.39	406.83	565.48	-548.54	0.00	0.00	0.00	0.00
5,500.00	9.64	54.27	5,440.98	416.61	579.07	-561.73	0.00	0.00	0.00	0.00
5,600.00	9.64	54.27	5,539.57	426.39	592.66	-574.92	0.00	0.00	0.00	0.00
5,700.00	9.64	54.27	5,638.16	436.18	606.26	-588.11	0.00	0.00	0.00	0.00
5,800.00	9.64	54.27	5,736.74	445.96	619.85	-601.29	0.00	0.00	0.00	0.00
5,900.00	9.64	54.27	5,835.33	455.74	633.45	-614.48	0.00	0.00	0.00	0.00
6,000.00	9.64	54.27	5,933.92	465.52	647.04	-627.67	0.00	0.00	0.00	0.00
6,100.00	9.64	54.27	6,032.51	475.30	660.64	-640.86	0.00	0.00	0.00	0.00
6,200.00	9.64	54.27	6,131.09	485.08	674.23	-654.04	0.00	0.00	0.00	0.00
6,287.54	9.64	54.27	6,217.40	493.64	686.13	-665.59	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6287.54ft										
6,300.00	9.64	54.27	6,229.68	494.86	687.83	-667.23	0.00	0.00	0.00	0.00
6,387.54	9.64	54.27	6,315.99	503.42	699.73	-678.78	0.00	0.00	0.00	0.00
KOP @ 6387.54ft										
6,400.00	8.70	49.14	6,328.29	504.65	701.29	-680.28	10.00	-7.56	-41.16	-141.58
6,500.00	7.01	330.68	6,427.59	514.94	704.03	-682.61	10.00	-1.69	-78.46	-136.52
6,600.00	14.89	295.46	6,525.79	525.81	689.40	-667.55	10.00	7.89	-35.21	-58.58
6,700.00	24.37	285.65	6,619.89	536.92	657.86	-635.58	10.00	9.47	-9.81	-23.89
6,800.00	34.13	281.17	6,707.05	547.95	610.35	-587.67	10.00	9.76	-4.48	-14.61
6,900.00	43.99	278.51	6,784.61	558.55	548.33	-525.27	10.00	9.86	-2.66	-10.69
DLS = 10/100'										
6,970.14	50.93	277.16	6,832.00	565.56	497.16	-473.86	10.00	9.90	-1.93	-8.62
Sharon Springs										
7,000.00	53.89	276.67	6,850.21	568.41	473.67	-450.27	10.00	9.91	-1.66	-7.70
7,076.35	61.47	275.55	6,891.00	575.25	409.56	-385.94	10.00	9.92	-1.46	-7.40
Niobrara A										
7,100.00	63.82	275.24	6,901.87	577.22	388.65	-364.97	10.00	9.93	-1.32	-6.80
7,200.00	73.76	274.04	6,938.00	584.72	295.85	-271.93	10.00	9.94	-1.20	-6.66
7,203.60	74.11	274.00	6,939.00	584.96	292.40	-268.48	10.00	9.94	-1.13	-6.22
Niobrara B										
7,300.00	83.70	272.95	6,957.53	590.67	198.08	-174.01	10.00	9.94	-1.08	-6.21
7,360.62	89.73	272.32	6,961.00	593.45	137.65	-113.51	10.00	9.94	-1.05	-6.01
End Build @ 7360.62ft - Landing Target (Heel) - 7" - ELLIOTT 30C-18HZ_CP										
7,400.00	89.73	272.32	6,961.19	595.05	98.31	-74.14	0.00	0.00	0.00	-5.97
7,500.00	89.73	272.32	6,961.66	599.09	-1.61	25.86	0.00	0.00	0.00	0.00
7,600.00	89.73	272.32	6,962.13	603.14	-101.53	125.86	0.00	0.00	0.00	0.00
7,700.00	89.73	272.32	6,962.60	607.19	-201.44	225.86	0.00	0.00	0.00	0.00
7,800.00	89.73	272.32	6,963.08	611.23	-301.36	325.86	0.00	0.00	0.00	0.00
7,900.00	89.73	272.32	6,963.55	615.28	-401.28	425.86	0.00	0.00	0.00	0.00
8,000.00	89.73	272.32	6,964.02	619.33	-501.20	525.86	0.00	0.00	0.00	0.00
8,100.00	89.73	272.32	6,964.49	623.37	-601.11	625.85	0.00	0.00	0.00	0.00
8,200.00	89.73	272.32	6,964.97	627.42	-701.03	725.85	0.00	0.00	0.00	0.00
8,300.00	89.73	272.32	6,965.44	631.47	-800.95	825.85	0.00	0.00	0.00	0.00
8,400.00	89.73	272.32	6,965.91	635.51	-900.86	925.85	0.00	0.00	0.00	0.00
8,500.00	89.73	272.32	6,966.38	639.56	-1,000.78	1,025.85	0.00	0.00	0.00	0.00
8,600.00	89.73	272.32	6,966.86	643.61	-1,100.70	1,125.85	0.00	0.00	0.00	0.00
8,700.00	89.73	272.32	6,967.33	647.65	-1,200.61	1,225.85	0.00	0.00	0.00	0.00
8,800.00	89.73	272.32	6,967.80	651.70	-1,300.53	1,325.85	0.00	0.00	0.00	0.00
8,900.00	89.73	272.32	6,968.27	655.74	-1,400.45	1,425.85	0.00	0.00	0.00	0.00
9,000.00	89.73	272.32	6,968.75	659.79	-1,500.37	1,525.84	0.00	0.00	0.00	0.00
9,100.00	89.73	272.32	6,969.22	663.84	-1,600.28	1,625.84	0.00	0.00	0.00	0.00

Plan Report for ELLIOTT 30N-18HZ - Plan A0 Permit

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Tooface Azimuth (°)
9,200.00	89.73	272.32	6,969.69	667.88	-1,700.20	1,725.84	0.00	0.00	0.00	0.00
9,300.00	89.73	272.32	6,970.16	671.93	-1,800.12	1,825.84	0.00	0.00	0.00	0.00
9,400.00	89.73	272.32	6,970.64	675.98	-1,900.03	1,925.84	0.00	0.00	0.00	0.00
9,500.00	89.73	272.32	6,971.11	680.02	-1,999.95	2,025.84	0.00	0.00	0.00	0.00
9,600.00	89.73	272.32	6,971.58	684.07	-2,099.87	2,125.84	0.00	0.00	0.00	0.00
9,700.00	89.73	272.32	6,972.05	688.12	-2,199.78	2,225.84	0.00	0.00	0.00	0.00
9,800.00	89.73	272.32	6,972.53	692.16	-2,299.70	2,325.84	0.00	0.00	0.00	0.00
9,900.00	89.73	272.32	6,973.00	696.21	-2,399.62	2,425.83	0.00	0.00	0.00	0.00
10,000.00	89.73	272.32	6,973.47	700.26	-2,499.54	2,525.83	0.00	0.00	0.00	0.00
10,100.00	89.73	272.32	6,973.94	704.30	-2,599.45	2,625.83	0.00	0.00	0.00	0.00
10,200.00	89.73	272.32	6,974.42	708.35	-2,699.37	2,725.83	0.00	0.00	0.00	0.00
10,300.00	89.73	272.32	6,974.89	712.39	-2,799.29	2,825.83	0.00	0.00	0.00	0.00
10,400.00	89.73	272.32	6,975.36	716.44	-2,899.20	2,925.83	0.00	0.00	0.00	0.00
10,500.00	89.73	272.32	6,975.83	720.49	-2,999.12	3,025.83	0.00	0.00	0.00	0.00
10,600.00	89.73	272.32	6,976.31	724.53	-3,099.04	3,125.83	0.00	0.00	0.00	0.00
10,700.00	89.73	272.32	6,976.78	728.58	-3,198.95	3,225.83	0.00	0.00	0.00	0.00
10,800.00	89.73	272.32	6,977.25	732.63	-3,298.87	3,325.82	0.00	0.00	0.00	0.00
10,900.00	89.73	272.32	6,977.72	736.67	-3,398.79	3,425.82	0.00	0.00	0.00	0.00
11,000.00	89.73	272.32	6,978.20	740.72	-3,498.71	3,525.82	0.00	0.00	0.00	0.00
11,100.00	89.73	272.32	6,978.67	744.77	-3,598.62	3,625.82	0.00	0.00	0.00	0.00
11,200.00	89.73	272.32	6,979.14	748.81	-3,698.54	3,725.82	0.00	0.00	0.00	0.00
11,300.00	89.73	272.32	6,979.62	752.86	-3,798.46	3,825.82	0.00	0.00	0.00	0.00
11,400.00	89.73	272.32	6,980.09	756.91	-3,898.37	3,925.82	0.00	0.00	0.00	0.00
11,500.00	89.73	272.32	6,980.56	760.95	-3,998.29	4,025.82	0.00	0.00	0.00	0.00
11,600.00	89.73	272.32	6,981.03	765.00	-4,098.21	4,125.82	0.00	0.00	0.00	0.00
11,700.00	89.73	272.32	6,981.51	769.04	-4,198.12	4,225.81	0.00	0.00	0.00	0.00
11,800.00	89.73	272.32	6,981.98	773.09	-4,298.04	4,325.81	0.00	0.00	0.00	0.00
11,900.00	89.73	272.32	6,982.45	777.14	-4,397.96	4,425.81	0.00	0.00	0.00	0.00
12,000.00	89.73	272.32	6,982.92	781.18	-4,497.87	4,525.81	0.00	0.00	0.00	0.00
12,016.35	89.73	272.32	6,983.00	781.85	-4,514.21	4,542.16	0.00	0.00	0.00	0.00

Total Depth (Toe) - ELLIOTT 30C-18HZ_BHL**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/S (ft)	+E/W (ft)	
1,000.00	1,000.00	0.00	0.00	Begin Nudge @ 1000.00ft
1,482.05	1,479.78	23.63	32.84	End Nudge @ 1482.05ft
6,287.54	6,217.40	493.64	686.13	Top of 4.5" Liner @ 6287.54ft
6,387.54	6,315.99	503.42	699.73	KOP @ 6387.54ft
6,900.00	6,784.61	558.55	548.33	DLS = 10/100'
7,360.62	6,961.00	593.45	137.65	End Build @ 7360.62ft
12,016.35	6,983.00	781.85	-4,514.21	TD Well @ 12016.35ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/S (ft)	+E/W (ft)	
User	No Target (Freehand)	272.32	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,360.62	Plan A0 Permit	MWD
7,360.62	12,016.35	Plan A0 Permit	MWD

Plan Report for ELLIOTT 30N-18HZ - Plan A0 Permit**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
800.00	800.00	9 5/8"	9-5/8	13-1/2
7,360.62	6,961.00	7"	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
750.00	750.00	Fox Hills Base			
3,576.86	3,545.00	Parkman			
4,037.36	3,999.00	Sussex			
6,970.14	6,832.00	Sharon Springs			
7,076.35	6,891.00	Niobrara A			
7,203.60	6,939.00	Niobrara B			
7,360.62	6,961.00	Landing Target (Heel)			
12,016.35	6,983.00	Total Depth (Toe)			

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
ELLIOTT 30C-18HZ_SHL	0.00	0.00	0.00	Point
ELLIOTT_SEC	0.00	-1,377.05	107.78	Polygon
ELLIOTT 30C-18HZ_LD	0.00	-1,377.05	107.78	Polygon
ELLIOTT 30C-18HZ_CP	6,961.00	593.45	137.65	Point
ELLIOTT 30C-18HZ_BHL	6,983.00	781.85	-4,514.21	Point

North Reference Sheet for Sec. 18-T3N-R67W - ELLIOTT 30N-18HZ - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
 Vertical Depths are relative to RKB = 17' @ 4853.00ft (Drilling Rig). Northing and Easting are relative to ELLIOTT 30N-18HZ
 Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980
 Projection method is Lambert Conformal Conic (2 parallel)
 Central Meridian is -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°
 False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995690

Grid Coordinates of Well: 1,327,652.03 ft N, 3,160,432.32 ft E
 Geographical Coordinates of Well: 40° 13' 52.95" N, 104° 55' 31.40" W
 Grid Convergence at Surface is: 0.37°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,016.35ft
 the Bottom Hole Displacement is 4,581.41ft in the Direction of 279.83° (True).
 Magnetic Convergence at surface is: -8.30° (20 August 2013, , BGGM2013)

