

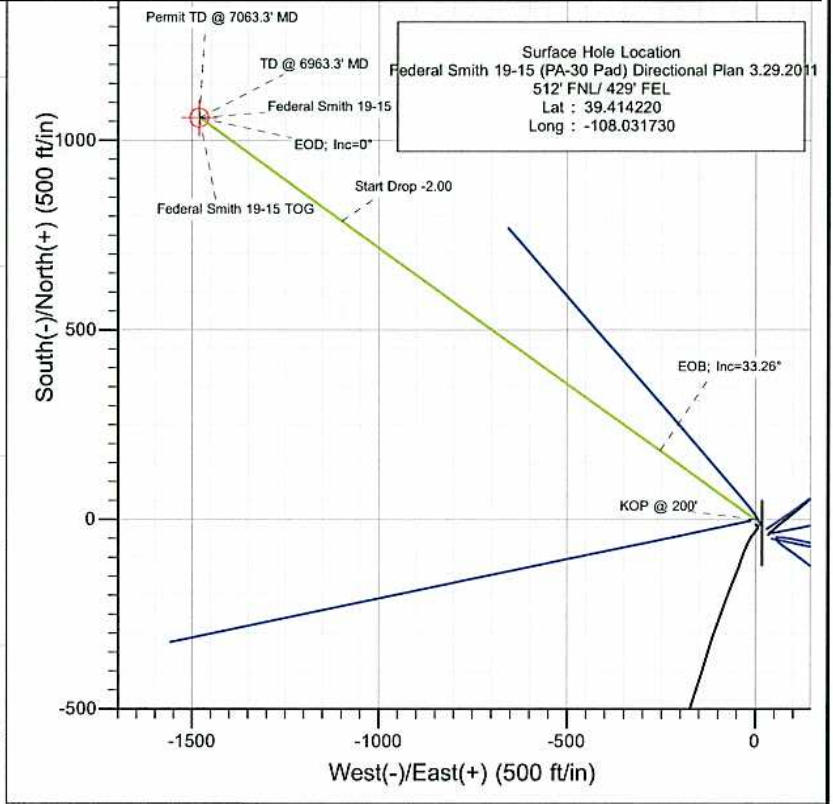
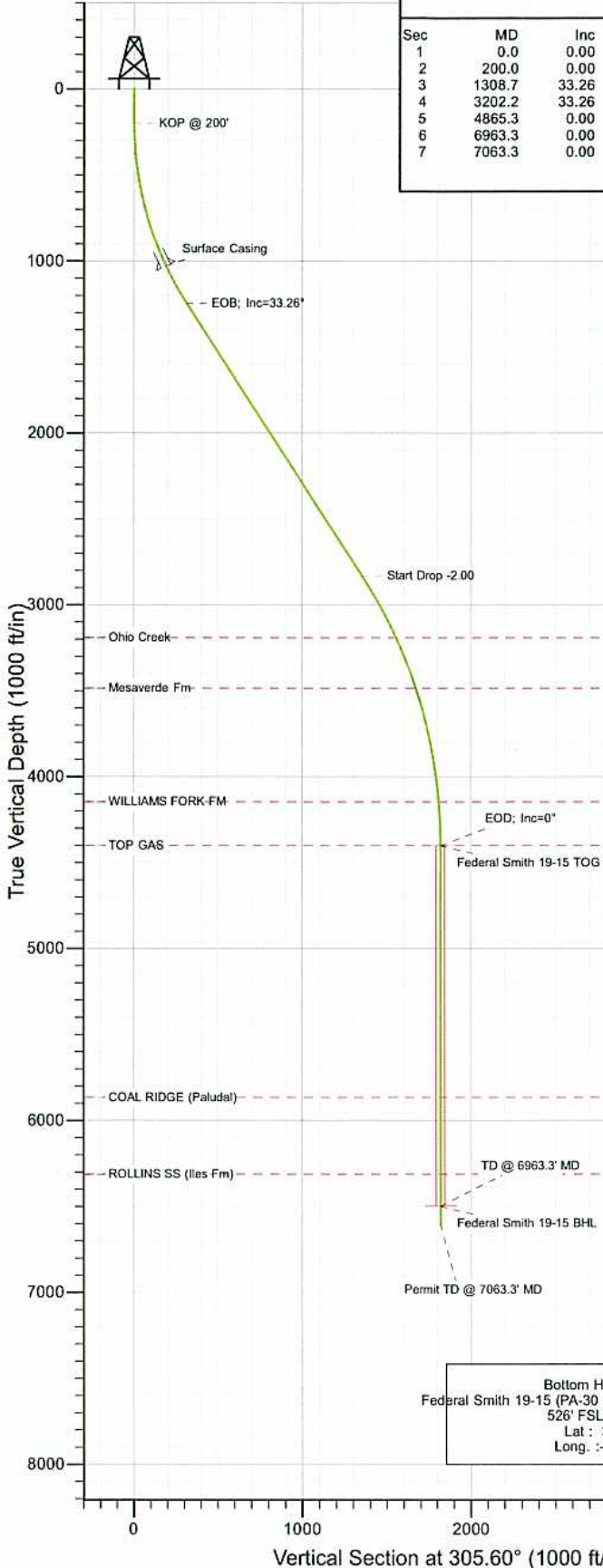


Project: S. Piceance (Parachute)
 Site: SESE 19-7S-95W (PA-30 Pad)
 Well: Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29.2011
 Wellbore: DD
 Design: Plan #1



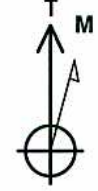
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSEct	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1308.7	33.26	305.60	1247.5	182.2	-254.4	3.00	305.60	312.9	
4	3202.2	33.26	305.60	2830.7	786.7	-1098.8	0.00	0.00	1351.4	
5	4865.3	0.00	0.00	4402.0	1060.0	-1480.4	2.00	180.00	1820.7	Federal Smith 19-15 TOG
6	6963.3	0.00	0.00	6500.0	1060.0	-1480.4	0.00	0.00	1820.7	Federal Smith 19-15 BHL
7	7063.3	0.00	0.00	6600.0	1060.0	-1480.4	0.00	0.00	1820.7	



FORMATION TOP DETAILS

VDPPath	MDPath	Formation
3191.0	3615.0	Ohio Creek
3485.0	3931.9	Mesaverde Fm
4147.0	4610.0	WILLIAMS FORK FM
4402.0	4865.3	TOP GAS
5868.0	6331.3	COAL RIDGE (Paludal)
6314.0	6777.3	ROLLINS SS (Iles Fm)



Azimuths to True North
 Magnetic North: 10.38°
 Magnetic Field
 Strength: 52223.7snT
 Dip Angle: 65.67°
 Date: 3/29/2011
 Model: IGRF2010

DESIGN DETAILS: Plan #1

Job #10xxx: KR
 WELL @ 5827.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Federal Smith 19-15 BHL	305.60	Slot	0.0	0.0	6500.0

Bottom Hole Location
 Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29.2011
 526' FSL/ 1981' FEL
 Lat : 39.41713
 Long: -108.03697

Vertical Section at 305.60° (1000 ft/in)

Cathedral Energy Services

Planning Report

Database: EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference: Well Federal Smith 19-15 (PA-30 Pad) Direction
Company: EnCana Oil & Gas (USA) Inc	TVD Reference: WELL @ 5827.0ft (Original Well Elev)
Project: S. Piceance (Parachute)	MD Reference: WELL @ 5827.0ft (Original Well Elev)
Site: SESE 19-7S-95W (PA-30 Pad)	North Reference: True
Well: Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29	Survey Calculation Method: Minimum Curvature
Wellbore: DD	
Design: Plan #1	

Project S. Piceance (Parachute), Garfield County, CO
Map System: US State Plane 1983 System Datum: Mean Sea Level
Geo Datum: North American Datum 1983
Map Zone: Colorado Central Zone

Site SESE 19-7S-95W (PA-30 Pad)
Site Position: Northing: 1,585,669.17 ft Latitude: 39.414060
From: Lat/Long Easting: 2,284,869.32 ft Longitude: -108.031520
Position Uncertainty: 0.0 ft Slot Radius: 13.200 in Grid Convergence: -1.60 °

Well Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29.2011
Well Position +N/-S 0.0 ft Northing: 1,585,729.07 ft Latitude: 39.414220
+E/-W 0.0 ft Easting: 2,284,811.64 ft Longitude: -108.031730
Position Uncertainty 0.0 ft Wellhead Elevation: ft Ground Level: 5,805.0 ft

Wellbore DD
Magnetics
Model Name Sample Date Declination Dip Angle Field Strength
IGRF2010 3/29/2011 (°) 10.39 (°) 65.67 (nT) 52,224

Design Plan #1
Audit Notes:
Version: Phase: PLAN Tie On Depth: 0.0
Vertical Section:
Depth From (TVD) +N/-S +E/-W Direction
(ft) (ft) (ft) (°)
6,500.0 0.0 0.0 305.60

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,308.7	33.26	305.60	1,247.5	182.2	-254.4	3.00	3.00	0.00	305.60	
3,202.2	33.26	305.60	2,830.7	786.7	-1,098.8	0.00	0.00	0.00	0.00	
4,865.3	0.00	0.00	4,402.0	1,060.0	-1,480.4	2.00	-2.00	0.00	180.00	Federal Smith 19-15
6,963.3	0.00	0.00	6,500.0	1,060.0	-1,480.4	0.00	0.00	0.00	0.00	Federal Smith 19-15
7,063.3	0.00	0.00	6,600.0	1,060.0	-1,480.4	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal Smith 19-15 (PA-30 Pad) Direction
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	3.00	305.60	300.0	1.5	-2.1	2.6	3.00	3.00	
400.0	6.00	305.60	399.6	6.1	-8.5	10.5	3.00	3.00	
500.0	9.00	305.60	498.8	13.7	-19.1	23.5	3.00	3.00	
600.0	12.00	305.60	597.1	24.3	-33.9	41.7	3.00	3.00	
700.0	15.00	305.60	694.3	37.9	-52.9	65.1	3.00	3.00	
800.0	18.00	305.60	790.2	54.4	-76.0	93.5	3.00	3.00	
900.0	21.00	305.60	884.4	73.8	-103.1	126.9	3.00	3.00	
1,000.0	24.00	305.60	976.8	96.1	-134.3	165.1	3.00	3.00	
1,059.0	25.77	305.60	1,030.3	110.6	-154.4	189.9	3.00	3.00	Surface Casing
1,100.0	27.00	305.60	1,067.1	121.2	-169.3	208.2	3.00	3.00	
1,200.0	30.00	305.60	1,154.9	149.0	-208.0	255.9	3.00	3.00	
1,300.0	33.00	305.60	1,240.2	179.4	-250.5	308.1	3.00	3.00	
1,308.7	33.26	305.60	1,247.5	182.2	-254.4	312.9	3.00	3.00	EOB; Inc=33.26°
1,400.0	33.26	305.60	1,323.8	211.3	-295.1	362.9	0.00	0.00	
1,500.0	33.26	305.60	1,407.4	243.2	-339.7	417.8	0.00	0.00	
1,600.0	33.26	305.60	1,491.0	275.2	-384.3	472.6	0.00	0.00	
1,700.0	33.26	305.60	1,574.7	307.1	-428.9	527.5	0.00	0.00	
1,800.0	33.26	305.60	1,658.3	339.0	-473.5	582.3	0.00	0.00	
1,900.0	33.26	305.60	1,741.9	370.9	-518.1	637.2	0.00	0.00	
2,000.0	33.26	305.60	1,825.5	402.9	-562.7	692.0	0.00	0.00	
2,100.0	33.26	305.60	1,909.1	434.8	-607.3	746.9	0.00	0.00	
2,200.0	33.26	305.60	1,992.7	466.7	-651.9	801.7	0.00	0.00	
2,300.0	33.26	305.60	2,076.4	498.7	-696.5	856.6	0.00	0.00	
2,400.0	33.26	305.60	2,160.0	530.6	-741.0	911.4	0.00	0.00	
2,500.0	33.26	305.60	2,243.6	562.5	-785.6	966.3	0.00	0.00	
2,600.0	33.26	305.60	2,327.2	594.5	-830.2	1,021.1	0.00	0.00	
2,700.0	33.26	305.60	2,410.8	626.4	-874.8	1,076.0	0.00	0.00	
2,800.0	33.26	305.60	2,494.4	658.3	-919.4	1,130.8	0.00	0.00	
2,900.0	33.26	305.60	2,578.1	690.2	-964.0	1,185.7	0.00	0.00	
3,000.0	33.26	305.60	2,661.7	722.2	-1,008.6	1,240.5	0.00	0.00	
3,100.0	33.26	305.60	2,745.3	754.1	-1,053.2	1,295.4	0.00	0.00	
3,200.0	33.26	305.60	2,828.9	786.0	-1,097.8	1,350.2	0.00	0.00	
3,202.2	33.26	305.60	2,830.7	786.7	-1,098.8	1,351.4	0.00	0.00	Start Drop -2.00
3,300.0	31.31	305.60	2,913.4	817.1	-1,141.3	1,403.6	2.00	-2.00	
3,400.0	29.31	305.60	2,999.8	846.5	-1,182.3	1,454.1	2.00	-2.00	
3,500.0	27.31	305.60	3,087.8	874.1	-1,220.8	1,501.5	2.00	-2.00	
3,600.0	25.31	305.60	3,177.4	899.9	-1,256.9	1,545.8	2.00	-2.00	
3,615.0	25.01	305.60	3,191.0	903.6	-1,262.0	1,552.2	2.00	-2.00	Ohio Creek
3,700.0	23.31	305.60	3,268.6	923.9	-1,290.3	1,587.0	2.00	-2.00	
3,800.0	21.31	305.60	3,361.1	946.0	-1,321.2	1,624.9	2.00	-2.00	
3,900.0	19.31	305.60	3,454.9	966.2	-1,349.4	1,659.6	2.00	-2.00	
3,931.9	18.67	305.60	3,485.0	972.2	-1,357.8	1,670.0	2.00	-2.00	Mesaverde Fm
4,000.0	17.31	305.60	3,549.8	984.5	-1,374.9	1,691.0	2.00	-2.00	
4,100.0	15.31	305.60	3,645.8	1,000.8	-1,397.8	1,719.1	2.00	-2.00	
4,200.0	13.31	305.60	3,742.7	1,015.2	-1,417.9	1,743.8	2.00	-2.00	
4,300.0	11.31	305.60	3,840.4	1,027.6	-1,435.2	1,765.1	2.00	-2.00	
4,400.0	9.31	305.60	3,938.7	1,038.0	-1,449.7	1,783.0	2.00	-2.00	
4,500.0	7.31	305.60	4,037.7	1,046.4	-1,461.5	1,797.5	2.00	-2.00	
4,600.0	5.31	305.60	4,137.1	1,052.8	-1,470.4	1,808.5	2.00	-2.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal Smith 19-15 (PA-30 Pad) Direction
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
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Well:	Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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)	Comments / Formations
4,610.0	5.11	305.60	4,147.0	1,053.3	-1,471.1	1,809.4	2.00	-2.00	WILLIAMS FORK FM
4,700.0	3.31	305.60	4,236.8	1,057.2	-1,476.5	1,816.0	2.00	-2.00	
4,800.0	1.31	305.60	4,336.7	1,059.5	-1,479.8	1,820.0	2.00	-2.00	
4,865.3	0.00	0.00	4,402.0	1,060.0	-1,480.4	1,820.7	2.00	-2.00	EOD; Inc=0° - TOP GAS - Federal Smith 19-15
4,900.0	0.00	0.00	4,436.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,000.0	0.00	0.00	4,536.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,100.0	0.00	0.00	4,636.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,200.0	0.00	0.00	4,736.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,300.0	0.00	0.00	4,836.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,400.0	0.00	0.00	4,936.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,500.0	0.00	0.00	5,036.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,600.0	0.00	0.00	5,136.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,700.0	0.00	0.00	5,236.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,800.0	0.00	0.00	5,336.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
5,900.0	0.00	0.00	5,436.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,000.0	0.00	0.00	5,536.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,100.0	0.00	0.00	5,636.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,200.0	0.00	0.00	5,736.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,300.0	0.00	0.00	5,836.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,331.3	0.00	0.00	5,868.0	1,060.0	-1,480.4	1,820.7	0.00	0.00	COAL RIDGE (Paludal)
6,400.0	0.00	0.00	5,936.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,500.0	0.00	0.00	6,036.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,600.0	0.00	0.00	6,136.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,700.0	0.00	0.00	6,236.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,777.3	0.00	0.00	6,314.0	1,060.0	-1,480.4	1,820.7	0.00	0.00	ROLLINS SS (Iles Fm)
6,800.0	0.00	0.00	6,336.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,900.0	0.00	0.00	6,436.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
6,963.3	0.00	0.00	6,500.0	1,060.0	-1,480.4	1,820.7	0.00	0.00	TD @ 6963.3' MD - Federal Smith 19-15 BHL
7,000.0	0.00	0.00	6,536.7	1,060.0	-1,480.4	1,820.7	0.00	0.00	
7,063.3	0.00	0.00	6,600.0	1,060.0	-1,480.4	1,820.7	0.00	0.00	

Targets

Target Name	- hit/miss target	- Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Federal Smith 19-15 TO			0.00	0.00	4,402.0	1,060.0	-1,480.4	1,586,829.88	2,283,361.36	39.417130	-108.036970
- plan hits target center											
- Point											
Federal Smith 19-15 BH			0.00	0.00	6,500.0	1,060.0	-1,480.4	1,586,829.88	2,283,361.36	39.417130	-108.036970
- plan hits target center											
- Circle (radius 25.0)											

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,059.0	1,030.3	Surface Casing	5.500	6.000

Cathedral Energy Services

Planning Report

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Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,615.0	3,191.0	Ohio Creek			
3,931.9	3,485.0	Mesaverde Fm			
4,610.0	4,147.0	WILLIAMS FORK FM			
4,865.3	4,402.0	TOP GAS			
6,331.3	5,868.0	COAL RIDGE (Paludal)			
6,777.3	6,314.0	ROLLINS SS (Iles Fm)			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200'
1,308.7	1,247.5	182.2	-254.4	EOB; Inc=33.26°
3,202.2	2,830.7	786.7	-1,098.8	Start Drop -2.00
4,865.3	4,402.0	1,060.0	-1,480.4	EOD; Inc=0°
6,963.3	6,500.0	1,060.0	-1,480.4	TD @ 6963.3' MD
7,063.3	6,600.0	1,060.0	-1,480.4	Permit TD @ 7063.3' MD