

Unit Petroleum

Reno County, Kansas [NAD 83]

Section 20 T25S-R10W

Debes 20 #1H

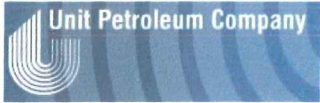
OH

Design: OH

Standard Survey Report

22 April, 2014





Unit Petroleum
 Project: Reno County, Kansas [NAD 83]
 Site: Section 20 T25S-R10W
 Well: Debes 20 #1H
 Wellbore: OH
 Design: Design #3
 Lat: 37° 51' 10.096 N
 Long: 98° 27' 5.204 W
 Pad GL: 1783.00
 KB: 20' KB @ 1803.00usft (UDI 303)



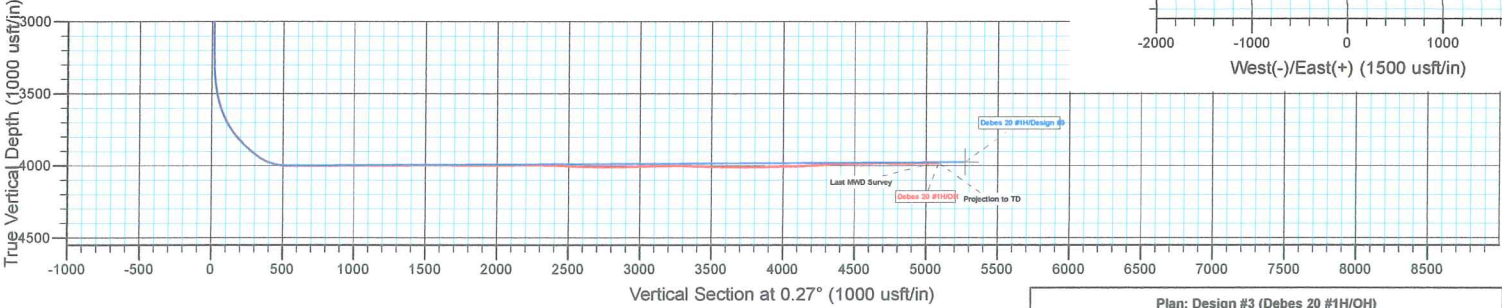
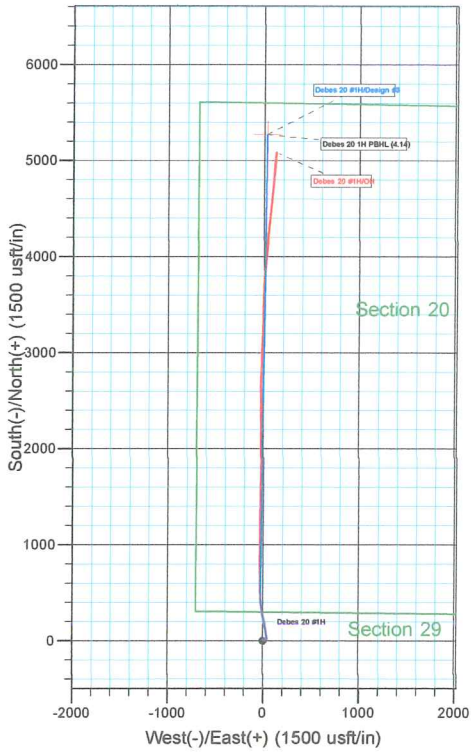
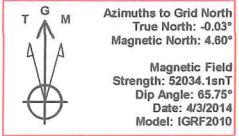
SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
4192.00	80.50	358.50	3993.00	461.58	-30.37	0.00	0.00	461.43
4240.00	89.50	1.19	3997.18	509.34	-30.49	19.58	16.72	509.19
4271.03	90.27	0.67	3997.24	540.36	-29.99	3.00	-34.26	540.22
9002.37	90.27	0.67	3975.00	5271.33	25.00	0.00	0.00	5271.39

WELL DETAILS: Debes 20 #1H						
+N/-S	+E/-W	Northing	Ground Level: Easting	1783.00 Latitude	Longitude	Slot
0.00	0.00	1744236.00	1326352.00	37° 51' 10.096 N	98° 27' 5.204 W	

PROJECT DETAILS: Reno County, Kansas [NAD 83]
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Kansas Southern Zone
 System Datum: Mean Sea Level

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape Point
Debes 20 1H PBHL (4.14)	3975.00	5271.33	25.00	1749507.00	1326377.00	

NOTE: All Lease lines and Hard lines are estimates only and are subject to the customers' approval.



Plan: Design #3 (Debes 20 #1H/OH)
 Created By: Derek Stephens Date: 7:52, April 22 2014

Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Debes 20 #1H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	20' KB @ 1803.00usft (UDI 303)
Site:	Section 20 T25S-R10W	MD Reference:	20' KB @ 1803.00usft (UDI 303)
Well:	Debes 20 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Reno County, Kansas [NAD 83]		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Kansas Southern Zone		Using geodetic scale factor

Site	Section 20 T25S-R10W				
Site Position:		Northing:	1,744,236.00 usft	Latitude:	37° 51' 10.096 N
From:	Map	Easting:	1,326,352.00 usft	Longitude:	98° 27' 5.204 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.03 °

Well	Debes 20 #1H					
Well Position	+N/-S	0.00 usft	Northing:	1,744,236.00 usft	Latitude:	37° 51' 10.096 N
	+E/-W	0.00 usft	Easting:	1,326,352.00 usft	Longitude:	98° 27' 5.204 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	1,783.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/3/2014	4.63	65.75	52,034

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.27	

Survey Program	Date	4/22/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,504.00	Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot	
1,627.00	8,824.00	MWD (OH)	MWD	MWD - Standard	

Survey										
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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.30	37.41	100.00	0.21	0.16	0.21	0.30	0.30	0.00	
200.00	0.74	27.52	200.00	0.99	0.62	0.99	0.45	0.44	-9.89	
300.00	0.49	11.26	299.99	1.98	1.00	1.99	0.30	-0.25	-16.26	
400.00	0.57	22.21	399.99	2.86	1.27	2.87	0.13	0.08	10.95	
500.00	0.28	28.37	499.98	3.54	1.57	3.54	0.29	-0.29	6.16	
600.00	0.29	20.72	599.98	3.99	1.78	4.00	0.04	0.01	-7.65	
700.00	0.50	16.77	699.98	4.64	2.00	4.65	0.21	0.21	-3.95	
800.00	0.38	15.43	799.98	5.38	2.21	5.39	0.12	-0.12	-1.34	
900.00	0.83	13.30	899.97	6.40	2.46	6.42	0.45	0.45	-2.13	

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Well:	Debes 20 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey									
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)
1,000.00	1.02	20.87	999.96	7.94	2.95	7.95	0.23	0.19	7.57
1,100.00	1.10	34.04	1,099.94	9.57	3.80	9.59	0.26	0.08	13.17
1,200.00	0.94	46.47	1,199.92	10.93	4.93	10.95	0.27	-0.16	12.43
1,300.00	0.82	51.92	1,299.91	11.93	6.09	11.96	0.15	-0.12	5.45
1,400.00	0.94	62.70	1,399.90	12.75	7.38	12.79	0.20	0.12	10.78
1,500.00	0.97	72.29	1,499.89	13.39	8.92	13.43	0.16	0.03	9.59
1,504.00	0.98	72.21	1,503.89	13.41	8.98	13.45	0.25	0.25	-2.00
1,627.00	1.30	77.90	1,626.86	14.02	11.35	14.07	0.28	0.26	4.63
1,721.00	0.90	75.30	1,720.84	14.43	13.11	14.49	0.43	-0.43	-2.77
1,815.00	1.10	85.10	1,814.83	14.70	14.72	14.77	0.28	0.21	10.43
1,909.00	1.00	73.40	1,908.81	15.01	16.41	15.08	0.25	-0.11	-12.45
2,003.00	1.00	91.40	2,002.80	15.22	18.01	15.31	0.33	0.00	19.15
2,096.00	0.90	95.80	2,095.79	15.13	19.55	15.22	0.13	-0.11	4.73
2,190.00	1.00	82.10	2,189.77	15.17	21.10	15.27	0.26	0.11	-14.57
2,284.00	1.00	85.50	2,283.76	15.34	22.73	15.45	0.06	0.00	3.62
2,379.00	1.10	90.60	2,378.74	15.40	24.46	15.51	0.14	0.11	5.37
2,472.00	0.80	96.20	2,471.73	15.32	26.00	15.44	0.34	-0.32	6.02
2,566.00	0.80	94.60	2,565.72	15.20	27.31	15.32	0.02	0.00	-1.70
2,660.00	0.80	89.70	2,659.71	15.15	28.62	15.28	0.07	0.00	-5.21
2,754.00	1.00	89.80	2,753.70	15.15	30.10	15.30	0.21	0.21	0.11
2,848.00	0.90	81.30	2,847.69	15.27	31.65	15.42	0.18	-0.11	-9.04
2,942.00	0.80	97.20	2,941.68	15.30	33.03	15.45	0.27	-0.11	16.91
3,036.00	1.00	89.40	3,035.67	15.22	34.50	15.39	0.25	0.21	-8.30
3,130.00	0.80	95.70	3,129.66	15.17	35.97	15.34	0.24	-0.21	6.70
3,222.00	0.90	95.80	3,221.65	15.03	37.33	15.21	0.11	0.11	0.11
3,256.00	0.70	87.00	3,255.64	15.01	37.80	15.19	0.69	-0.59	-25.88
3,321.00	2.10	16.40	3,320.62	16.18	38.53	16.36	3.05	2.15	-108.62
3,352.00	3.60	3.60	3,351.58	17.69	38.76	17.88	5.23	4.84	-41.29
3,384.00	5.10	358.60	3,383.49	20.12	38.78	20.30	4.83	4.69	-15.63
3,415.00	6.60	355.70	3,414.33	23.27	38.62	23.45	4.93	4.84	-9.35
3,447.00	8.20	354.40	3,446.06	27.38	38.26	27.56	5.03	5.00	-4.06
3,478.00	9.50	353.90	3,476.69	32.12	37.77	32.30	4.20	4.19	-1.61
3,509.00	11.50	353.40	3,507.17	37.74	37.14	37.91	6.46	6.45	-1.61
3,540.00	13.60	352.10	3,537.43	44.42	36.29	44.59	6.83	6.77	-4.19
3,572.00	16.00	351.50	3,568.37	52.51	35.12	52.67	7.52	7.50	-1.88
3,603.00	18.70	350.50	3,597.95	61.63	33.66	61.79	8.76	8.71	-3.23
3,635.00	21.80	350.50	3,627.97	72.56	31.84	72.71	9.69	9.69	0.00
3,666.00	24.80	349.60	3,656.44	84.63	29.71	84.77	9.75	9.68	-2.90
3,697.00	27.60	348.80	3,684.25	98.07	27.14	98.20	9.10	9.03	-2.58
3,729.00	30.70	348.40	3,712.20	113.35	24.06	113.46	9.71	9.69	-1.25
3,760.00	33.60	348.00	3,738.44	129.50	20.69	129.59	9.38	9.35	-1.29
3,791.00	36.50	348.10	3,763.81	146.91	17.00	146.99	9.36	9.35	0.32
3,823.00	39.40	348.40	3,789.05	166.18	12.99	166.24	9.08	9.06	0.94

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Survey										
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)	
3,854.00	42.20	348.70	3,812.51	186.03	8.98	186.07	9.05	9.03	0.97	
3,872.00	44.20	348.80	3,825.63	198.11	6.57	198.14	11.12	11.11	0.56	
3,883.00	45.30	349.10	3,833.44	205.71	5.09	205.73	10.18	10.00	2.73	
3,910.00	47.70	349.00	3,852.03	224.94	1.37	224.94	8.89	8.89	-0.37	
3,942.00	48.20	349.20	3,873.46	248.27	-3.13	248.25	1.63	1.56	0.63	
3,979.00	49.10	349.80	3,897.90	275.58	-8.19	275.54	2.72	2.43	1.62	
4,011.00	52.50	349.70	3,918.13	299.98	-12.60	299.92	10.63	10.63	-0.31	
4,041.00	56.00	350.30	3,935.65	323.95	-16.82	323.87	11.78	11.67	2.00	
4,073.00	60.00	351.50	3,952.61	350.75	-21.11	350.64	12.90	12.50	3.75	
4,104.00	65.30	353.70	3,966.84	378.04	-24.64	377.92	18.22	17.10	7.10	
4,136.00	70.50	355.30	3,978.88	407.54	-27.47	407.41	16.90	16.25	5.00	
4,167.00	75.80	357.10	3,987.86	437.13	-29.43	436.99	17.98	17.10	5.81	
4,192.00	80.50	358.50	3,993.00	461.58	-30.37	461.43	19.58	18.80	5.60	
4,246.00	88.00	358.50	3,998.40	515.25	-31.77	515.09	13.89	13.89	0.00	
4,341.00	89.90	359.60	4,000.14	610.21	-33.35	610.05	2.31	2.00	1.16	
4,437.00	90.20	359.90	4,000.06	706.21	-33.77	706.04	0.44	0.31	0.31	
4,533.00	90.40	359.80	3,999.56	802.21	-34.02	802.04	0.23	0.21	-0.10	
4,628.00	90.60	359.90	3,998.73	897.21	-34.27	897.03	0.24	0.21	0.11	
4,724.00	91.10	359.90	3,997.30	993.20	-34.43	993.02	0.52	0.52	0.00	
4,820.00	89.50	0.60	3,996.80	1,089.19	-34.02	1,089.02	1.82	-1.67	0.73	
4,916.00	89.90	0.00	3,997.30	1,185.19	-33.51	1,185.01	0.75	0.42	-0.63	
5,011.00	90.30	0.60	3,997.14	1,280.18	-33.02	1,280.01	0.76	0.42	0.63	
5,107.00	91.00	0.80	3,996.05	1,376.17	-31.84	1,376.00	0.76	0.73	0.21	
5,203.00	90.80	1.20	3,994.54	1,472.14	-30.17	1,471.98	0.47	-0.21	0.42	
5,295.00	89.10	0.70	3,994.62	1,564.13	-28.64	1,563.97	1.93	-1.85	-0.54	
5,386.00	89.10	1.20	3,996.05	1,655.10	-27.13	1,654.96	0.55	0.00	0.55	
5,478.00	89.70	1.40	3,997.01	1,747.07	-25.05	1,746.94	0.69	0.65	0.22	
5,569.00	89.90	0.90	3,997.33	1,838.05	-23.22	1,837.92	0.59	0.22	-0.55	
5,661.00	89.80	0.70	3,997.57	1,930.05	-21.94	1,929.92	0.24	-0.11	-0.22	
5,754.00	90.40	0.40	3,997.41	2,023.04	-21.04	2,022.92	0.72	0.65	-0.32	
5,845.00	90.60	359.70	3,996.62	2,114.04	-20.96	2,113.91	0.80	0.22	-0.77	
5,937.00	90.70	358.50	3,995.57	2,206.02	-22.41	2,205.89	1.31	0.11	-1.30	
6,029.00	89.70	359.00	3,995.25	2,297.99	-24.42	2,297.85	1.22	-1.09	0.54	
6,122.00	88.30	358.60	3,996.87	2,390.96	-26.36	2,390.80	1.57	-1.51	-0.43	
6,214.00	87.10	359.30	4,000.57	2,482.86	-28.05	2,482.70	1.51	-1.30	0.76	
6,306.00	87.20	359.50	4,005.14	2,574.75	-29.01	2,574.58	0.24	0.11	0.22	
6,398.00	89.40	1.20	4,007.87	2,666.69	-28.45	2,666.53	3.02	2.39	1.85	
6,491.00	89.90	2.00	4,008.44	2,759.66	-25.85	2,759.50	1.01	0.54	0.86	
6,584.00	90.90	1.80	4,007.79	2,852.60	-22.77	2,852.46	1.10	1.08	-0.22	
6,676.00	91.70	1.80	4,005.70	2,944.53	-19.88	2,944.40	0.87	0.87	0.00	
6,769.00	91.60	2.80	4,003.02	3,037.42	-16.15	3,037.31	1.08	-0.11	1.08	
6,860.00	91.20	2.60	4,000.80	3,128.29	-11.86	3,128.20	0.49	-0.44	-0.22	
6,952.00	89.20	1.50	4,000.48	3,220.22	-8.57	3,220.15	2.48	-2.17	-1.20	



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Survey										
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7,043.00	89.10	0.40	4,001.83	3,311.20	-7.06	3,311.13	1.21	-0.11	-1.21	
7,136.00	88.10	0.70	4,004.10	3,404.17	-6.17	3,404.10	1.12	-1.08	0.32	
7,228.00	89.20	1.40	4,006.27	3,496.12	-4.49	3,496.06	1.42	1.20	0.76	
7,321.00	88.20	359.60	4,008.38	3,589.09	-3.67	3,589.03	2.21	-1.08	-1.94	
7,415.00	90.80	3.20	4,009.20	3,683.03	-1.38	3,682.99	4.72	2.77	3.83	
7,510.00	90.70	3.30	4,007.96	3,777.87	4.01	3,777.85	0.15	-0.11	0.11	
7,606.00	90.70	3.90	4,006.78	3,873.68	10.04	3,873.68	0.62	0.00	0.63	
7,701.00	90.30	4.30	4,005.95	3,968.43	16.83	3,968.46	0.60	-0.42	0.42	
7,797.00	91.60	4.60	4,004.36	4,064.12	24.27	4,064.19	1.39	1.35	0.31	
7,893.00	92.90	6.00	4,000.59	4,159.64	33.13	4,159.75	1.99	1.35	1.46	
7,989.00	93.10	6.10	3,995.57	4,254.97	43.24	4,255.13	0.23	0.21	0.10	
8,085.00	92.80	6.50	3,990.63	4,350.26	53.76	4,350.47	0.52	-0.31	0.42	
8,180.00	93.10	6.60	3,985.74	4,444.52	64.58	4,444.78	0.33	0.32	0.11	
8,276.00	90.20	5.30	3,982.97	4,539.95	74.53	4,540.25	3.31	-3.02	-1.35	
8,372.00	89.60	5.60	3,983.14	4,635.52	83.64	4,635.86	0.70	-0.63	0.31	
8,467.00	89.40	5.10	3,983.97	4,730.10	92.50	4,730.48	0.57	-0.21	-0.53	
8,563.00	90.10	4.90	3,984.39	4,825.73	100.87	4,826.15	0.76	0.73	-0.21	
8,659.00	90.70	4.50	3,983.72	4,921.40	108.73	4,921.87	0.75	0.63	-0.42	
8,755.00	90.60	4.30	3,982.63	5,017.12	116.10	5,017.61	0.23	-0.10	-0.21	
8,778.00	90.60	4.40	3,982.39	5,040.05	117.84	5,040.55	0.43	0.00	0.43	
Last MWD Survey										
8,824.00	90.60	4.40	3,981.91	5,085.91	121.37	5,086.43	0.00	0.00	0.00	
Projection to TD - Debes 20 1H PBHL (4.14)										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,778.00	3,982.39	5,040.05	117.84	Last MWD Survey	
8,824.00	3,981.91	5,085.91	121.37	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____