



Directional Survey

District DELAWARE BASIN	County EDDY	Field Name PADUCA	Project Group DELAWARE BASIN REG	State/Province NM
Surface Legal Location Sec. 14 T25S R31E	API/UWI 3001542091	Latitude (°) 32° 8' 12.317" N	Longitude (°) 103° 45' 12.594" W	Ground Elev... 3,400.60
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,425.60
				Tubing Head Elevation (ft)

Wellbore Name OH	Parent Wellbore	SAP Well ID	Kick Off Depth (ftKB)	Vertical Section Direction (°) 186.12
Actual Deviation Survey		Definitive?	Proposed?	Proposed Deviation Survey

Date	Description
MD Tie In (ftKB)	TVD Tie In (ftKB)
Inclination Tie In (°)	Azimuth Tie In (°)
NS Tie In (ft)	EW Tie In (ft)

Survey Data										
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
Wellbore Name ST01		Parent Wellbore OH		SAP Well ID			Kick Off Depth (ftKB) 9,834.0		Vertical Section Direction (°) 186.12	
Actual Deviation Survey SPERRY, Proposed? No				Definitive? Yes		Proposed? No		Proposed Deviation Survey		

Date 8/6/2014	Description SPERRY
MD Tie In (ftKB) 9,779.00	TVD Tie In (ftKB) 9,764.98
Inclination Tie In (°) 1.39	Azimuth Tie In (°) 308.50
NS Tie In (ft) -0.05	EW Tie In (ft) -296.31

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Survey Tool	Survey Company
8/7/2014	9,779.00	1.39	308.50	9,764.98	31.64	-0.05	-296.31	0.00	MWD	SPERRY-SUN DRILLING SE...
8/6/2014	9,872.00	10.17	198.30	9,857.51	39.08	-7.16	-299.78	11.54	MWD	SPERRY-SUN DRILLING SE...
8/6/2014	9,903.00	14.19	199.76	9,887.80	45.45	-13.34	-301.93	13.00	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	9,935.00	18.86	200.69	9,918.47	54.28	-21.88	-305.08	14.62	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	9,966.00	22.45	199.11	9,947.47	64.90	-32.16	-308.79	11.72	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	9,990.00	24.75	198.86	9,969.47	74.26	-41.24	-311.91	9.59	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,021.00	27.89	195.07	9,997.25	87.76	-54.39	-315.90	11.48	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,053.00	30.76	192.23	10,025.15	103.29	-69.62	-319.58	9.96	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,084.00	34.54	190.99	10,051.25	119.94	-86.00	-322.94	12.38	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,116.00	36.49	191.41	10,077.29	138.45	-104.23	-326.55	6.14	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,147.00	37.79	193.02	10,102.00	157.06	-122.52	-330.51	5.24	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,179.00	40.18	192.49	10,126.88	177.06	-142.16	-334.95	7.54	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,211.00	42.77	191.26	10,150.85	198.14	-162.90	-339.31	8.48	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,242.00	45.09	187.29	10,173.18	219.61	-184.11	-342.76	11.61	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,274.00	47.70	185.18	10,195.25	242.77	-207.15	-345.26	9.45	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,305.00	49.87	184.22	10,215.67	266.08	-230.39	-347.17	7.38	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,336.00	51.56	184.32	10,235.30	290.07	-254.31	-348.96	5.46	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,368.00	53.32	182.92	10,254.81	315.41	-279.63	-350.56	6.50	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,400.00	55.84	183.64	10,273.35	341.45	-305.66	-352.05	8.09	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,431.00	57.81	181.68	10,290.32	367.35	-331.57	-353.25	8.27	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,462.00	60.47	180.28	10,306.22	393.85	-358.18	-353.70	9.42	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,494.00	63.19	181.14	10,321.32	421.93	-386.38	-354.05	8.82	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,525.00	66.42	180.73	10,334.52	449.86	-414.43	-354.51	10.49	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,557.00	68.60	181.92	10,346.76	479.32	-443.98	-355.19	7.63	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,588.00	70.97	181.76	10,357.47	508.33	-473.06	-356.13	7.66	MWD	SPERRY-SUN DRILLING SE...
8/7/2014	10,620.00	73.16	181.05	10,367.32	538.67	-503.49	-356.87	7.16	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,651.00	76.23	180.89	10,375.50	568.44	-533.38	-357.38	9.92	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,683.00	79.12	180.69	10,382.33	599.57	-564.64	-357.81	9.05	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,714.00	82.13	180.22	10,387.38	630.00	-595.22	-358.05	9.82	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,746.00	84.53	180.64	10,391.10	661.62	-627.00	-358.29	7.61	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,777.00	86.70	180.70	10,393.47	692.39	-657.90	-358.65	7.00	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,809.00	87.60	180.62	10,395.06	724.21	-689.86	-359.02	2.82	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,903.00	89.85	181.54	10,397.15	817.81	-783.82	-360.79	2.59	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	10,998.00	89.81	181.55	10,397.43	912.51	-878.78	-363.35	0.04	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,092.00	88.61	181.44	10,398.73	1,006.19	-972.74	-365.81	1.28	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,186.00	89.35	181.36	10,400.40	1,099.86	-1,066.69	-368.10	0.79	MWD	SPERRY-SUN DRILLING SE...



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Survey Data

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8/9/2014	11,280.00	88.21	181.59	10,402.40	1,193.53	-1,160.64	-370.52	1.24	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,374.00	89.35	181.69	10,404.41	1,287.22	-1,254.58	-373.21	1.22	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,469.00	90.37	181.48	10,404.64	1,381.92	-1,349.54	-375.84	1.10	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,563.00	89.72	181.62	10,404.56	1,475.62	-1,443.51	-378.38	0.71	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,657.00	90.09	181.12	10,404.72	1,569.30	-1,537.48	-380.63	0.66	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,751.00	90.59	181.33	10,404.16	1,662.95	-1,631.46	-382.64	0.58	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,845.00	91.20	180.95	10,402.69	1,756.58	-1,725.42	-384.51	0.76	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	11,940.00	90.65	181.06	10,401.16	1,851.19	-1,820.40	-386.17	0.59	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,034.00	91.67	180.85	10,399.26	1,944.79	-1,914.36	-387.74	1.11	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,128.00	91.36	181.43	10,396.77	2,038.40	-2,008.31	-389.61	0.70	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,223.00	90.49	181.07	10,395.24	2,133.05	-2,103.28	-391.68	0.99	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,317.00	90.89	180.99	10,394.11	2,226.67	-2,197.25	-393.37	0.43	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,412.00	91.45	181.24	10,392.17	2,321.29	-2,292.22	-395.22	0.65	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,506.00	89.85	181.47	10,391.10	2,414.95	-2,386.18	-397.44	1.72	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,601.00	89.91	181.77	10,391.30	2,509.66	-2,481.14	-400.13	0.32	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,695.00	90.93	182.13	10,390.61	2,603.41	-2,575.08	-403.33	1.15	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,789.00	91.26	182.96	10,388.81	2,697.21	-2,668.97	-407.50	0.95	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,883.00	92.09	183.17	10,386.07	2,791.03	-2,762.80	-412.52	0.91	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	12,978.00	92.74	183.11	10,382.06	2,885.82	-2,857.57	-417.72	0.69	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,072.00	91.08	182.58	10,378.93	2,979.61	-2,951.40	-422.39	1.85	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,167.00	90.19	182.33	10,377.88	3,074.41	-3,046.30	-426.45	0.97	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,261.00	89.69	182.01	10,377.98	3,168.18	-3,140.24	-430.01	0.63	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,355.00	89.85	183.37	10,378.73	3,262.95	-3,242.87	-433.88	0.72	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,450.00	88.92	182.97	10,379.75	3,357.72	-3,342.87	-444.14	1.07	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,545.00	89.94	183.29	10,380.69	3,452.49	-3,517.72	-449.27	1.14	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,639.00	89.04	183.56	10,381.53	3,547.26	-3,612.55	-454.94	0.99	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,734.00	88.76	183.28	10,383.34	3,642.03	-3,706.36	-460.55	0.42	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,828.00	89.69	183.87	10,384.62	3,736.80	-3,801.17	-466.47	1.16	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,923.00	89.41	184.36	10,385.36	3,831.57	-3,894.92	-473.22	0.60	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,017.00	88.86	184.66	10,386.80	3,926.34	-3,989.62	-480.69	0.66	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,112.00	88.95	184.93	10,388.59	4,021.11	-4,083.27	-488.54	0.30	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,206.00	88.00	184.61	10,391.12	4,115.88	-4,177.91	-496.44	1.06	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,301.00	87.79	183.83	10,394.61	4,210.65	-4,272.59	-503.43	0.85	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,396.00	88.32	183.93	10,397.80	4,305.42	-4,366.32	-509.78	0.57	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,490.00	88.36	184.17	10,400.99	4,400.19	-4,476.00	-517.55	0.22	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,585.00	87.97	184.04	10,403.52	4,494.96	-4,554.75	-523.20	0.52	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,679.00	87.97	184.04	10,405.50	4,589.73	-4,610.58	-527.14	0.00	BIT	SPERRY-SUN DRILLING SE...