

Project: Kiowa County, CO (NAD 83)  
 Site: Sec. 11-T17S-R48W  
 Well: LINCOLN 1748-11-11-H  
 Wellbore: Plan A0  
 Design: Plan A0 - PERMIT



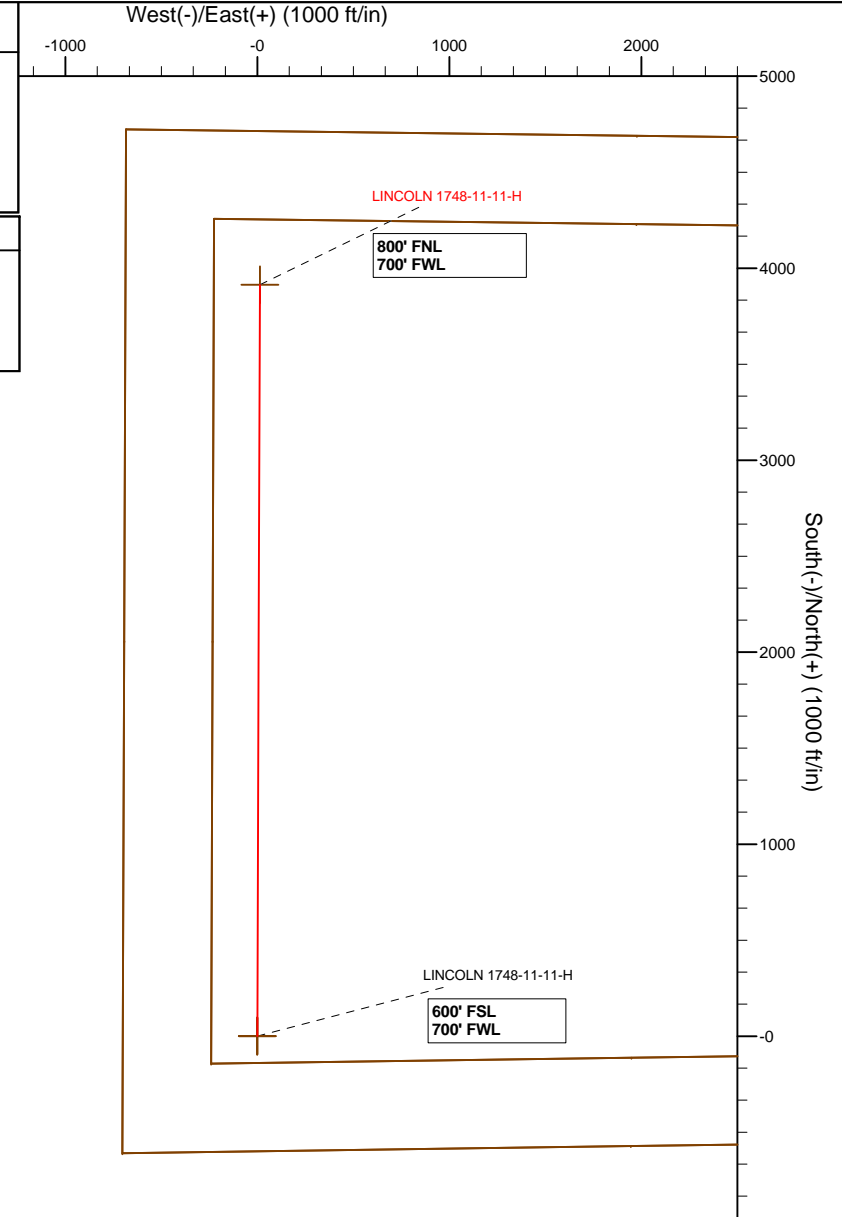
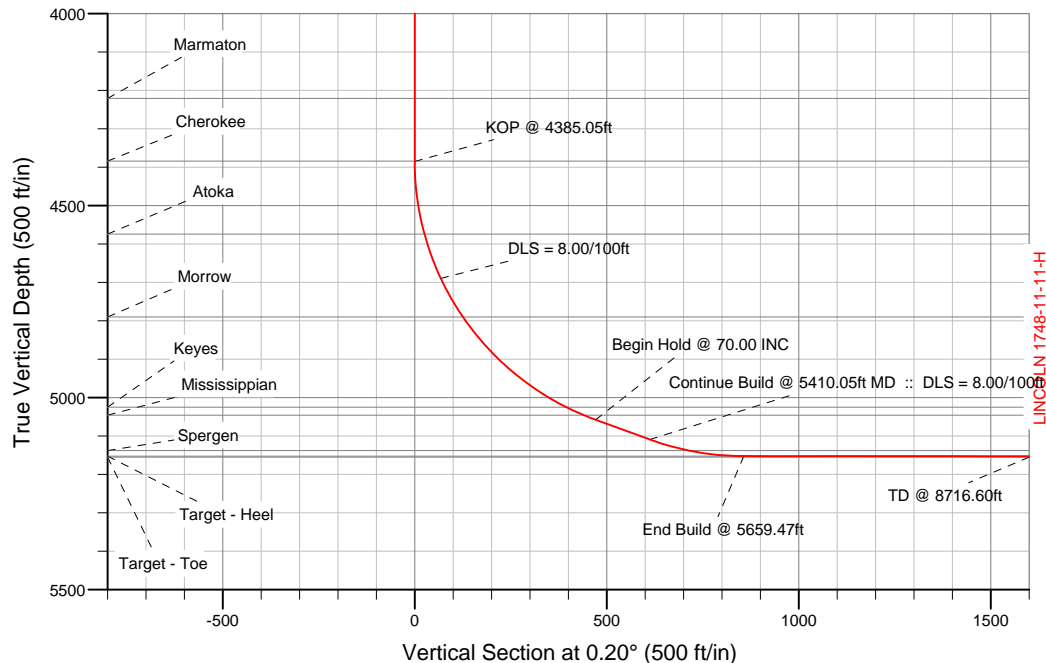
#### SECTION DETAILS

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	4385.05	0.00	0.00	4385.05	0.00	0.00	0.00	0.00	0.00	
3	5260.05	70.00	0.20	5058.06	471.24	1.64	8.00	0.20	471.24	
4	5410.05	70.00	0.20	5109.36	612.19	2.14	0.00	0.00	612.20	
5	5659.48	89.95	0.20	5152.55	856.57	2.99	8.00	0.00	856.58	
6	8716.60	89.95	0.20	5155.00	3913.68	13.66	0.00	0.00	3913.70	LINCOLN 1748-11-11-H_BHL

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
LINCOLN 1748-11-11-H_SB	0.00	0.00	0.00	38.586836	-102.765358	Polygon
LINCOLN 1748-11-11-H_Sec	0.00	0.00	0.00	38.586836	-102.765358	Polygon
LINCOLN 1748-11-11-H_SHL	0.00	0.00	0.00	38.586836	-102.765358	Point
LINCOLN 1748-11-11-H_BHL	5155.00	3913.68	13.43	38.597582	-102.765311	Point

MD	TVD	Annotation
4385.05	4385.05	KOP @ 4385.05ft
4700.00	4689.95	DLS = 8.00/100ft
5260.05	5058.06	Begin Hold @ 70.00 INC
5410.05	5109.36	Continue Build @ 5410.05ft MD :: DLS = 8.00/100ft
5659.47	5152.55	End Build @ 5659.47ft
8716.60	5155.00	TD @ 8716.60ft



#### WELL DETAILS: LINCOLN 1748-11-11-H

Ground Level: 4233.00  
 RKB = 25 @ 4258.00ft (Drilling Rig)

Plan: Plan A0 - PERMIT (LINCOLN 1748-11-11-H/Plan A0)

Created By: Fred Hartmann Date: 07/24/2013

# Anadarko Petroleum Corp.

Kiowa County, CO (NAD 83)

Sec. 11-T17S-R48W

LINCOLN 1748-11-11-H

Plan A0

Plan: Plan A0 - PERMIT

## Sperry Drilling Services

## Proposal Report

25 July, 2013

Well Coordinates: 1,710,647.26 N, 3,781,616.59 E (38° 35' 12.61" N, 102° 45' 55.29" W)

Ground Level: 4,233.00 ft

Local Coordinate Origin:

Centered on Well LINCOLN 1748-11-11-H

Viewing Datum:

RKB = 25 @ 4258.00ft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

**HALLIBURTON**

## Plan Report for LINCOLN 1748-11-11-H - 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
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
506.00	0.00	0.00	506.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Niobrara</b>										
574.00	0.00	0.00	574.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Ft Hays Limestone</b>										
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
1,067.00	0.00	0.00	1,067.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Dakota Sandstone</b>										
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
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,345.00	0.00	0.00	1,345.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Cheyenne Sandstone</b>										
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
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,165.00	0.00	0.00	2,165.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Blaine Anhydrite</b>										
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
2,320.00	0.00	0.00	2,320.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Cedar Hills (Lyons) Sandstone</b>										
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,461.00	0.00	0.00	2,461.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Stone Corral Anhydrite</b>										
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
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,141.00	0.00	0.00	3,141.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Neva Limestone</b>										
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,611.00	0.00	0.00	3,611.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Shawnee</b>										
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,830.00	0.00	0.00	3,830.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## Plan Report for LINCOLN 1748-11-11-H - 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 (°)
<b>Lansing</b>										
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,221.00	0.00	0.00	4,221.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Marmaton</b>										
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,384.00	0.00	0.00	4,384.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Cherokee</b>										
4,385.05	0.00	0.00	4,385.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>KOP @ 4385.05ft</b>										
4,400.00	1.20	0.20	4,400.00	0.16	0.00	0.16	8.00	8.00	0.00	0.20
4,500.00	9.20	0.20	4,499.51	9.20	0.03	9.20	8.00	8.00	0.00	0.00
4,576.26	15.30	0.20	4,574.00	25.37	0.09	25.37	8.00	8.00	0.00	0.00
<b>Atoka</b>										
4,600.00	17.20	0.20	4,596.79	32.01	0.11	32.01	8.00	8.00	0.00	0.00
4,700.00	25.20	0.20	4,689.95	68.14	0.24	68.14	8.00	8.00	0.00	0.00
<b>DLS = 8.00/100ft</b>										
4,800.00	33.20	0.20	4,777.17	116.88	0.41	116.88	8.00	8.00	0.00	0.00
4,815.44	34.43	0.20	4,790.00	125.47	0.44	125.47	8.00	8.00	0.00	0.00
<b>Morrow</b>										
4,900.00	41.20	0.20	4,856.76	177.29	0.62	177.29	8.00	8.00	0.00	0.00
5,000.00	49.20	0.20	4,927.18	248.18	0.87	248.18	8.00	8.00	0.00	0.00
5,100.00	57.20	0.20	4,987.03	328.18	1.15	328.19	8.00	8.00	0.00	0.00
5,176.57	63.32	0.20	5,025.00	394.63	1.38	394.63	8.00	8.00	0.00	0.00
<b>Keyes</b>										
5,200.00	65.20	0.20	5,035.18	415.74	1.45	415.74	8.00	8.00	0.00	0.00
5,226.90	67.35	0.20	5,046.00	440.36	1.54	440.36	8.00	8.00	0.00	0.00
<b>Mississippian</b>										
5,260.05	70.00	0.20	5,058.06	471.24	1.64	471.24	8.00	8.00	0.00	0.00
<b>Begin Hold @ 70.00 INC</b>										
5,300.00	70.00	0.20	5,071.72	508.78	1.78	508.78	0.00	0.00	0.00	0.00
5,400.00	70.00	0.20	5,105.92	602.75	2.10	602.75	0.00	0.00	0.00	0.00
5,410.05	70.00	0.20	5,109.36	612.19	2.14	612.20	0.00	0.00	0.00	0.00
<b>Continue Build @ 5410.05ft MD :: DLS = 8.00/100ft</b>										
5,500.00	77.20	0.20	5,134.74	698.43	2.44	698.43	8.00	8.00	0.00	0.00
5,515.44	78.43	0.20	5,138.00	713.52	2.49	713.52	8.00	8.00	0.00	0.00
<b>Spergen</b>										
5,600.00	85.20	0.20	5,150.03	797.17	2.78	797.17	8.00	8.00	0.00	0.00
5,659.47	89.95	0.20	5,152.55	856.57	2.99	856.57	8.00	8.00	0.00	0.00
<b>End Build @ 5659.47ft - Target - Heel</b>										
5,700.00	89.95	0.20	5,152.58	897.10	3.13	897.10	0.00	0.00	0.00	0.00
5,800.00	89.95	0.20	5,152.66	997.10	3.48	997.10	0.00	0.00	0.00	0.00
5,900.00	89.95	0.20	5,152.74	1,097.09	3.83	1,097.10	0.00	0.00	0.00	0.00
6,000.00	89.95	0.20	5,152.82	1,197.09	4.18	1,197.10	0.00	0.00	0.00	0.00
6,100.00	89.95	0.20	5,152.90	1,297.09	4.53	1,297.10	0.00	0.00	0.00	0.00
6,200.00	89.95	0.20	5,152.98	1,397.09	4.88	1,397.10	0.00	0.00	0.00	0.00
6,300.00	89.95	0.20	5,153.06	1,497.09	5.23	1,497.10	0.00	0.00	0.00	0.00
6,400.00	89.95	0.20	5,153.14	1,597.09	5.57	1,597.10	0.00	0.00	0.00	0.00
6,500.00	89.95	0.20	5,153.22	1,697.09	5.92	1,697.10	0.00	0.00	0.00	0.00
6,600.00	89.95	0.20	5,153.31	1,797.09	6.27	1,797.10	0.00	0.00	0.00	0.00
6,700.00	89.95	0.20	5,153.39	1,897.09	6.62	1,897.10	0.00	0.00	0.00	0.00
6,800.00	89.95	0.20	5,153.47	1,997.09	6.97	1,997.10	0.00	0.00	0.00	0.00
6,900.00	89.95	0.20	5,153.55	2,097.09	7.32	2,097.10	0.00	0.00	0.00	0.00
7,000.00	89.95	0.20	5,153.63	2,197.09	7.67	2,197.10	0.00	0.00	0.00	0.00
7,100.00	89.95	0.20	5,153.71	2,297.09	8.02	2,297.10	0.00	0.00	0.00	0.00
7,200.00	89.95	0.20	5,153.79	2,397.09	8.37	2,397.10	0.00	0.00	0.00	0.00

**Plan Report for LINCOLN 1748-11-11-H - 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 (°)
7,300.00	89.95	0.20	5,153.87	2,497.09	8.72	2,497.10	0.00	0.00	0.00	0.00
7,400.00	89.95	0.20	5,153.95	2,597.08	9.07	2,597.10	0.00	0.00	0.00	0.00
7,500.00	89.95	0.20	5,154.03	2,697.08	9.41	2,697.10	0.00	0.00	0.00	0.00
7,600.00	89.95	0.20	5,154.11	2,797.08	9.76	2,797.10	0.00	0.00	0.00	0.00
7,700.00	89.95	0.20	5,154.19	2,897.08	10.11	2,897.10	0.00	0.00	0.00	0.00
7,800.00	89.95	0.20	5,154.27	2,997.08	10.46	2,997.10	0.00	0.00	0.00	0.00
7,900.00	89.95	0.20	5,154.35	3,097.08	10.81	3,097.10	0.00	0.00	0.00	0.00
8,000.00	89.95	0.20	5,154.43	3,197.08	11.16	3,197.10	0.00	0.00	0.00	0.00
8,100.00	89.95	0.20	5,154.51	3,297.08	11.51	3,297.10	0.00	0.00	0.00	0.00
8,200.00	89.95	0.20	5,154.59	3,397.08	11.86	3,397.10	0.00	0.00	0.00	0.00
8,300.00	89.95	0.20	5,154.67	3,497.08	12.21	3,497.10	0.00	0.00	0.00	0.00
8,400.00	89.95	0.20	5,154.75	3,597.08	12.56	3,597.10	0.00	0.00	0.00	0.00
8,500.00	89.95	0.20	5,154.83	3,697.08	12.91	3,697.10	0.00	0.00	0.00	0.00
8,600.00	89.95	0.20	5,154.91	3,797.08	13.25	3,797.10	0.00	0.00	0.00	0.00
8,700.00	89.95	0.20	5,154.99	3,897.08	13.60	3,897.10	0.00	0.00	0.00	0.00
8,716.59	89.95	0.20	5,155.00	3,913.67	13.66	3,913.69	0.00	0.00	0.00	0.00

**Target - Toe**

8,716.60	89.95	0.20	5,155.00	3,913.68	13.66	3,913.70	0.00	0.00	0.00	0.00
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**TD @ 8716.60ft - LINCOLN 1748-11-11-H\_BHL****Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,385.05	4,385.05	0.00	0.00	KOP @ 4385.05ft
4,700.00	4,689.95	68.14	0.24	DLS = 8.00/100ft
5,260.05	5,058.06	471.24	1.64	Begin Hold @ 70.00 INC
5,410.05	5,109.36	612.19	2.14	Continue Build @ 5410.05ft MD :: DLS = 8.00/100ft
5,659.47	5,152.55	856.57	2.99	End Build @ 5659.47ft
8,716.60	5,155.00	3,913.68	13.66	TD @ 8716.60ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
TD	No Target (Freehand)	0.20	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	8,716.60	Plan A0 - PERMIT	MWD

## Plan Report for LINCOLN 1748-11-11-H - Plan A0 - PERMIT

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
506.00	506.00	Niobrara		0.00	
574.00	574.00	Ft Hays Limestone		0.00	
1,067.00	1,067.00	Dakota Sandstone		0.00	
1,345.00	1,345.00	Cheyenne Sandstone		0.00	
2,165.00	2,165.00	Blaine Anhydrite		0.00	
2,320.00	2,320.00	Cedar Hills (Lyons) Sandstone		0.00	
2,461.00	2,461.00	Stone Corral Anhydrite		0.00	
3,141.00	3,141.00	Neva Limestone		0.00	
3,611.00	3,611.00	Shawnee		0.00	
3,830.00	3,830.00	Lansing		0.00	
4,221.00	4,221.00	Marmaton		0.00	
4,384.00	4,384.00	Cherokee		0.00	
4,576.26	4,574.00	Atoka		0.00	
4,815.44	4,790.00	Morrow		0.00	
5,176.57	5,025.00	Keyes		0.00	
5,226.90	5,046.00	Mississippian		0.00	
5,515.44	5,138.00	Spergen		0.00	
5,659.47	5,152.55	Target - Heel		0.00	
8,716.59	5,155.00	Target - Toe		0.00	

***Targets associated with this wellbore***

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
LINCOLN 1748-11-11-H_SHL	0.00	0.00	0.00	Point
LINCOLN 1748-11-11-H_BHL	5,155.00	3,913.68	13.43	Point

## North Reference Sheet for Sec. 11-T17S-R48W - LINCOLN 1748-11-11-H - Plan A0

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

Vertical Depths are relative to RKB = 25 @ 4258.00ft (Drilling Rig). Northing and Easting are relative to LINCOLN 1748-11-11-H

Coordinate System is US State Plane 1983, Colorado Southern 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:38.433333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 1.00003162

Grid Coordinates of Well: 1,710,647.26 ft N, 3,781,616.59 ft E

Geographical Coordinates of Well: 38° 35' 12.61" N, 102° 45' 55.29" W

Grid Convergence at Surface is: 1.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 8,716.60ft  
the Bottom Hole Displacement is 3,913.70ft in the Direction of 0.20° (True).

Magnetic Convergence at surface is: -5.76° (25 July 2013, , BGGM2013)

