

Solaris MidStream

Eddy County, New Mexico (NAD 83)

Mad Cow SWD

#1

OH / 63723

Survey: Phoenix MWD Surveys

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DISTRICT II-ARTESIA O.C.D.

Standard Survey Report

11 January, 2019



PHOENIX
TECHNOLOGY SERVICES

Survey Report



Company:	Solaris MidStream	Local Co-ordinate Reference:	Well #1
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	RKB @ 3567.00usft
Site:	Mad Cow SWD	MD Reference:	RKB @ 3567.00usft
Well:	#1	North Reference:	Grid
Wellbore:	OH / 63723	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Precision 312)	Database:	USA Compass

Project	Eddy County, New Mexico (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Mad Cow SWD		
Site Position:		Northing:	448,449.69 usft
From:	Map	Easting:	697,178.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 13' 54.69373 N
		Longitude:	103° 49' 45.59676 W
		Grid Convergence:	0.27 °

Well	#1		
Well Position	+N/-S	0.00 usft	Northing: 448,449.69 usft
	+E/-W	0.00 usft	Easting: 697,178.20 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 13' 54.69373 N
		Longitude:	103° 49' 45.59676 W
		Ground Level:	3,535.00 usft

Wellbore	OH / 63723		
Magnetics	Model Name	Sample Date	Declination
	MVHD	10/15/2018	(°)
			6.87
			Dip Angle
			(°)
			59.95
			Field Strength
			(nT)
			47,988.89942078

Design	Surveys (Precision 312)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction	
		(°)	
		0.00	

Survey Program	Date 1/11/2019		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
779.00	8,914.00	Phoenix MWD Surveys (Pre-Gyro) (OH / 6	MWD+HDGM
9,100.00	10,765.00	Phoenix Gryo Surveys (OH / 63723)	SPT_GTD
10,902.00	17,430.00	Phoenix MWD Surveys (OH / 63723)	MWD+HDGM
			Description
			OWSG Rev.2 MWD + HDGM
			Continuous north-seeking gyro
			OWSG Rev.2 MWD + HDGM

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
10,765.00	0.58	198.34	10,763.01	20.35	63.67	20.35	0.00	0.00	0.00
Tie In									
10,902.00	0.18	157.72	10,900.01	19.49	63.53	19.49	0.33	-0.29	-29.65
First Phoenix MWD Survey									
11,091.00	0.35	206.44	11,089.01	18.70	63.39	18.70	0.14	0.09	25.78
11,281.00	0.35	201.78	11,279.01	17.64	62.91	17.64	0.01	0.00	-2.45
11,473.00	0.42	196.30	11,471.00	16.42	62.50	16.42	0.04	0.04	-2.85
11,662.00	0.55	238.72	11,659.99	15.28	61.53	15.28	0.20	0.07	22.44

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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)
11,852.00	1.05	255.45	11,849.98	14.37	59.06	14.37	0.29	0.26	8.81
12,042.00	0.88	244.14	12,039.95	13.30	56.07	13.30	0.13	-0.09	-5.95
12,232.00	0.83	185.66	12,229.93	11.29	54.62	11.29	0.44	-0.03	-30.78
12,420.00	1.49	167.48	12,417.89	7.55	55.01	7.55	0.40	0.35	-9.67
12,608.00	1.66	175.94	12,605.82	2.45	55.73	2.45	0.15	0.09	4.50
12,795.00	1.73	184.99	12,792.74	-3.06	55.68	-3.06	0.15	0.04	4.84
12,982.00	1.55	177.86	12,979.66	-8.40	55.53	-8.40	0.15	-0.10	-3.81
13,173.00	1.43	183.61	13,170.60	-13.36	55.48	-13.36	0.10	-0.06	3.01
13,362.00	1.41	189.01	13,359.54	-18.01	54.96	-18.01	0.07	-0.01	2.86
13,552.00	1.34	202.46	13,549.49	-22.38	53.75	-22.38	0.17	-0.04	7.08
13,741.00	1.21	216.21	13,738.44	-26.03	51.73	-26.03	0.18	-0.07	7.28
13,928.00	1.17	223.44	13,925.40	-29.01	49.25	-29.01	0.08	-0.02	3.87
14,117.00	1.22	223.23	14,114.36	-31.87	46.54	-31.87	0.03	0.03	-0.11
14,306.00	1.32	231.79	14,303.31	-34.69	43.45	-34.69	0.11	0.05	4.53
14,495.00	1.33	237.95	14,492.26	-37.20	39.88	-37.20	0.08	0.01	3.26
14,590.00	1.47	237.58	14,587.23	-38.44	37.92	-38.44	0.15	0.15	-0.39
14,698.00	2.22	307.72	14,695.19	-37.90	35.10	-37.90	2.04	0.69	64.94
14,887.00	2.46	296.73	14,884.03	-33.84	28.58	-33.84	0.27	0.13	-5.81
15,077.00	2.64	293.89	15,073.84	-30.23	20.93	-30.23	0.12	0.09	-1.49
15,266.00	2.47	284.00	15,262.66	-27.48	13.00	-27.48	0.25	-0.09	-5.23
15,456.00	2.10	284.55	15,452.51	-25.62	5.66	-25.62	0.20	-0.19	0.29
15,552.00	1.99	273.24	15,548.45	-25.08	2.29	-25.08	0.43	-0.11	-11.78
15,659.00	2.19	264.29	15,655.37	-25.18	-1.59	-25.18	0.36	0.19	-8.36
15,847.00	2.59	262.68	15,843.21	-26.08	-9.38	-26.08	0.22	0.21	-0.86
16,037.00	2.78	269.38	16,033.00	-26.67	-18.25	-26.67	0.19	0.10	3.53
16,228.00	3.42	265.90	16,223.72	-27.13	-28.56	-27.13	0.35	0.34	-1.82
16,418.00	3.44	266.47	16,413.38	-27.89	-39.90	-27.89	0.02	0.01	0.30
16,569.00	3.76	272.50	16,564.08	-27.95	-49.37	-27.95	0.33	0.21	3.99
16,689.00	3.61	263.22	16,683.84	-28.22	-57.05	-28.22	0.51	-0.13	-7.73
16,878.00	3.61	267.08	16,872.46	-29.23	-68.90	-29.23	0.13	0.00	2.04
16,972.00	3.74	264.48	16,966.27	-29.68	-74.91	-29.68	0.22	0.14	-2.77
17,162.00	3.75	258.54	17,155.86	-31.51	-87.17	-31.51	0.20	0.01	-3.13
17,332.00	3.17	250.34	17,325.55	-34.19	-97.04	-34.19	0.45	-0.34	-4.82
17,378.00	3.36	250.42	17,371.48	-35.07	-99.51	-35.07	0.41	0.41	0.17
Final Phoenix MWD Survey									
17,430.00	3.36	250.42	17,423.39	-36.09	-102.38	-36.09	0.00	0.00	0.00
Projection to TD									

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Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,765.00	10,763.01	20.35	63.67	Tie In
10,902.00	10,900.01	19.49	63.53	First Phoenix MWD Survey
17,378.00	17,371.48	-35.07	-99.51	Final Phoenix MWD Survey
17,430.00	17,423.39	-36.09	-102.38	Projection to TD