



COTTON DRAW 14 FED COM 1H

WEST UNRESTRICTED

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)

Wellbores

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

Deviation Survey

Date	Description
MD Tie In (ftKB)	TVD Tie In (ftKB)
Inclination Tie In (")	Azimuth Tie In (")
NSTie In (ft)	EWtie 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		

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
NSTie In (ft) -0.05	EWtie In (ft) -296.31

Survey Data

Date	MD (ftKB)	Incl (")	Azm (")	TVD (ftKB)	VS (ft)	N/S (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...

Provide signature page for Survey



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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	13,450.00	89.85	183.37	10,378.73	3,356.84	-3,329.02	-438.88	0.72	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,545.00	88.92	182.97	10,379.75	3,451.71	-3,423.87	-444.14	1.07	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,639.00	89.94	183.29	10,380.69	3,545.57	-3,517.72	-449.27	1.14	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,734.00	89.04	183.56	10,381.53	3,640.46	-3,612.55	-454.94	0.99	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,828.00	88.76	183.28	10,383.34	3,734.34	-3,706.36	-460.55	0.42	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	13,923.00	89.69	183.87	10,384.62	3,829.24	-3,801.17	-466.47	1.16	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,017.00	89.41	184.36	10,385.36	3,923.18	-3,894.92	-473.22	0.60	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,112.00	88.86	184.66	10,386.80	4,018.13	-3,989.62	-480.69	0.66	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,206.00	88.95	184.93	10,388.59	4,112.08	-4,083.27	-488.54	0.30	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,301.00	88.00	184.61	10,391.12	4,207.02	-4,177.91	-496.44	1.06	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,396.00	87.79	183.83	10,394.61	4,301.91	-4,272.59	-503.43	0.85	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,490.00	88.32	183.93	10,397.80	4,395.78	-4,366.32	-509.78	0.57	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,600.00	88.36	184.17	10,400.99	4,505.66	-4,476.00	-517.55	0.22	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,679.00	87.97	184.04	10,403.52	4,584.57	-4,554.75	-523.20	0.52	MWD	SPERRY-SUN DRILLING SE...
8/9/2014	14,735.00	87.97	184.04	10,405.50	4,640.50	-4,610.58	-527.14	0.00	BIT	SPERRY-SUN DRILLING SE...