

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 22-T2N-R67W

Black Tiger 15N-27HZ

Plan A

Plan: Rev A0 Permit

Sperry Drilling Services

Proposal Report

10 February, 2014

Well Coordinates: 1,286,181.76 N, 3,175,452.94 E (40° 07' 02.13" N, 104° 52' 21.51" W)

Ground Level: 4,980.00 usft

Local Coordinate Origin:

Centered on Well Black Tiger 15N-27HZ

Viewing Datum:

RKB-17' @ 4997.00usft

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

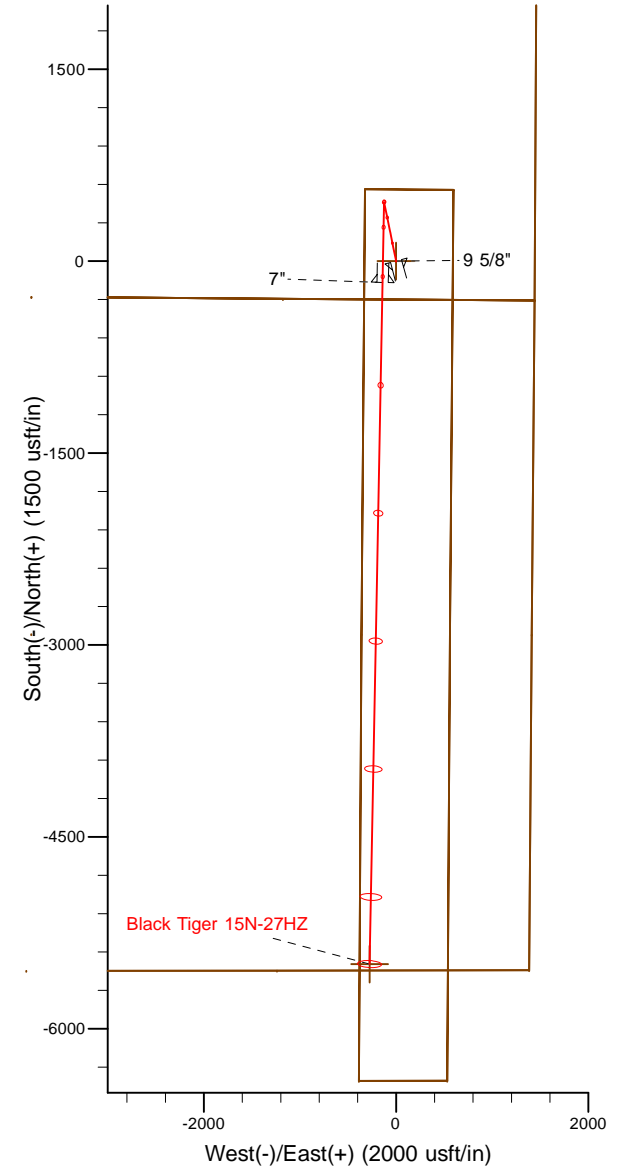
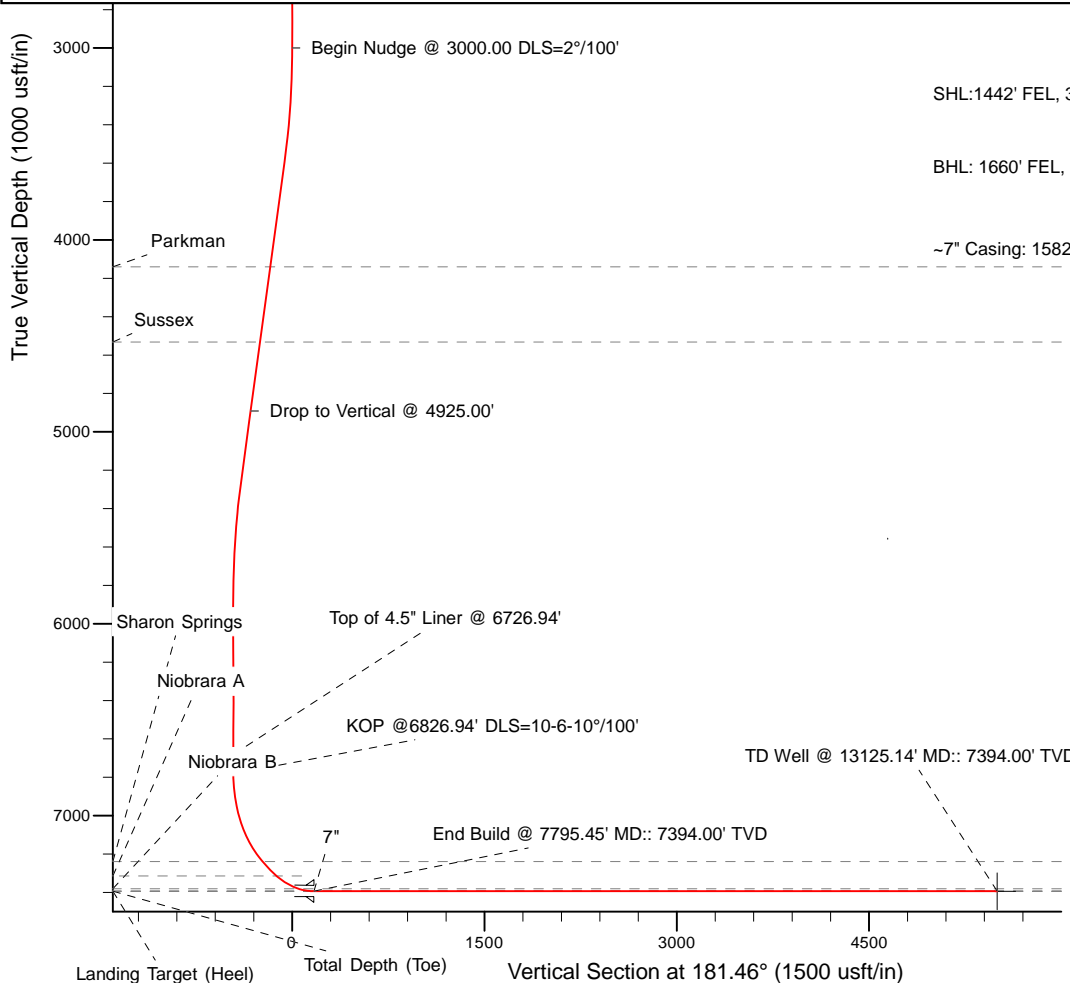
Project: Weld County, CO (NAD 83)
 Site: Sec. 22-T2N-R67W
 Well: Black Tiger 15N-27HZ
 Wellbore: Plan A
 Design: Rev A0 Permit

Anadarko Petroleum Corp.



Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Black Tiger 15N-27HZ SHL	0.00	0.02	0.00	1286181.78	3175452.94	40.117258	-104.872642
Black Tiger15C-27HZ Pad_Sec.line	0.00	4352.41	-2921.62	1290513.22	3172500.72	40.129205	-104.883090
Black Tiger15N-27HZ LD	0.00	4352.41	-2921.62	1290513.22	3172500.72	40.129205	-104.883090
Black Tiger 15N-27HZ BHL	7394.00	-5493.89	-275.27	1280686.29	3175216.55	40.102177	-104.873626

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00
3600.00	12.00	345.00	3595.62	60.47	-16.20	2.00	-60.04
5300.00	12.00	345.00	5258.47	401.88	-107.68	0.00	-399.00
5900.00	0.00	0.00	5854.10	462.35	-123.89	2.00	-459.04
6826.94	0.00	0.00	6781.04	462.35	-123.89	0.00	-459.04
7317.77	49.08	181.46	7214.00	264.72	-128.92	10.00	-261.35
7489.04	59.36	181.46	7314.00	126.00	-132.46	6.00	-122.59
7795.45	90.00	181.46	7394.00	-165.91	-139.89	10.00	169.42
13125.14	90.00	181.46	7394.00	-5493.89	-275.27	0.00	5499.12



WELL DETAILS: Black Tiger 15N-27HZ	
Ground Level: 4980.00	
RKB-17' @ 4997.00usft	
Plan: Rev A0 Permit (Black Tiger 15N-27HZ/Plan A)	
Created By: Pari Amanlou	Date: 2-6-2014

Plan Report for Black Tiger 15N-27HZ - Rev A0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,228.00	0.00	0.00	1,228.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Marker										
1,278.00	0.00	0.00	1,278.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hold Vertical to 2000.00'										
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 3000.00 DLS=2°/100'										
3,100.00	2.00	345.00	3,099.98	1.69	-0.45	-1.67	2.00	2.00	0.00	345.00
3,200.00	4.00	345.00	3,199.84	6.74	-1.81	-6.69	2.00	2.00	0.00	0.00
3,300.00	6.00	345.00	3,299.45	15.16	-4.06	-15.05	2.00	2.00	0.00	0.00
3,400.00	8.00	345.00	3,398.70	26.93	-7.22	-26.74	2.00	2.00	0.00	0.00
3,500.00	10.00	345.00	3,497.47	42.04	-11.26	-41.74	2.00	2.00	0.00	0.00
3,600.00	12.00	345.00	3,595.62	60.47	-16.20	-60.04	2.00	2.00	0.00	0.00
3,700.00	12.00	345.00	3,693.44	80.55	-21.58	-79.98	0.00	0.00	0.00	0.00
3,800.00	12.00	345.00	3,791.25	100.63	-26.97	-99.92	0.00	0.00	0.00	0.00
3,900.00	12.00	345.00	3,889.07	120.72	-32.35	-119.85	0.00	0.00	0.00	0.00
4,000.00	12.00	345.00	3,986.88	140.80	-37.73	-139.79	0.00	0.00	0.00	0.00
4,100.00	12.00	345.00	4,084.70	160.88	-43.11	-159.73	0.00	0.00	0.00	0.00
4,156.54	12.00	345.00	4,140.00	172.24	-46.15	-171.01	0.00	0.00	0.00	0.00
Parkman										
4,200.00	12.00	345.00	4,182.51	180.97	-48.49	-179.67	0.00	0.00	0.00	0.00
4,300.00	12.00	345.00	4,280.33	201.05	-53.87	-199.61	0.00	0.00	0.00	0.00
4,400.00	12.00	345.00	4,378.14	221.13	-59.25	-219.55	0.00	0.00	0.00	0.00
4,500.00	12.00	345.00	4,475.96	241.21	-64.63	-239.49	0.00	0.00	0.00	0.00
4,557.30	12.00	345.00	4,532.00	252.72	-67.72	-250.91	0.00	0.00	0.00	0.00
Sussex										
4,600.00	12.00	345.00	4,573.77	261.30	-70.01	-259.43	0.00	0.00	0.00	0.00
4,700.00	12.00	345.00	4,671.59	281.38	-75.40	-279.37	0.00	0.00	0.00	0.00

Plan Report for Black Tiger 15N-27HZ - Rev A0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,800.00	12.00	345.00	4,769.40	301.46	-80.78	-299.31	0.00	0.00	0.00	0.00
4,900.00	12.00	345.00	4,867.22	321.54	-86.16	-319.25	0.00	0.00	0.00	0.00
4,925.00	12.00	345.00	4,891.67	326.57	-87.50	-324.23	0.00	0.00	0.00	0.00
Drop to Vertical @ 4925.00'										
5,000.00	12.00	345.00	4,965.03	341.63	-91.54	-339.18	0.00	0.00	0.00	0.00
5,100.00	12.00	345.00	5,062.84	361.71	-96.92	-359.12	0.00	0.00	0.00	0.00
5,200.00	12.00	345.00	5,160.66	381.79	-102.30	-379.06	0.00	0.00	0.00	0.00
5,300.00	12.00	345.00	5,258.47	401.88	-107.68	-399.00	0.00	0.00	0.00	0.00
5,400.00	10.00	345.00	5,356.63	420.31	-112.62	-417.30	2.00	-2.00	0.00	180.00
5,500.00	8.00	345.00	5,455.40	435.42	-116.67	-432.30	2.00	-2.00	0.00	180.00
5,600.00	6.00	345.00	5,554.65	447.19	-119.82	-443.99	2.00	-2.00	0.00	180.00
5,700.00	4.00	345.00	5,654.26	455.60	-122.08	-452.35	2.00	-2.00	0.00	180.00
5,800.00	2.00	345.00	5,754.12	460.66	-123.43	-457.36	2.00	-2.00	0.00	180.00
5,900.00	0.00	0.00	5,854.10	462.35	-123.89	-459.04	2.00	-2.00	0.00	180.00
6,000.00	0.00	0.00	5,954.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,054.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,154.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,254.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,354.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,454.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,554.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,654.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,726.94	0.00	0.00	6,681.04	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6726.94'										
6,800.00	0.00	0.00	6,754.10	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
6,826.94	0.00	0.00	6,781.04	462.35	-123.89	-459.04	0.00	0.00	0.00	0.00
KOP @6826.94' DLS=10-6-10°/100'										
6,900.00	7.31	181.46	6,853.90	457.70	-124.00	-454.39	10.00	10.00	0.00	181.46
7,000.00	17.31	181.46	6,951.48	436.42	-124.55	-433.10	10.00	10.00	0.00	0.00
7,100.00	27.31	181.46	7,043.88	398.52	-125.51	-395.19	10.00	10.00	0.00	0.00
7,200.00	37.31	181.46	7,128.29	345.16	-126.87	-341.82	10.00	10.00	0.00	0.00
7,300.00	47.31	181.46	7,202.15	277.96	-128.58	-274.60	10.00	10.00	0.00	0.00
7,317.77	49.08	181.46	7,214.00	264.72	-128.92	-261.35	10.00	10.00	0.00	0.00
7,356.88	51.43	181.46	7,239.00	234.66	-129.69	-231.28	6.00	6.00	0.00	0.00
Sharon Springs										
7,400.00	54.02	181.46	7,265.12	200.36	-130.56	-196.97	6.00	6.00	0.00	0.00
7,489.04	59.36	181.46	7,314.00	126.00	-132.46	-122.59	6.00	6.00	0.00	0.00
Niobrara A										
7,500.00	60.45	181.46	7,319.50	116.53	-132.70	-113.11	10.00	10.00	0.00	-0.01
7,600.00	70.45	181.46	7,360.98	25.71	-135.01	-22.26	10.00	10.00	0.00	-0.01
7,673.18	77.77	181.46	7,381.00	-44.60	-136.80	48.07	10.00	10.00	0.00	-0.01
Niobrara B										
7,700.00	80.45	181.46	7,386.07	-70.93	-137.47	74.41	10.00	10.00	0.00	-0.01
7,795.45	90.00	181.46	7,394.00	-165.91	-139.89	169.42	10.00	10.00	0.00	-0.01
End Build @ 7795.45' MD:: 7394.00' TVD - Landing Target (Heel) - 7"										
7,800.00	90.00	181.46	7,394.00	-170.46	-140.00	173.97	0.00	0.00	0.00	-0.01
7,900.00	90.00	181.46	7,394.00	-270.43	-142.54	273.97	0.00	0.00	0.00	0.00
8,000.00	90.00	181.46	7,394.00	-370.40	-145.08	373.97	0.00	0.00	0.00	0.00
8,100.00	90.00	181.46	7,394.00	-470.36	-147.62	473.97	0.00	0.00	0.00	0.00
8,200.00	90.00	181.46	7,394.00	-570.33	-150.16	573.97	0.00	0.00	0.00	0.00
8,300.00	90.00	181.46	7,394.00	-670.30	-152.70	673.97	0.00	0.00	0.00	0.00
8,400.00	90.00	181.46	7,394.00	-770.27	-155.24	773.97	0.00	0.00	0.00	0.00
8,500.00	90.00	181.46	7,394.00	-870.24	-157.78	873.97	0.00	0.00	0.00	0.00
8,600.00	90.00	181.46	7,394.00	-970.20	-160.32	973.97	0.00	0.00	0.00	0.00
8,700.00	90.00	181.46	7,394.00	-1,070.17	-162.86	1,073.97	0.00	0.00	0.00	0.00
8,800.00	90.00	181.46	7,394.00	-1,170.14	-165.40	1,173.97	0.00	0.00	0.00	0.00
8,900.00	90.00	181.46	7,394.00	-1,270.11	-167.94	1,273.97	0.00	0.00	0.00	0.00
9,000.00	90.00	181.46	7,394.00	-1,370.07	-170.48	1,373.97	0.00	0.00	0.00	0.00
9,100.00	90.00	181.46	7,394.00	-1,470.04	-173.02	1,473.97	0.00	0.00	0.00	0.00

Plan Report for Black Tiger 15N-27HZ - Rev A0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
9,200.00	90.00	181.46	7,394.00	-1,570.01	-175.56	1,573.97	0.00	0.00	0.00	0.00
9,300.00	90.00	181.46	7,394.00	-1,669.98	-178.10	1,673.97	0.00	0.00	0.00	0.00
9,400.00	90.00	181.46	7,394.00	-1,769.94	-180.64	1,773.97	0.00	0.00	0.00	0.00
9,500.00	90.00	181.46	7,394.00	-1,869.91	-183.18	1,873.97	0.00	0.00	0.00	0.00
9,600.00	90.00	181.46	7,394.00	-1,969.88	-185.72	1,973.97	0.00	0.00	0.00	0.00
9,700.00	90.00	181.46	7,394.00	-2,069.85	-188.26	2,073.97	0.00	0.00	0.00	0.00
9,800.00	90.00	181.46	7,394.00	-2,169.82	-190.80	2,173.97	0.00	0.00	0.00	0.00
9,900.00	90.00	181.46	7,394.00	-2,269.78	-193.34	2,273.97	0.00	0.00	0.00	0.00
10,000.00	90.00	181.46	7,394.00	-2,369.75	-195.88	2,373.97	0.00	0.00	0.00	0.00
10,100.00	90.00	181.46	7,394.00	-2,469.72	-198.43	2,473.97	0.00	0.00	0.00	0.00
10,200.00	90.00	181.46	7,394.00	-2,569.69	-200.97	2,573.97	0.00	0.00	0.00	0.00
10,300.00	90.00	181.46	7,394.00	-2,669.65	-203.51	2,673.97	0.00	0.00	0.00	0.00
10,400.00	90.00	181.46	7,394.00	-2,769.62	-206.05	2,773.97	0.00	0.00	0.00	0.00
10,500.00	90.00	181.46	7,394.00	-2,869.59	-208.59	2,873.97	0.00	0.00	0.00	0.00
10,600.00	90.00	181.46	7,394.00	-2,969.56	-211.13	2,973.97	0.00	0.00	0.00	0.00
10,700.00	90.00	181.46	7,394.00	-3,069.53	-213.67	3,073.97	0.00	0.00	0.00	0.00
10,800.00	90.00	181.46	7,394.00	-3,169.49	-216.21	3,173.97	0.00	0.00	0.00	0.00
10,900.00	90.00	181.46	7,394.00	-3,269.46	-218.75	3,273.97	0.00	0.00	0.00	0.00
11,000.00	90.00	181.46	7,394.00	-3,369.43	-221.29	3,373.97	0.00	0.00	0.00	0.00
11,100.00	90.00	181.46	7,394.00	-3,469.40	-223.83	3,473.97	0.00	0.00	0.00	0.00
11,200.00	90.00	181.46	7,394.00	-3,569.36	-226.37	3,573.97	0.00	0.00	0.00	0.00
11,300.00	90.00	181.46	7,394.00	-3,669.33	-228.91	3,673.97	0.00	0.00	0.00	0.00
11,400.00	90.00	181.46	7,394.00	-3,769.30	-231.45	3,773.97	0.00	0.00	0.00	0.00
11,500.00	90.00	181.46	7,394.00	-3,869.27	-233.99	3,873.97	0.00	0.00	0.00	0.00
11,600.00	90.00	181.46	7,394.00	-3,969.24	-236.53	3,973.97	0.00	0.00	0.00	0.00
11,700.00	90.00	181.46	7,394.00	-4,069.20	-239.07	4,073.97	0.00	0.00	0.00	0.00
11,800.00	90.00	181.46	7,394.00	-4,169.17	-241.61	4,173.97	0.00	0.00	0.00	0.00
11,900.00	90.00	181.46	7,394.00	-4,269.14	-244.15	4,273.97	0.00	0.00	0.00	0.00
12,000.00	90.00	181.46	7,394.00	-4,369.11	-246.69	4,373.97	0.00	0.00	0.00	0.00
12,100.00	90.00	181.46	7,394.00	-4,469.07	-249.23	4,473.97	0.00	0.00	0.00	0.00
12,200.00	90.00	181.46	7,394.00	-4,569.04	-251.77	4,573.97	0.00	0.00	0.00	0.00
12,300.00	90.00	181.46	7,394.00	-4,669.01	-254.31	4,673.97	0.00	0.00	0.00	0.00
12,400.00	90.00	181.46	7,394.00	-4,768.98	-256.85	4,773.97	0.00	0.00	0.00	0.00
12,500.00	90.00	181.46	7,394.00	-4,868.94	-259.39	4,873.97	0.00	0.00	0.00	0.00
12,600.00	90.00	181.46	7,394.00	-4,968.91	-261.93	4,973.97	0.00	0.00	0.00	0.00
12,700.00	90.00	181.46	7,394.00	-5,068.88	-264.47	5,073.97	0.00	0.00	0.00	0.00
12,800.00	90.00	181.46	7,394.00	-5,168.85	-267.01	5,173.97	0.00	0.00	0.00	0.00
12,900.00	90.00	181.46	7,394.00	-5,268.82	-269.55	5,273.97	0.00	0.00	0.00	0.00
13,000.00	90.00	181.46	7,394.00	-5,368.78	-272.09	5,373.97	0.00	0.00	0.00	0.00
13,100.00	90.00	181.46	7,394.00	-5,468.75	-274.63	5,473.97	0.00	0.00	0.00	0.00
13,125.14	90.00	181.46	7,394.00	-5,493.88	-275.27	5,499.11	0.00	0.00	0.00	0.00

TD Well @ 13125.14' MD:: 7394.00' TVD - Total Depth (Toe)

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	Hold Vertical to 2000.00'
3,000.00	3,000.00	0.00	0.00	Begin Nudge @ 3000.00 DLS=2°/100'
4,925.00	4,891.67	326.57	-87.50	Drop to Vertical @ 4925.00'
6,726.94	6,681.04	462.35	-123.89	Top of 4.5" Liner @ 6726.94'
6,826.94	6,781.04	462.35	-123.89	KOP @6826.94' DLS=10-6-10°/100'
7,795.45	7,394.00	-165.91	-139.89	End Build @ 7795.45' MD:: 7394.00' TVD
13,125.14	7,394.00	-5,493.88	-275.27	TD Well @ 13125.14' MD:: 7394.00' TVD

Plan Report for Black Tiger 15N-27HZ - Rev A0 Permit**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	181.46	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	11,278.00	Rev A0 Permit	MWD
11,278.00	7,795.45	Rev A0 Permit	MWD
7,795.45	13,125.14	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,278.00	1,278.00	9 5/8"	9-5/8	12-3/4
7,795.45	7,394.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,228.00	1,228.00	Fox Hills Marker		0.00	
4,156.54	4,140.00	Parkman		0.00	
4,557.30	4,532.00	Sussex		0.00	
7,356.88	7,239.00	Sharon Springs		0.00	
7,489.04	7,314.00	Niobrara A		0.00	
7,673.18	7,381.00	Niobrara B		0.00	
7,795.45	7,394.00	Landing Target (Heel)		0.00	
13,125.14	7,394.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Black Tiger15N-27HZ LD	0.00	4,352.41	-2,921.62	Polygon
Black Tiger 15N-27HZ SHL	0.00	0.02	0.00	Point
Black Tiger15C-27HZ Pad_Sec.line	0.00	4,352.41	-2,921.62	Polygon
Black Tiger 15N-27HZ BHL	7,394.00	-5,493.89	-275.27	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.87 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,317.77 usft
Net Tortosity applicable to Plans:	0.87 °/100usft	Directional Difficulty Index:	6.285

Plan Report for Black Tiger 15N-27HZ - Rev A0 Permit

Audit Info

North Reference Sheet for Sec. 22-T2N-R67W - Black Tiger 15N-27HZ - 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' @ 4997.00usft. Northing and Easting are relative to Black Tiger 15N-27HZ
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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995955

Grid Coordinates of Well: 1,286,181.76 usft N, 3,175,452.94 usft E
Geographical Coordinates of Well: 40° 07' 02.13" N, 104° 52' 21.51" W
Grid Convergence at Surface is: 0.41°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,125.14usft
the Bottom Hole Displacement is 5,500.77usft in the Direction of 182.87° (True).

Magnetic Convergence at surface is: -8.18° (10 February 2014, , BGGM2013)

Magnetic Model: BGGM2013
Date: 10-Feb-14
Declination: 8.58°
Inclination/Dip: 66.70°
Field Strength: 52611

Grid North is 0.41° East of True North (Grid Convergence)
Magnetic North is 8.58° East of True North (Magnetic Declination)
Magnetic North is 8.18° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.41°
To convert a Magnetic Direction to a True Direction, Add 8.58° East
To convert a Magnetic Direction to a Grid Direction, Add 8.18°