

Chama Oil and Minerals, LLC - SECO



Project: Kiowa County, CO
 Site: Sec 16-T19S-R48W
 Well: Fischer State 16-19-48 #1H
 Wellbore: Original Hole
 Plan 1
 Rig: Xtreme 11

Surface Location:
 SHL 660' FNL & 600' FWL Sec 16-T19S-R48W

US State Plane 1983
 Colorado Southern Zone
 Elevation: 4026' GL + 20' KB @ 4046.00ft (Xtreme 11)
 Northing 1645934.25 Easting 3773052.33 Latitude 38° 24' 35.638 N Longitude 102° 48' 6.731 W

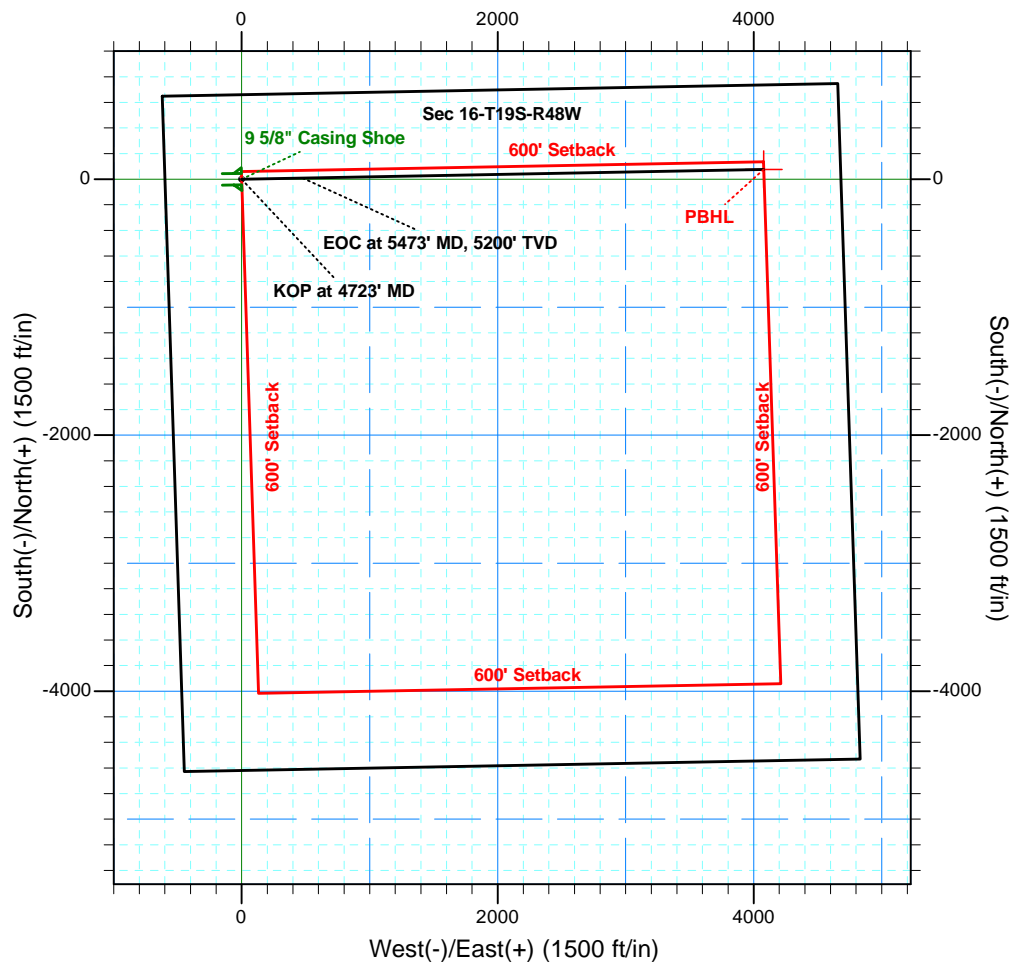
SECTION DETAILS Plan 1

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4722.54	0.00	0.00	4722.54	0.00	0.00	0.00	0.00	0.00	KOP at 4723' MD
5472.54	90.00	88.93	5200.00	8.95	477.38	12.00	88.93	477.46	EOC at 5473' MD, 5200' TVD
9074.38	90.00	88.93	5200.00	76.44	4078.59	0.00	0.00	4079.31	PBHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL	5200.00	76.44	4078.59	38° 24' 35.226 N	102° 47' 15.485 W

To convert a Magnetic Direction to a Grid Direction, Add 5.75°



Azimuths to Grid North
 True North: -1.65°
 Magnetic North: 5.75°

Magnetic Field
 Strength: 52086.0snT
 Dip Angle: 65.67°
 Date: 03/27/2013
 Model: IGRF2010

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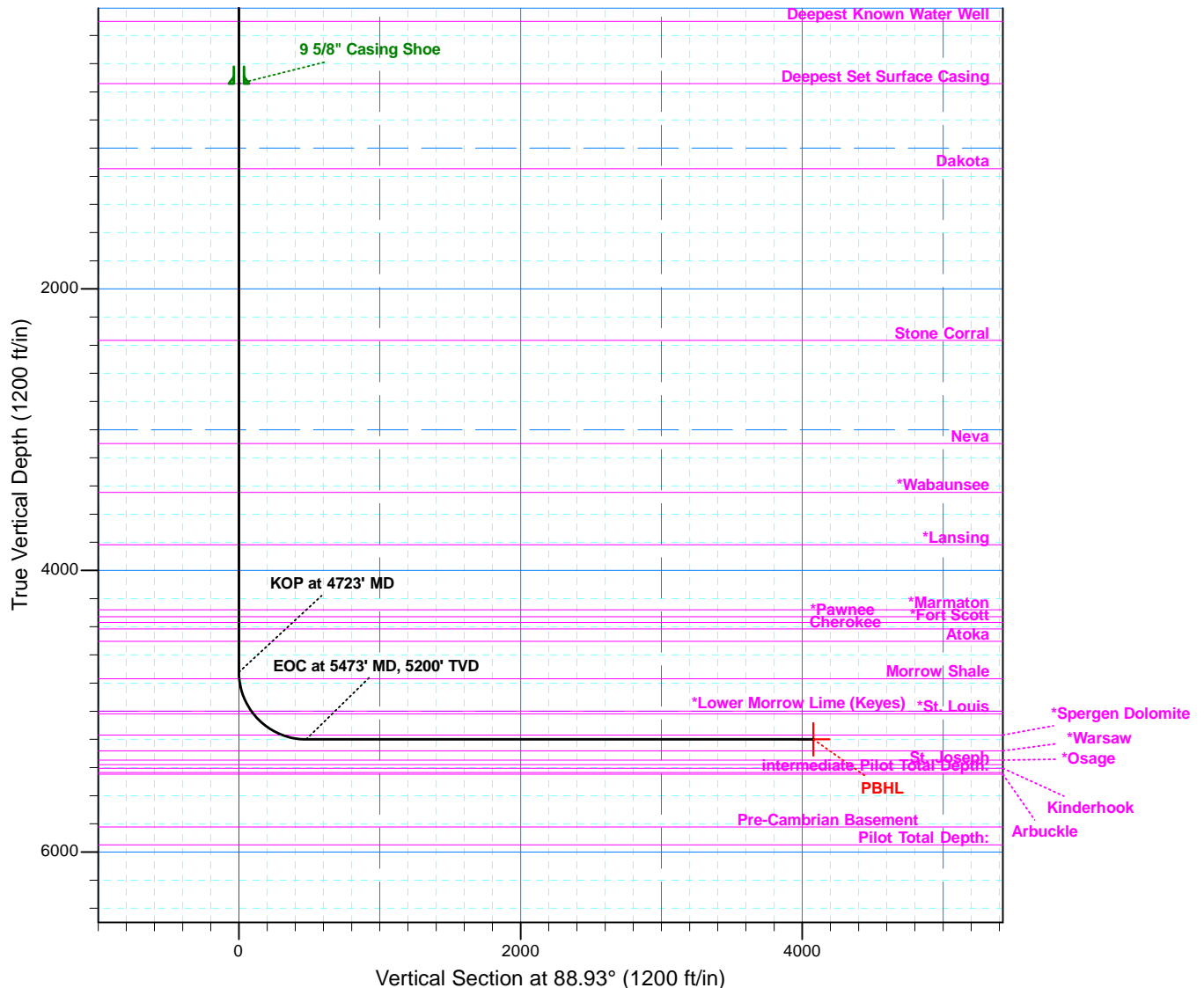
US State Plane 1983
 Colorado Southern Zone
 Elevation: 4026' GL + 20' KB @ 4046.00ft (Xtreme 11)
 Northing 1645934.25 Easting 3773052.33 Latitude 38° 24' 35.638 N Longitude 102° 48' 6.731 W

SECTION DETAILS Plan 1

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4722.54	0.00	0.00	4722.54	0.00	0.00	0.00	0.00	0.00	KOP at 4723' MD
5472.54	90.00	88.93	5200.00	8.95	477.38	12.00	88.93	477.46	EOC at 5473' MD, 5200' TVD
9074.38	90.00	88.93	5200.00	76.44	4078.59	0.00	0.00	4079.31	PBHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL	5200.00	76.44	4078.59	38° 24' 35.226 N	102° 47' 15.485 W



Chama Oil and Minerals, LLC - SECO

Kiowa County, CO

Sec 16-T19S-R48W

Fischer State 16-19-48 #1H

Original Hole

Plan: Plan 1

Standard Planning Report

27 March, 2013



Professional Directional LTD

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Fischer State 16-19-48 #1H
Company:	Chama Oil and Minerals, LLC - SECO	TVD Reference:	4026' GL + 20' KB @ 4046.00ft (Xtreme 11)
Project:	Kiowa County, CO	MD Reference:	4026' GL + 20' KB @ 4046.00ft (Xtreme 11)
Site:	Sec 16-T19S-R48W	North Reference:	Grid
Well:	Fischer State 16-19-48 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan 1		

Project	Kiowa County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site		Sec 16-T19S-R48W			
Site Position:		Northing:	1,645,934.24 ft	Latitude:	38° 24' 35.638 N
From:	Lat/Long	Easting:	3,773,052.33 ft	Longitude:	102° 48' 6.731 W
Position Uncertainty:	0.00 ft	Slot Radius:	1.10000 ft	Grid Convergence:	1.65 °

Well	Fischer State 16-19-48 #1H					
Well Position	+N/-S	0.00 ft	Northing:	1,645,934.24 ft	Latitude:	38° 24' 35.638 N
	+E/-W	0.00 ft	Easting:	3,773,052.33 ft	Longitude:	102° 48' 6.731 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,026.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	03/27/13	7.40	65.67	52,086

Design	Plan 1				
Audit Notes:	SHL 660' FNL & 600' FWL Sec 16-T19S-R48W				
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	88.93	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,722.54	0.00	0.00	4,722.54	0.00	0.00	0.00	0.00	0.00	0.00	
5,472.54	90.00	88.93	5,200.00	8.95	477.38	12.00	12.00	0.00	88.93	
9,074.38	90.00	88.93	5,200.00	76.44	4,078.59	0.00	0.00	0.00	0.00	PBHL

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Site:	Sec 16-T19S-R48W	North Reference:	Grid
Well:	Fischer State 16-19-48 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan 1		

Planned Survey									
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)
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
Deepest Known Water Well									
542.00	0.00	0.00	542.00	0.00	0.00	0.00	0.00	0.00	0.00
Deepest Set Surface Casing - 9 5/8" Casing Shoe									
1,146.00	0.00	0.00	1,146.00	0.00	0.00	0.00	0.00	0.00	0.00
Dakota									
2,366.00	0.00	0.00	2,366.00	0.00	0.00	0.00	0.00	0.00	0.00
Stone Corral									
3,099.00	0.00	0.00	3,099.00	0.00	0.00	0.00	0.00	0.00	0.00
Neva									
3,445.00	0.00	0.00	3,445.00	0.00	0.00	0.00	0.00	0.00	0.00
*Wabaunsee									
3,817.00	0.00	0.00	3,817.00	0.00	0.00	0.00	0.00	0.00	0.00
*Lansing									
4,279.00	0.00	0.00	4,279.00	0.00	0.00	0.00	0.00	0.00	0.00
*Marmaton									
4,329.00	0.00	0.00	4,329.00	0.00	0.00	0.00	0.00	0.00	0.00
*Pawnee									
4,369.00	0.00	0.00	4,369.00	0.00	0.00	0.00	0.00	0.00	0.00
*Fort Scott									
4,415.00	0.00	0.00	4,415.00	0.00	0.00	0.00	0.00	0.00	0.00
Cherokee									
4,504.00	0.00	0.00	4,504.00	0.00	0.00	0.00	0.00	0.00	0.00
Atoka									
4,722.54	0.00	0.00	4,722.54	0.00	0.00	0.00	0.00	0.00	0.00
KOP at 4723' MD									
4,769.07	5.58	88.93	4,769.00	0.04	2.27	2.27	12.00	12.00	0.00
Morrow Shale									
4,800.00	9.30	88.93	4,799.66	0.12	6.27	6.27	12.00	12.00	0.00
4,900.00	21.30	88.93	4,895.94	0.61	32.60	32.60	12.00	12.00	0.00
5,000.00	33.30	88.93	4,984.64	1.47	78.36	78.38	12.00	12.00	0.00
5,017.39	35.38	88.93	4,999.00	1.65	88.17	88.18	12.00	12.00	0.00
*Lower Morrow Lime (Keyes)									
5,042.39	38.38	88.93	5,019.00	1.93	103.17	103.19	12.00	12.00	0.00
*St. Louis									
5,100.00	45.30	88.93	5,061.89	2.65	141.57	141.59	12.00	12.00	0.00
5,200.00	57.30	88.93	5,124.31	4.11	219.45	219.49	12.00	12.00	0.00
5,300.00	69.30	88.93	5,169.16	5.78	308.61	308.66	12.00	12.00	0.00
5,302.38	69.58	88.93	5,170.00	5.83	310.83	310.89	12.00	12.00	0.00
*Spergen Dolomite									
5,400.00	81.30	88.93	5,194.50	7.59	405.14	405.21	12.00	12.00	0.00
5,472.54	90.00	88.93	5,200.00	8.95	477.38	477.46	12.00	12.00	0.00
EOC at 5473' MD, 5200' TVD									
5,500.00	90.00	88.93	5,200.00	9.46	504.84	504.93	0.00	0.00	0.00
5,600.00	90.00	88.93	5,200.00	11.33	604.82	604.93	0.00	0.00	0.00
5,700.00	90.00	88.93	5,200.00	13.21	704.81	704.93	0.00	0.00	0.00
5,800.00	90.00	88.93	5,200.00	15.08	804.79	804.93	0.00	0.00	0.00
5,900.00	90.00	88.93	5,200.00	16.96	904.77	904.93	0.00	0.00	0.00
6,000.00	90.00	88.93	5,200.00	18.83	1,004.75	1,004.93	0.00	0.00	0.00
6,100.00	90.00	88.93	5,200.00	20.70	1,104.74	1,104.93	0.00	0.00	0.00
6,200.00	90.00	88.93	5,200.00	22.58	1,204.72	1,204.93	0.00	0.00	0.00

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Site:	Sec 16-T19S-R48W	North Reference:	Grid
Well:	Fischer State 16-19-48 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan 1		

Planned Survey										
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)	
6,300.00	90.00	88.93	5,200.00	24.45	1,304.70	1,304.93	0.00	0.00	0.00	
6,400.00	90.00	88.93	5,200.00	26.32	1,404.68	1,404.93	0.00	0.00	0.00	
6,500.00	90.00	88.93	5,200.00	28.20	1,504.67	1,504.93	0.00	0.00	0.00	
6,600.00	90.00	88.93	5,200.00	30.07	1,604.65	1,604.93	0.00	0.00	0.00	
6,700.00	90.00	88.93	5,200.00	31.95	1,704.63	1,704.93	0.00	0.00	0.00	
6,800.00	90.00	88.93	5,200.00	33.82	1,804.61	1,804.93	0.00	0.00	0.00	
6,900.00	90.00	88.93	5,200.00	35.69	1,904.60	1,904.93	0.00	0.00	0.00	
7,000.00	90.00	88.93	5,200.00	37.57	2,004.58	2,004.93	0.00	0.00	0.00	
7,100.00	90.00	88.93	5,200.00	39.44	2,104.56	2,104.93	0.00	0.00	0.00	
7,200.00	90.00	88.93	5,200.00	41.31	2,204.54	2,204.93	0.00	0.00	0.00	
7,300.00	90.00	88.93	5,200.00	43.19	2,304.53	2,304.93	0.00	0.00	0.00	
7,400.00	90.00	88.93	5,200.00	45.06	2,404.51	2,404.93	0.00	0.00	0.00	
7,500.00	90.00	88.93	5,200.00	46.94	2,504.49	2,504.93	0.00	0.00	0.00	
7,600.00	90.00	88.93	5,200.00	48.81	2,604.47	2,604.93	0.00	0.00	0.00	
7,700.00	90.00	88.93	5,200.00	50.68	2,704.45	2,704.93	0.00	0.00	0.00	
7,800.00	90.00	88.93	5,200.00	52.56	2,804.44	2,804.93	0.00	0.00	0.00	
7,900.00	90.00	88.93	5,200.00	54.43	2,904.42	2,904.93	0.00	0.00	0.00	
8,000.00	90.00	88.93	5,200.00	56.30	3,004.40	3,004.93	0.00	0.00	0.00	
8,100.00	90.00	88.93	5,200.00	58.18	3,104.38	3,104.93	0.00	0.00	0.00	
8,200.00	90.00	88.93	5,200.00	60.05	3,204.37	3,204.93	0.00	0.00	0.00	
8,300.00	90.00	88.93	5,200.00	61.93	3,304.35	3,304.93	0.00	0.00	0.00	
8,400.00	90.00	88.93	5,200.00	63.80	3,404.33	3,404.93	0.00	0.00	0.00	
8,500.00	90.00	88.93	5,200.00	65.67	3,504.31	3,504.93	0.00	0.00	0.00	
8,600.00	90.00	88.93	5,200.00	67.55	3,604.30	3,604.93	0.00	0.00	0.00	
8,700.00	90.00	88.93	5,200.00	69.42	3,704.28	3,704.93	0.00	0.00	0.00	
8,800.00	90.00	88.93	5,200.00	71.29	3,804.26	3,804.93	0.00	0.00	0.00	
8,900.00	90.00	88.93	5,200.00	73.17	3,904.24	3,904.93	0.00	0.00	0.00	
9,000.00	90.00	88.93	5,200.00	75.04	4,004.23	4,004.93	0.00	0.00	0.00	
9,074.38	90.00	88.93	5,200.00	76.44	4,078.59	4,079.31	0.00	0.00	0.00	
PBHL										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (ft)	Hole Diameter (ft)	
542.00	542.00	9 5/8" Casing Shoe	0.80208	1.02083	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Fischer State 16-19-48 #1H
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Project:	Kiowa County, CO	MD Reference:	4026' GL + 20' KB @ 4046.00ft (Xtreme 11)
Site:	Sec 16-T19S-R48W	North Reference:	Grid
Well:	Fischer State 16-19-48 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan 1		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
100.00	100.00	Deepest Known Water Well			
542.00	542.00	Deepest Set Surface Casing			
1,146.00	1,146.00	Dakota			
2,366.00	2,366.00	Stone Corral			
3,099.00	3,099.00	Neva			
3,445.00	3,445.00	*Wabaunsee			
3,817.00	3,817.00	*Lansing			
4,279.00	4,279.00	*Marmaton			
4,329.00	4,329.00	*Pawnee			
4,369.00	4,369.00	*Fort Scott			
4,415.00	4,415.00	Cherokee			
4,504.00	4,504.00	Atoka			
4,769.07	4,769.00	Morrow Shale			
5,017.39	4,999.00	*Lower Morrow Lime (Keyes)			
5,042.39	5,019.00	*St. Louis			
5,302.38	5,170.00	*Spargen Dolomite			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,722.54	4,722.54	0.00	0.00	KOP at 4723' MD
5,472.54	5,200.00	8.95	477.38	EOC at 5473' MD, 5200' TVD
9,074.38	5,200.00	76.44	4,078.59	PBHL