



Weatherford®

Evaluation, Drilling & Intervention

10000 West County Rd. 116

P.O. Box 61028

Midland, TX USA 79711

Tel. (432) 561-8892 Fax (432) 561-8895

HOBBS OCD

JUN 02 2017

RECEIVED

Date: January 10, 2017

Devon Energy
333 W. Sheridan Ave
Oklahoma City, OK, 73102

Attention: Garrett Glaze

Re: Devon Energy
Well: Morab 29-20 Fed Com 1H
Lea County, New Mexico

Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

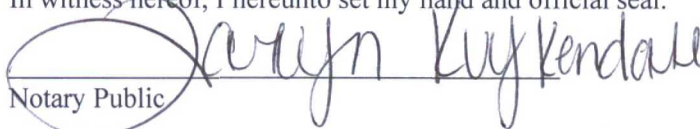
<u>Name & Title Of Surveyor</u>	<u>Well Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Andrew Schmidt MWD Supervisor	1H ST00	4357 MD 12211 MD	12/01/2016 12/06/2016	Measurement While Drilling
Andrew Schmidt MWD Supervisor	1H ST01	10036 MD 17621 MD	12/15/2016 12/22.2016	Measurement While Drilling

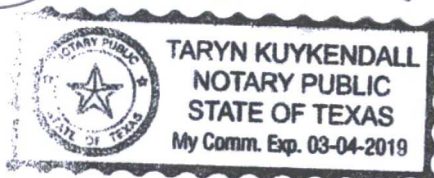
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


Jonathan Leger
MWD Ops Coordinator

On this, the 8th day of January 20 17, before me a notary public, the undersigned officer, personally appeared Jonathan Leger, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.


Notary Public



**5D Survey Report**

Devon Energy**Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Morab 29-20 Fed Com 1H***Well Name:** *Morab 29-20 Fed Com 1H Pilot Hole***Survey:** *Definitive survey*

10 January 2017





Devon Energy
Morab 29-20 Fed Com 1H
Lea Co, NM



Plan Data for Morab 29-20 Fed Com 1H Pilot Hole

Plan Point Information:									
DogLeg Severity Unit: °/100.00ft									
Position offsets from Slot centre									
MD Inc	Az	TVD	Elevation	+N/-S	+E/-W	Northing	Easting	VSec	DLS
(USft)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
4266.00	2.29	124.24	4264.11	-873.21	78.48	-3.38	401448.49	736286.99	78.50
4688.59	2.00	182.80	4686.46	-1295.56	66.36	3.24	401436.37	736293.61	66.34
6392.29	2.00	182.80	6389.12	-2998.22	6.97	0.34	401376.98	736290.71	6.97
6792.29	0.00	0.00	6789.04	-3398.14	0.00	-0.00	401370.01	736290.37	0.00
12203.26	0.00	0.00	12200.00	-8809.10	0.00	-0.00	401370.01	736290.37	0.00

Plan Data for Morab 29-20 Fed Com 1H Pilot Hole

Field: Lea Co, NM Nad 83 NMEZ
Map Unit: USFt
Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)

Site: Morab 29-20 Fed Com 1H
Unit: USFeet
TVD Reference:
Company Name: Devon Energy
Position:
Northing: 401370.01USft
Latitude: 32°6'6.8"
Easting: 736290.37USft
Longitude: -103°42'13.5"
North Reference: Grid
Grid Convergence: 0.33°
Elevation Above VRD: 3367.40USft

Slot: Morab 29-20 Fed Com 1H

Position:
Offset is from Site centre
Northing: 401370.01USft
Latitude: 32°6'6.8"
+N/-S: 0.00USft
Easting: 736290.37USft
Longitude: -103°42'13.5"
+E/-W: 0.00USft
Elevation Above VRD: 3367.40USft

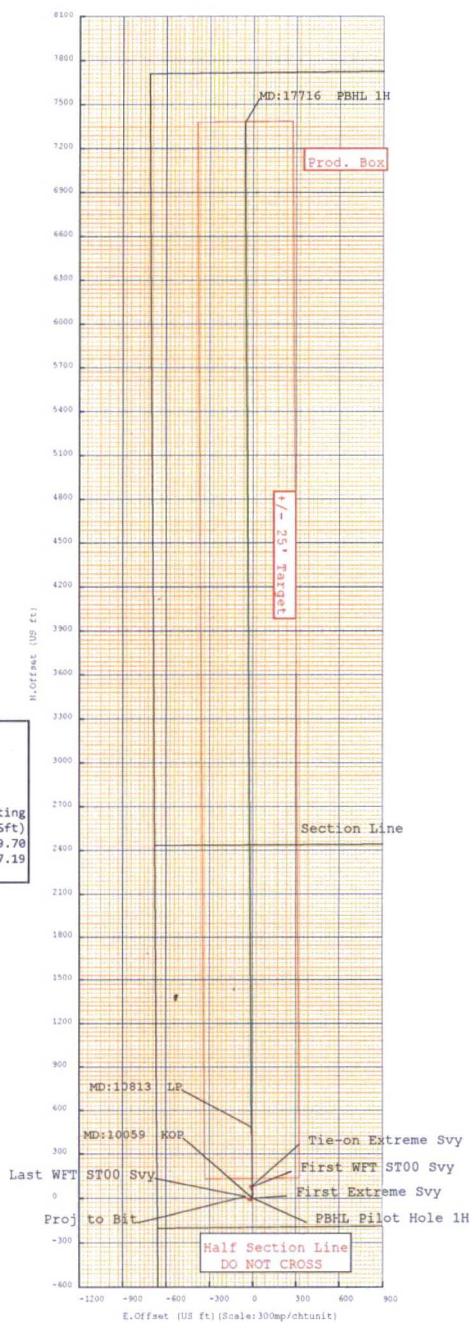
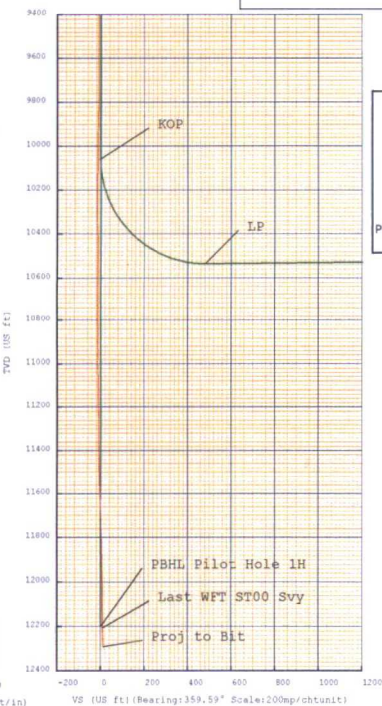
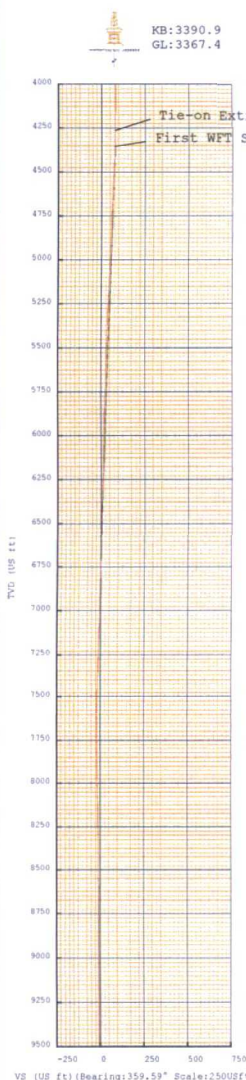
Well: Morab 29-20 Fed Com 1H Pilot Hole

Type: Main-Well
File Number:
Plan Folder: P2
Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: -0.00USft
+E/-W: 0.00USft
Azimuth: 359.59°
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
bggm2016 47999(nT) 7.13° 59.93° 2016-12-01

Morab 29-20 Fed Com 1H Pilot Hole
Morab 29-20 Fed Com 1H Lateral
Morab 29-20 Fed Com 1H Pilot Hole

Plan Data for Morab 29-20 Fed Com 1H Lateral

Target Set Information:
Name: Morab 29-20 Fed Com 1H Tgts
Position offsets from Slot centre
Name
TVD Elevation
(USft)
(USft)
+N/-S
(USft)
+E/-W
(USft)
Northing
(USft)
Easting
(USft)
LP 10540.00 -7149.10 126.29 -0.67 401496.30 736289.70
PBHL 1H 10475.00 -7084.10 7383.59 -53.18 408753.60 736237.19





Morab 29-20 Fed Com 1H Pilot Hole

Field Name: Lea Co, NM Nad 83 NMEZ	Map Units: US ft		Company Name: Devon Energy	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)			
	Comment:			
Site: Morab 29-20 Fed Com 1H	Units: US ft	North Reference: Grid	Convergence Angle: 0.33	
	Position:	Northing: 401370.01 US ft	Latitude: 32° 6' 6.77"	
		Easting: 736290.37 US ft	Longitude: -103° 42' 13.45"	
	Elevation above MSL: 3367.40 US ft		Comment:	
Slot: Morab 29-20 Fed Com 1H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 401370.01 US ft	Latitude: 32° 6' 6.77"	
	+E/-W: 0.00 US ft	Easting: 736290.37 US ft	Longitude: -103° 42' 13.45"	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 3367.40 US ft			
Well: Morab 29-20 Fed Com 1H Pilot Hole	Type: Main well		UWI:	
	File Number:	Comment:		
	Closure Distance: 53.2762 US ft	Closure Azimuth: 283.33°		
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: -0.00 US ft	+E/-W: 0.00 US ft	Az: 359.59°	

Drill floor: Survey Name: Definitive Survey			
Rig Height (Drill Floor): 23.50us ft	Elevation above MSL: 3390.90us ft	Inclination: 0.00°	Azimuth: 0.00°

Survey Name: Definitive Survey					
Date: 24/Oct/2016	Survey Tool: See Survey Tool Ranges below.		Comment:	Company:	
Magnetic Model:					
Model Name: bggm2016	Date: 01/Dec/2016	Field Strength: 47999.8nT	Declination: 7.13°	Dip: 59.93°	
Tie Point:					
MD: 0.00 US ft	Inclination: 0.00°	Azimuth: 0.00°	TVD: -0.00 US ft	North Offset: -0.00 US ft	East Offset: 0.00 US ft

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD	0.00	4266.00	Extreme MWD Svy
MWD	4266.00	10984.00	WFT MWD Svy 1
MWD	10984.00	12298.00	WFT MWD Svy 2

5D Survey Report

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
4266.00	2.29	124.24	4264.11	78.48	-3.38	78.50	0.11	401448.49	736286.99	Tie-on Extreme MWD Svy
4357.00	2.10	133.21	4355.05	76.31	-0.66	76.32	0.43	401446.32	736289.71	First WFT ST00 Svy
4452.00	2.07	135.82	4449.98	73.89	1.81	73.88	0.10	401443.90	736292.18	
4642.00	2.78	164.37	4639.82	66.99	5.44	66.95	0.73	401437.00	736295.81	
4736.00	2.79	183.25	4733.71	62.51	5.92	62.47	0.97	401432.52	736296.29	
4831.00	2.62	188.22	4828.60	58.06	5.48	58.01	0.30	401428.07	736295.85	
4925.00	2.37	194.10	4922.51	54.04	4.70	54.01	0.38	401424.05	736295.07	
5020.00	2.27	195.70	5017.44	50.33	3.71	50.30	0.13	401420.34	736294.08	
5115.00	2.44	190.73	5112.36	46.53	2.83	46.51	0.28	401416.54	736293.20	
5210.00	2.33	198.21	5207.27	42.71	1.85	42.69	0.35	401412.72	736292.22	
5304.00	2.37	198.54	5301.19	39.05	0.63	39.05	0.04	401409.06	736291.00	
5399.00	2.13	196.65	5396.12	35.50	-0.50	35.50	0.26	401405.51	736289.87	
5494.00	1.80	187.52	5491.07	32.33	-1.20	32.33	0.48	401402.34	736289.17	
5588.00	1.93	191.42	5585.02	29.31	-1.71	29.32	0.19	401399.32	736288.66	
5682.00	1.97	185.07	5678.96	26.15	-2.16	26.17	0.23	401396.16	736288.21	
5777.00	1.74	184.61	5773.91	23.09	-2.42	23.10	0.24	401393.10	736287.95	
5871.00	1.49	191.36	5867.87	20.47	-2.78	20.48	0.33	401390.48	736287.59	
5966.00	1.61	197.90	5962.84	17.98	-3.43	18.01	0.22	401387.99	736286.94	
6061.00	1.64	198.63	6057.80	15.43	-4.28	15.46	0.04	401385.44	736286.09	
6155.00	1.47	200.09	6151.77	13.02	-5.12	13.06	0.19	401383.03	736285.25	
6250.00	1.06	187.27	6246.74	11.00	-5.65	11.04	0.52	401381.01	736284.72	
6345.00	1.43	200.82	6341.72	9.02	-6.18	9.07	0.50	401379.03	736284.19	
6439.00	1.19	187.39	6435.70	6.96	-6.72	7.01	0.41	401376.97	736283.65	
6534.00	1.49	191.26	6530.67	4.77	-7.09	4.82	0.33	401374.78	736283.28	
6629.00	1.07	189.56	6625.65	2.68	-7.48	2.74	0.44	401372.69	736282.89	
6723.00	1.47	180.37	6719.62	0.61	-7.63	0.67	0.48	401370.62	736282.74	
6818.00	1.44	184.97	6814.59	-1.80	-7.75	-1.74	0.13	401368.21	736282.62	
6913.00	0.91	156.56	6909.57	-3.68	-7.55	-3.62	0.81	401366.33	736282.82	
7006.00	0.99	186.54	7002.56	-5.15	-7.35	-5.10	0.53	401364.86	736283.02	
7101.00	1.29	201.34	7097.54	-6.96	-7.83	-6.91	0.44	401363.05	736282.54	
7196.00	1.40	188.90	7192.52	-9.11	-8.40	-9.05	0.33	401360.90	736281.97	
7291.00	1.88	190.40	7287.48	-11.79	-8.86	-11.72	0.51	401358.22	736281.51	
7385.00	1.42	180.16	7381.44	-14.47	-9.14	-14.40	0.58	401355.54	736281.23	
7479.00	0.85	165.32	7475.42	-16.31	-8.97	-16.24	0.68	401353.70	736281.40	
7575.00	0.79	128.77	7571.41	-17.41	-8.27	-17.35	0.54	401352.60	736282.10	
7670.00	0.88	114.18	7666.40	-18.12	-7.09	-18.07	0.24	401351.89	736283.28	
7764.00	0.85	75.58	7760.39	-18.24	-5.76	-18.20	0.61	401351.77	736284.61	
7859.00	1.10	82.06	7855.38	-17.94	-4.17	-17.91	0.29	401352.07	736286.20	
7954.00	1.74	37.70	7950.35	-16.67	-2.39	-16.65	1.29	401353.34	736287.98	
8048.00	1.45	28.12	8044.31	-14.49	-0.96	-14.49	0.42	401355.52	736289.41	
8143.00	1.23	20.55	8139.29	-12.48	-0.03	-12.48	0.30	401357.53	736290.34	
8237.00	1.11	22.84	8233.27	-10.69	0.68	-10.70	0.14	401359.32	736291.05	
8331.00	0.86	28.84	8327.25	-9.24	1.37	-9.25	0.29	401360.77	736291.74	
8425.00	0.25	28.17	8421.25	-8.44	1.81	-8.45	0.65	401361.57	736292.18	
8520.00	0.41	333.17	8516.25	-7.95	1.75	-7.97	0.35	401362.06	736292.12	
8615.00	0.76	293.66	8611.24	-7.40	1.02	-7.40	0.54	401362.61	736291.39	
8710.00	0.80	314.37	8706.23	-6.68	-0.03	-6.68	0.30	401363.33	736290.34	
8805.00	1.20	268.23	8801.22	-6.25	-1.50	-6.24	0.91	401363.76	736288.87	
8900.00	1.48	253.02	8896.20	-6.64	-3.67	-6.61	0.47	401363.37	736286.70	
8995.00	2.09	270.78	8991.15	-6.97	-6.57	-6.92	0.86	401363.04	736283.80	
9089.00	2.04	271.34	9085.09	-6.91	-9.96	-6.84	0.06	401363.10	736280.41	
9185.00	2.26	258.46	9181.02	-7.25	-13.52	-7.15	0.55	401362.76	736276.85	
9280.00	1.15	257.93	9275.98	-7.82	-16.29	-7.70	1.17	401362.19	736274.08	
9376.00	0.51	6.19	9371.97	-7.60	-17.19	-7.47	1.45	401362.41	736273.18	
9470.00	0.16	30.25	9465.97	-7.07	-17.07	-6.95	0.39	401362.94	736273.30	

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
9565.00	0.45	109.73	9560.97	-7.08	-16.66	-6.96	0.47	401362.93	736273.71	
9659.00	0.41	127.81	9654.97	-7.41	-16.04	-7.30	0.15	401362.60	736274.33	
9754.00	0.29	224.98	9749.96	-7.79	-15.94	-7.68	0.56	401362.22	736274.43	
9848.00	1.28	207.12	9843.95	-8.89	-16.59	-8.77	1.07	401361.12	736273.78	
9943.00	1.27	221.94	9938.93	-10.62	-17.78	-10.49	0.35	401359.39	736272.59	
10038.00	1.04	230.39	10033.91	-11.95	-19.15	-11.82	0.30	401358.06	736271.22	
10133.00	0.45	122.67	10128.91	-12.70	-19.50	-12.56	1.32	401357.31	736270.87	
10228.00	0.38	92.67	10223.90	-12.92	-18.87	-12.78	0.24	401357.09	736271.50	
10323.00	0.51	59.42	10318.90	-12.72	-18.19	-12.59	0.30	401357.29	736272.18	
10416.00	0.60	336.88	10411.90	-12.06	-18.02	-11.93	0.79	401357.95	736272.35	
10511.00	0.63	302.29	10506.89	-11.32	-18.66	-11.19	0.39	401358.69	736271.71	
10605.00	0.42	266.74	10600.89	-11.07	-19.44	-10.93	0.40	401358.94	736270.93	
10700.00	0.47	251.56	10695.89	-11.21	-20.16	-11.07	0.13	401358.80	736270.21	
10795.00	0.89	280.80	10790.88	-11.20	-21.25	-11.04	0.56	401358.81	736269.12	
10890.00	1.44	270.21	10885.86	-11.05	-23.17	-10.89	0.62	401358.96	736267.20	
10984.00	1.41	289.02	10979.83	-10.67	-25.45	-10.49	0.50	401359.34	736264.92	
11079.00	1.56	280.75	11074.80	-10.05	-27.82	-9.85	0.27	401359.96	736262.55	Run 2
11174.00	1.20	295.87	11169.77	-9.37	-29.99	-9.16	0.54	401360.64	736260.38	
11269.00	1.36	294.83	11264.75	-8.47	-31.91	-8.24	0.17	401361.54	736258.46	
11364.00	1.76	308.96	11359.71	-7.08	-34.06	-6.83	0.58	401362.93	736256.31	
11458.00	2.04	313.47	11453.66	-5.02	-36.40	-4.76	0.34	401364.99	736253.97	
11552.00	2.40	310.21	11547.59	-2.60	-39.12	-2.32	0.41	401367.41	736251.25	
11646.00	2.55	316.26	11641.50	0.19	-42.07	0.49	0.32	401370.20	736248.30	
11741.00	1.81	311.04	11736.43	2.70	-44.66	3.02	0.81	401372.71	736245.71	
11835.00	1.40	339.82	11830.40	4.75	-46.17	5.08	0.95	401374.76	736244.20	
11929.00	1.32	338.97	11924.37	6.84	-46.96	7.17	0.09	401376.85	736243.41	
12023.00	1.04	319.29	12018.35	8.50	-47.90	8.84	0.52	401378.51	736242.47	
12116.00	1.20	329.19	12111.33	9.97	-48.95	10.32	0.27	401379.98	736241.42	
12163.00	1.10	314.05	12158.33	10.71	-49.53	11.06	0.68	401380.72	736240.84	
12211.00	1.21	302.32	12206.32	11.30	-50.29	11.66	0.54	401381.31	736240.08	Last WFT ST00 Svy
12298.00	1.21	302.32	12293.30	12.28	-51.84	12.65	0.00	401382.29	736238.53	Proj to Bit



Weatherford®

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Midland, TX USA 79711
Tel. (432) 561-8892 Fax (432) 561-8895

Devon Energy
333 W. Sheridan Ave
Oklahoma City, OK, 73102

Date: January 10, 2017

Attention: Garrett Glaze

Re: Devon Energy
Well: Morab 29-20 Fed Com 1H
Lea County, New Mexico

Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

<u>Name & Title Of Surveyor</u>	<u>Well Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Andrew Schmidt MWD Supervisor	1H ST00	4357 MD 12211 MD	12/01/2016 12/06/2016	Measurement While Drilling
Andrew Schmidt MWD Supervisor	1H ST01	10036 MD 17621 MD	12/15/2016 12/22.2016	Measurement While Drilling

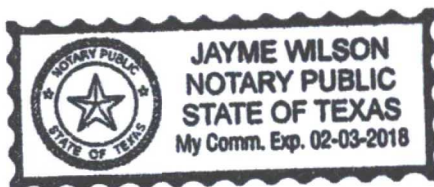
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Jonathan Leger
MWD Ops Coordinator

On this, the 18th day of January, 2017, before me a notary public, the undersigned officer, personally appeared Jonathan Leger, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.

Notary Public



**5D Survey Report**

Devon Energy

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Morab 29-20 Fed Com 1H*
Well Name: *Morab 29-20 Fed Com 1H Lateral*
Survey: *Definitive survey*

10 January 2017





Weatherford

Plan Point Information:

MD	Inc	Az	TUD	+N/-S	+E/-W	Northing	Easting	USC	DLS	Comments
(JST)	(°)	(°)	(JST)	(JST)	(JST)	(JST)	(JST)	(JST)	(JST)	
16582.88	93.23	2.87	1043.9	43.56	-48	-19.18	40776.64	73652.71	3.56	1.51 Tie-on SVy
15607.79	93.50	3.89	10402.5	65.64	-43	-11.99	44804.64	73652.78	4.77	65.64
17651.38	95.35	359.99	10354.86	7423.78	-12	-0.04	48083.93	797362.78	33.74	0.00 Phil. H

Plan Data for Morab 29-20 Fed Com 1H Lateral

Field: Lea Co, NM Nad 83 NMEZ
Vertical Reference Datum (VRD): Mean Sea Level
Map Unit: USFT
Projected Coordinate System: NAD83 / New Mexico East (ftUS)

Site: Morab 29-20 Fed Com 1H
Unit: USFeet TVD Reference:
Company Name: Devon Energy
Northing: 401370.01USft Latitude: 32.10181°
Position:

North Reference: Grid Grid Convergence: 0.33
Elevation Above VRD: 3367.40USft

Slot: Morab 29-20 Fed Com 1H

POSITION:

OFFICE: 6000 4th Avenue

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+N/-S: 0.00USft      Northing: 401370.0USft      Latitude: 32.101881°
+E/-W: 0.00USft      Easting: 736290.37USft      Longitude: -103.703737°
Elevation Above WPD: 3367.40USft

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Well: Morab 29-20 Fed Com 1H Lateral

Type: Slide-Track

File Number:

Vertical Section: Position offset of origin from Slot centre:

Azimuth: 359.73°

Magnetic Parameters:
+E/-W: 0.0001

Magnetic Parameters:

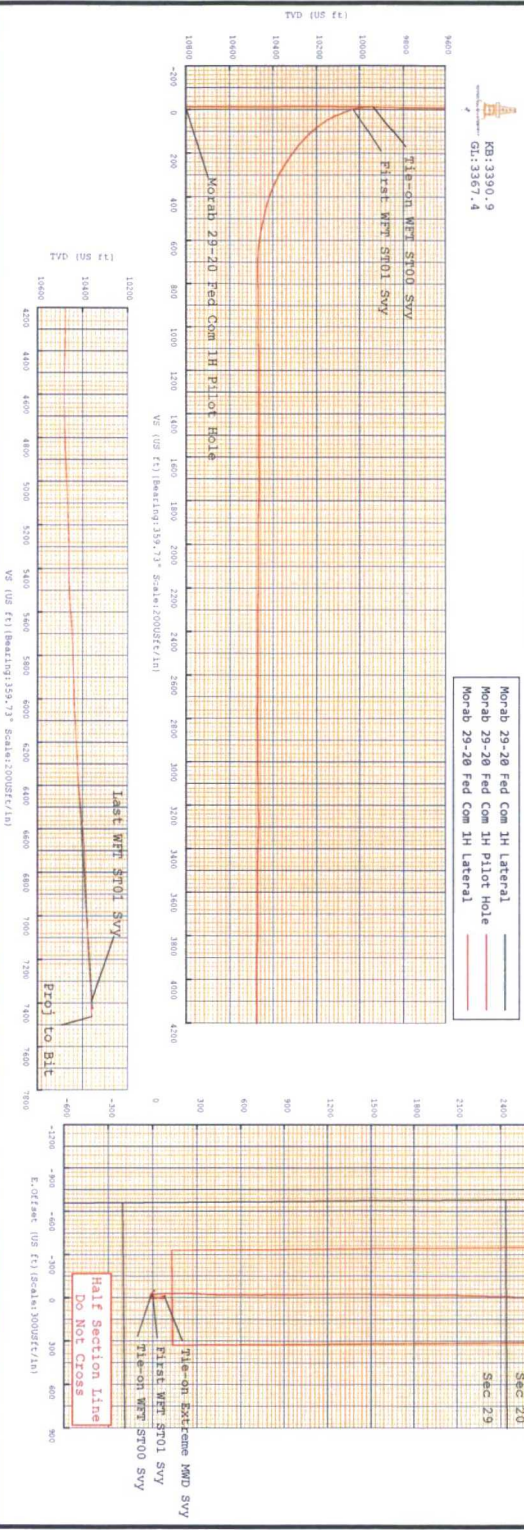
Model:	Field Strength:	Declination:	Dip:	Date:
bggm2016	47997(nT)	7.13°	59.93°	2016-12-09

Plan Data for Morab 29-20 Fed Com 1H Lateral

Target Set Information				
Name: Morab 29-20 Red Can 1H Tgrs				
Name	Position offsets from Slot centre	TD Elevation	AW-5 (+/-M)	Nothing
(USF)	(USF)	(USF)	(USF)	(USF)
LP 10475.00	-7884.10	126.29	-0.67	4041456.38 736289.70
PHIL 1H 10362.00	-8699.10	7423.59	-55.18	4403793.66 736237.19
ILLIT BHL 12200.00	-8891.10	0.00	0.00	4041456.01 736289.37

Morab 29-20 Fed Com 1H Lateral

Morab 29-20 Fed Com 1H Lateral





Morab 29-20 Fed Com 1H Lateral

Field Name: Lea Co, NM Nad 83 NMEZ	Map Units: US ft Vertical Reference Datum (VRD): Mean Sea Level Projected Coordinate System: NAD83 / New Mexico East (ftUS) Comment:	Company Name: Devon Energy
Site: Morab 29-20 Fed Com 1H	Units: US ft North Reference: Grid Position: Northing: 401370.01 US ft Easting: 736290.37 US ft Elevation above MSL: 3367.40 US ft Comment:	Convergence Angle: 0.33 Latitude: 32° 6' 6.77" Longitude: -103° 42' 13.45"
Slot: Morab 29-20 Fed Com 1H	Position (Relative to Site Centre) +N/-S: 0.00 US ft Northing: 401370.01 US ft Latitude: 32°6'6.77" +E/-W: 0.00 US ft Easting: 736290.37 US ft Longitude: -103°42'13.45" Slot TVD Reference: Ground Elevation Elevation above MSL: 3367.40 US ft Comment:	
Well: Morab 29-20 Fed Com 1H Lateral	Type: Sidetrack Parent: Morab 29-20 Fed Com 1H Pilot Hole File Number: Comment: Closure Distance: 7463.85 US ft Vertical Section: Position of Origin (Relative to Slot centre) +N/-S: -0.00 US ft +E/-W: 0.00 US ft Az: 359.73°	UWI: Tie Point Method: MD Closure Azimuth: 0.16°

Drill floor: Survey Name: Definitive Survey			
Rig Height (Drill Floor): 23.50us ft	Elevation above MSL: 3390.90us ft	Inclination: 0.00°	Azimuth: 0.00°

Survey Name: Definitive Survey				
Date: 09/Dec/2016	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:	
Magnetic Model:				
Model Name: bggm2016	Date: 09/Dec/2016	Field Strength: 47997.8nT	Declination: 7.13°	Dip: 59.93°
Tie Point:				
MD: 9943.00 US ft	Inclination: 1.27°	Azimuth: 221.94°	TVD: 9938.93 US ft	North Offset: -10.62 US ft East Offset: -17.78 US ft

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD	0.00	4266.00	Extreme MWD Svy
MWD	4266.00	10888.00	WFT MWD Svy 1

5D Survey Report

Survey Tool Ranges:

Name	Start MD(USft)	End MD(USft)	Source Survey
MWD	10888.00	17692.00	WFT MWD Svy 2

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
9943.00	1.27	221.94	9938.93	-10.62	-17.78	-10.54	0.35	401359.39	736272.59	Tie-on WFT ST00 Svy
10036.00	14.04	345.53	10031.04	-0.41	-21.31	-0.31	15.89	401369.60	736269.06	First WFT ST01 Svy
10083.00	21.38	350.88	10075.79	13.59	-24.09	13.71	15.98	401383.60	736266.28	
10131.00	25.96	355.14	10119.74	32.71	-26.37	32.83	10.18	401402.72	736264.00	
10178.00	32.23	356.77	10160.79	55.50	-27.95	55.63	13.45	401425.51	736262.42	
10226.00	37.98	357.89	10200.04	83.06	-29.22	83.20	12.05	401453.07	736261.15	
10273.00	44.46	358.91	10235.38	114.00	-30.06	114.14	13.86	401484.01	736260.31	
10321.00	48.67	359.49	10268.37	148.84	-30.54	148.99	8.81	401518.85	736259.83	
10368.00	51.81	359.75	10298.43	184.97	-30.78	185.11	6.69	401554.98	736259.59	
10414.00	55.26	1.07	10325.76	221.96	-30.51	222.10	7.85	401591.97	736259.86	
10461.00	59.07	3.13	10351.24	261.41	-29.04	261.54	8.90	401631.42	736261.33	
10509.00	62.52	3.82	10374.66	303.22	-26.50	303.34	7.30	401673.23	736263.87	
10556.00	65.82	4.13	10395.14	345.42	-23.57	345.53	7.05	401715.43	736266.80	
10603.00	69.28	3.53	10413.08	388.75	-20.67	388.85	7.46	401758.76	736269.70	
10650.00	73.11	1.52	10428.23	433.19	-18.72	433.27	9.10	401803.20	736271.65	
10699.00	76.10	359.54	10441.24	480.42	-18.29	480.50	7.24	401850.43	736272.08	
10746.00	78.52	0.02	10451.56	526.27	-18.46	526.35	5.24	401896.28	736271.91	
10793.00	80.66	0.52	10460.06	572.49	-18.24	572.57	4.67	401942.50	736272.13	
10840.00	83.84	0.67	10466.39	619.06	-17.76	619.13	6.77	401989.07	736272.61	
10888.00	86.92	359.80	10470.26	666.89	-17.56	666.97	6.67	402036.90	736272.81	
10967.00	90.84	358.64	10471.80	745.85	-18.64	745.93	5.17	402115.86	736271.73	Run 2
10998.00	91.05	358.83	10471.29	776.84	-19.32	776.93	0.91	402146.85	736271.05	
11093.00	89.65	0.00	10470.71	871.83	-20.29	871.92	1.92	402241.84	736270.08	
11187.00	90.49	359.24	10470.60	965.83	-20.92	965.92	1.21	402335.84	736269.45	
11283.00	91.32	358.76	10469.08	1061.80	-22.59	1061.90	1.00	402431.81	736267.78	
11378.00	90.00	359.91	10467.99	1156.78	-23.69	1156.88	1.84	402526.79	736266.68	
11473.00	90.49	359.69	10467.58	1251.78	-24.03	1251.88	0.57	402621.79	736266.34	
11567.00	90.00	0.23	10467.18	1345.78	-24.09	1345.88	0.78	402715.79	736266.28	
11662.00	89.58	0.51	10467.53	1440.78	-23.48	1440.87	0.53	402810.79	736266.89	
11756.00	90.28	1.91	10467.64	1534.75	-21.49	1534.84	1.67	402904.76	736268.88	
11851.00	91.33	0.99	10466.31	1629.71	-19.09	1629.78	1.47	402999.72	736271.28	
11945.00	88.81	0.52	10466.19	1723.70	-17.85	1723.76	2.73	403093.71	736272.52	
12040.00	89.09	0.19	10467.93	1818.68	-17.26	1818.74	0.46	403188.69	736273.11	
12135.00	89.44	359.05	10469.15	1913.67	-17.89	1913.73	1.26	403283.68	736272.48	
12231.00	90.56	1.34	10469.15	2009.66	-17.57	2009.72	2.66	403379.67	736272.80	
12325.00	89.58	0.95	10469.04	2103.64	-15.69	2103.69	1.12	403473.65	736274.68	
12421.00	89.23	1.54	10470.03	2199.61	-13.60	2199.65	0.71	403569.62	736276.77	
12514.00	88.88	2.01	10471.57	2292.55	-10.72	2292.58	0.63	403662.56	736279.65	
12608.00	89.65	1.16	10472.77	2386.51	-8.12	2386.52	1.22	403756.52	736282.25	
12703.00	90.84	1.90	10472.37	2481.47	-5.59	2481.47	1.48	403851.48	736284.78	
12798.00	90.42	1.94	10471.32	2576.41	-2.40	2576.39	0.44	403946.42	736287.97	
12893.00	88.74	1.49	10472.02	2671.36	0.44	2671.33	1.83	404041.37	736290.81	
12988.00	90.00	357.83	10473.06	2766.34	-0.12	2766.31	4.07	404136.35	736290.25	
13082.00	90.21	356.63	10472.89	2860.22	-4.67	2860.21	1.30	404230.23	736285.70	
13177.00	90.35	357.85	10472.43	2955.11	-9.24	2955.12	1.29	404325.12	736281.13	
13272.00	91.26	357.11	10471.09	3050.01	-13.42	3050.04	1.23	404420.02	736276.95	
13367.00	90.42	359.17	10469.70	3144.94	-16.50	3144.98	2.34	404514.95	736273.87	
13461.00	90.84	0.38	10468.67	3238.93	-16.87	3238.98	1.36	404608.94	736273.50	
13555.00	88.60	0.87	10469.12	3332.92	-15.84	3332.96	2.44	404702.93	736274.53	
13650.00	87.83	0.68	10472.08	3427.86	-14.56	3427.90	0.83	404797.87	736275.81	
13744.00	89.51	1.39	10474.27	3521.82	-12.86	3521.84	1.94	404891.83	736277.51	

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
13838.00	89.86	0.68	10474.78	3615.80	-11.16	3615.82	0.84	404985.81	736279.21	
13933.00	90.14	2.56	10474.78	3710.76	-8.48	3710.76	2.00	405080.77	736281.89	
14027.00	89.93	0.91	10474.73	3804.71	-5.63	3804.70	1.77	405174.72	736284.74	
14121.00	89.58	1.64	10475.13	3898.69	-3.54	3898.66	0.86	405268.70	736286.83	
14214.00	90.35	359.71	10475.18	3991.68	-2.45	3991.64	2.23	405361.69	736287.92	
14308.00	89.65	359.05	10475.18	4085.67	-3.46	4085.64	1.02	405455.68	736286.91	
14403.00	89.37	357.02	10476.00	4180.61	-6.72	4180.59	2.16	405550.62	736283.65	
14497.00	89.37	356.58	10477.03	4274.45	-11.97	4274.46	0.47	405644.46	736278.40	
14592.00	89.02	356.35	10478.36	4369.26	-17.82	4369.30	0.44	405739.27	736272.55	
14687.00	88.88	357.52	10480.11	4464.11	-22.90	4464.17	1.24	405834.12	736267.47	
14782.00	89.65	357.17	10481.32	4559.00	-27.30	4559.08	0.89	405929.01	736263.07	
14875.00	90.28	357.93	10481.38	4651.91	-31.28	4652.01	1.06	406021.92	736259.09	
14971.00	90.84	357.99	10480.44	4747.85	-34.70	4747.96	0.59	406117.86	736255.67	
15065.00	92.30	357.41	10477.87	4841.73	-38.47	4841.86	1.67	406211.74	736251.90	
15160.00	92.45	357.86	10473.93	4936.57	-42.38	4936.72	0.50	406306.58	736247.99	
15255.00	92.31	358.76	10469.99	5031.45	-45.18	5031.60	0.96	406401.46	736245.19	
15350.00	92.38	358.95	10466.10	5126.35	-47.08	5126.51	0.21	406496.36	736243.29	
15445.00	91.26	359.02	10463.08	5221.28	-48.76	5221.46	1.18	406591.29	736241.61	
15540.00	90.14	358.25	10461.92	5316.25	-51.02	5316.43	1.43	406686.26	736239.35	
15635.00	90.70	359.61	10461.22	5411.23	-52.80	5411.41	1.55	406781.24	736237.57	
15729.00	92.81	0.99	10458.35	5505.17	-52.31	5505.36	2.68	406875.18	736238.06	
15824.00	93.51	2.05	10453.11	5599.99	-49.79	5600.17	1.34	406970.00	736240.58	
15918.00	92.94	2.07	10447.82	5693.78	-46.42	5693.94	0.61	407063.79	736243.95	
16013.00	91.88	2.18	10443.83	5788.63	-42.90	5788.77	1.12	407158.64	736247.47	
16108.00	91.75	1.24	10440.82	5883.54	-40.06	5883.66	1.00	407253.55	736250.31	
16203.00	91.60	1.07	10438.04	5978.48	-38.15	5978.59	0.24	407348.49	736252.22	
16298.00	92.37	2.09	10434.75	6073.39	-35.53	6073.49	1.34	407443.40	736254.84	
16392.00	93.50	3.20	10429.94	6167.16	-31.20	6167.24	1.68	407537.17	736259.17	
16487.00	92.95	4.28	10424.59	6261.81	-25.01	6261.85	1.27	407631.82	736265.36	
16582.00	93.23	2.87	10419.47	6356.48	-19.10	6356.50	1.51	407726.49	736271.27	
16677.00	94.68	1.20	10412.92	6451.19	-15.73	6451.19	2.32	407821.20	736274.64	
16771.00	95.91	2.03	10404.24	6544.75	-13.10	6544.74	1.58	407914.76	736277.27	
16866.00	94.15	2.32	10395.91	6639.31	-9.50	6639.28	1.88	408009.32	736280.87	
16961.00	92.65	0.38	10390.28	6734.11	-7.27	6734.07	2.58	408104.12	736283.10	
17056.00	92.17	2.33	10386.28	6828.99	-5.03	6828.94	2.11	408199.00	736285.34	
17150.00	91.96	1.30	10382.90	6922.88	-2.05	6922.82	1.12	408292.89	736288.32	
17245.00	92.60	2.35	10379.12	7017.76	0.97	7017.68	1.29	408387.77	736291.34	
17340.00	92.25	2.20	10375.10	7112.60	4.74	7112.50	0.40	408482.61	736295.11	
17434.00	92.52	2.62	10371.19	7206.43	8.69	7206.31	0.53	408576.44	736299.06	
17528.00	93.02	3.17	10366.64	7300.20	13.43	7300.06	0.79	408670.21	736303.80	
17621.00	92.65	2.68	10362.04	7392.97	18.17	7392.80	0.66	408762.98	736308.54	Last WFT ST01 Svy
17692.00	92.65	2.68	10358.76	7463.82	21.49	7463.63	0.00	408833.83	736311.86	Proj to Bit