



COTTON DRAW 89 SWD

WEST UNRESTRICTED

Directional Survey

District PERMIAN BASIN County EDDY Field Name PADUCA Project Group PB NEW MEXICO State/Province NM
Surface Legal Location SEC 3 T2S R31E API/UWI 3001531381 Latitude (DMS) 32° 9' 10.08" N Longitude (DMS) 103° 45' 48.96" W Ground Elev 3,419.00 KB - GL (ft) 17.00 Orig KB Elev (ft) 3,436.00 ITH Elev (ft)
Wellbores Wellbore Name ST01 Parent Wellbore OH Property Number 049146-010 Kick Off Depth (ftKB) 12,399.0 Vertical Section Direction (°) 119.67
Deviation Survey MWD Definitive? Yes Proposed? No Proposed Deviation Survey MWD

Deviation Survey

Date 6/7/2012 Description MWD
MD Tie In (ftKB) 12,300.00 TVD Tie In (ftKB) 12,296.82 Inclination Tie In (°) 0.12 Azimuth Tie In (°) 57.65 NSTie In (ft) -157.80 EWTie In (ft) 130.82

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
6/6/2012	12,339.00	0.12	250.92	12,335.82	191.77	-157.79	130.82	0.61	GYRO	GYRODATA SERVICES
6/9/2012	12,591.00	3.35	50.16	12,587.68	194.18	-153.16	136.22	1.37	MWD	HALLIBURTON
6/9/2012	12,623.00	2.97	51.08	12,619.63	194.81	-152.04	137.58	1.20	MWD	HALLIBURTON
6/9/2012	12,655.00	3.00	50.89	12,651.59	195.41	-150.99	138.88	0.10	MWD	HALLIBURTON
6/9/2012	12,687.00	3.06	53.99	12,683.54	196.07	-149.96	140.22	0.55	MWD	HALLIBURTON
6/9/2012	12,719.00	2.68	55.66	12,715.50	196.75	-149.04	141.53	1.22	MWD	HALLIBURTON
6/9/2012	12,814.00	1.79	57.55	12,810.43	198.41	-146.99	144.61	0.94	MWD	HALLIBURTON
6/10/2012	12,910.00	1.93	56.10	12,906.38	199.83	-145.28	147.22	0.15	MWD	HALLIBURTON
6/10/2012	13,006.00	1.65	58.98	13,002.33	201.23	-143.67	149.75	0.31	MWD	HALLIBURTON
6/10/2012	13,101.00	1.42	48.51	13,097.30	202.28	-142.18	151.80	0.38	MWD	HALLIBURTON
6/10/2012	13,197.00	1.00	57.90	13,193.28	203.06	-140.95	153.40	0.48	MWD	HALLIBURTON
6/10/2012	13,208.00	0.97	56.32	13,204.28	203.15	-140.85	153.56	0.37	MWD	HALLIBURTON
6/13/2012	13,985.00	0.70	155.00	13,981.22	209.97	-141.50	161.04	0.16	INC	RIG CREW
6/15/2012	14,240.00	1.30	147.00	14,236.18	213.81	-145.34	163.27	0.24	INC	RIG CREW
6/16/2012	14,460.00	2.10	80.60	14,456.10	219.16	-146.77	168.61	0.90	INC	RIG CREW
6/17/2012	14,639.00	0.90	164.60	14,635.05	222.70	-147.59	172.22	1.23	INC	RIG CREW
6/20/2012	14,810.00	1.60	97.60	14,806.02	225.86	-149.20	174.94	0.88	INC	RIG CREW
6/20/2012	14,879.00	2.00	92.60	14,874.99	227.83	-149.39	177.10	0.62	INC	RIG CREW
6/20/2012	15,000.00	2.40	55.60	14,995.90	230.82	-148.05	181.30	1.20	INC	RIG CREW
6/20/2012	15,260.00	2.20	86.00	15,255.70	237.35	-144.63	190.77	0.47	INC	RIG CREW
7/2/2012	15,840.00	1.70	20.60	15,835.43	245.26	-135.80	204.90	0.37	INC	RIG CREW
7/3/2012	16,030.00	3.50	30.00	16,025.23	244.85	-128.13	208.80	0.97	INC	RIG CREW
7/8/2012	16,467.00	2.90	35.60	16,461.54	246.07	-107.59	221.90	0.15	INC	RIG CREW

Wellbore Name OH Parent Wellbore OH Property Number 049146-010 Kick Off Depth (ftKB) Vertical Section Direction (°)
Deviation Survey MWD Definitive? No Proposed? No 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
------	-----------	----------	---------	------------	---------	----------	----------	------------------	----------------	----------------

