

30-025-42368

Well Name: DUNKEL 7 STATE 2H

Sub-Division DELAWARE BASIN	Region DELAWARE SLOPE EAST	Field Name WEIHEN	County LEA	State/Province NM
Surface Legal Location SECTION 7 T18S R36E	API/UWI 3002542368	Latitude (°) 32° 45' 19.073" N	Longitude (°) 103° 23' 43.083" W	Orig KB Elevation (ft) 3,888.00
				Ground Elev MSL (ft) 3,863.00
				KB - GL (ft) 25.00

<b>Wellbores</b>			
Wellbore Name OH	Parent Wellbore OH	SAP Well ID 38174	Vertical Section Direction (°)

<b>Kick Offs &amp; Key Depths</b>			
Date 4/4/2015	Type Kick Off	Top Depth (ftKB) 8,571.0	<b>HOBBS OCD</b>

Actual Deviation Survey XTREME TOOL, Proposed? No	Definitive? No	Proposed? No	Proposed Deviation Survey
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<b>Deviation Survey</b>			
Date 3/23/2015	Description XTREME TOOL	<b>JUL 30 2015</b>	
MD Tie In (ftKB)	TVD Tie In (ftKB)	Inclination Tie In (°)	Azimuth Tie In (°)
			NSTie In (ft)
			EW Tie In (ft)

**RECEIVED**

<b>Survey Data</b>											
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company	
3/29/2015	47.00	0.22	69.81	47.00	0.03	0.03	0.08	0.47	MWD	XTREME	
3/29/2015	173.00	0.31	162.62	173.00	-0.21	-0.21	0.41	0.31	MWD	XTREME	
3/29/2015	200.00	0.09	41.20	200.00	-0.27	-0.26	0.45	1.35	MWD	XTREME	
3/29/2015	232.00	0.22	207.09	232.00	-0.30	-0.30	0.44	0.96	MWD	XTREME	
3/29/2015	294.00	0.48	290.19	294.00	-0.32	-0.32	0.14	0.81	MWD	XTREME	
3/29/2015	354.00	0.48	287.99	354.00	-0.15	-0.15	-0.33	0.03	MWD	XTREME	
3/29/2015	414.00	0.62	291.60	413.99	0.05	0.04	-0.88	0.24	MWD	XTREME	
3/29/2015	474.00	0.70	287.29	473.99	0.28	0.27	-1.53	0.16	MWD	XTREME	
3/29/2015	537.00	0.79	298.41	536.98	0.61	0.59	-2.28	0.27	MWD	XTREME	
3/29/2015	651.00	0.70	288.61	650.97	1.21	1.19	-3.63	0.14	MWD	XTREME	
3/29/2015	776.00	0.70	282.41	775.96	1.62	1.60	-5.10	0.06	MWD	XTREME	
3/29/2015	961.00	0.31	256.79	960.96	1.76	1.73	-6.69	0.24	MWD	XTREME	
3/29/2015	1,149.00	0.22	277.80	1,148.96	1.70	1.66	-7.54	0.07	MWD	XTREME	
3/29/2015	1,337.00	0.09	169.61	1,336.95	1.60	1.56	-7.87	0.14	MWD	XTREME	
3/29/2015	1,525.00	0.09	169.69	1,524.95	1.31	1.27	-7.82	0.00	MWD	XTREME	
3/29/2015	1,715.00	0.22	211.70	1,714.95	0.86	0.82	-7.98	0.09	MWD	XTREME	
3/29/2015	1,810.00	0.22	355.49	1,809.95	0.88	0.84	-8.09	0.44	MWD	XTREME	
3/29/2015	1,872.00	0.09	335.19	1,871.95	1.05	1.01	-8.12	0.22	MWD	XTREME	
3/29/2015	2,053.00	0.31	261.16	2,052.95	1.10	1.06	-8.67	0.16	MWD	XTREME	
3/29/2015	2,148.00	0.09	4.59	2,147.95	1.14	1.09	-8.92	0.36	MWD	XTREME	
3/29/2015	2,337.00	0.00	6.60	2,336.95	1.29	1.24	-8.90	0.05	MWD	XTREME	
3/29/2015	2,431.00	0.31	34.82	2,430.95	1.50	1.45	-8.76	0.33	MWD	XTREME	
3/29/2015	2,525.00	0.31	24.81	2,524.95	1.93	1.89	-8.51	0.06	MWD	XTREME	
3/29/2015	2,620.00	0.00	96.30	2,619.95	2.17	2.12	-8.40	0.33	MWD	XTREME	
3/29/2015	2,716.00	0.09	298.01	2,715.95	2.20	2.16	-8.47	0.09	MWD	XTREME	
3/29/2015	2,810.00	0.09	70.82	2,809.95	2.26	2.22	-8.46	0.18	MWD	XTREME	
3/29/2015	2,904.00	0.48	21.60	2,903.95	2.65	2.61	-8.25	0.45	MWD	XTREME	
3/29/2015	2,999.00	0.09	340.82	2,998.95	3.09	3.05	-8.12	0.44	MWD	XTREME	
3/29/2015	3,094.00	0.40	341.61	3,093.95	3.48	3.43	-8.25	0.33	MWD	XTREME	
3/29/2015	3,124.00	0.31	346.92	3,123.95	3.65	3.61	-8.30	0.32	MWD	XTREME	
3/30/2015	3,146.00	0.22	13.03	3,145.95	3.75	3.71	-8.31	0.67	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,257.00	0.70	348.55	3,256.94	4.63	4.58	-8.40	0.46	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,320.00	0.97	32.63	3,319.94	5.45	5.41	-8.18	1.07	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,414.00	0.62	13.65	3,413.93	6.61	6.57	-7.63	0.46	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,509.00	0.70	344.38	3,508.92	7.67	7.63	-7.67	0.36	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,603.00	1.06	323.55	3,602.91	8.93	8.88	-8.34	0.51	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,698.00	0.97	0.98	3,697.90	10.44	10.40	-8.85	0.69	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,792.00	0.44	293.97	3,791.89	11.38	11.34	-9.17	0.95	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,887.00	1.85	204.96	3,886.87	10.15	10.10	-10.15	1.99	MWD	PATHFINDER ENERGY SE...	
3/30/2015	3,981.00	1.67	193.28	3,980.83	7.44	7.39	-11.10	0.43	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,076.00	1.32	201.56	4,075.80	5.08	5.02	-11.82	0.43	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,170.00	1.49	211.16	4,169.77	3.04	2.97	-12.85	0.31	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,265.00	1.14	201.62	4,264.74	1.11	1.03	-13.84	0.43	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,359.00	1.06	210.97	4,358.72	-0.51	-0.58	-14.63	0.21	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,454.00	0.70	243.91	4,453.71	-1.51	-1.59	-15.60	0.64	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,548.00	0.97	241.01	4,547.70	-2.14	-2.23	-16.82	0.29	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,642.00	0.79	228.82	4,641.69	-2.95	-3.04	-18.00	0.28	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,736.00	0.70	229.79	4,735.68	-3.74	-3.84	-18.93	0.10	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,831.00	0.44	235.72	4,830.68	-4.32	-4.42	-19.67	0.28	MWD	PATHFINDER ENERGY SE...	
3/30/2015	4,925.00	0.88	271.08	4,924.67	-4.50	-4.61	-20.69	0.62	MWD	PATHFINDER ENERGY SE...	
3/30/2015	5,020.00	0.62	246.18	5,019.67	-4.69	-4.80	-21.89	0.43	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,114.00	0.88	271.53	5,113.66	-4.87	-4.99	-23.08	0.44	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,208.00	0.35	55.46	5,207.65	-4.68	-4.81	-23.56	1.26	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,303.00	0.53	64.81	5,302.65	-4.34	-4.45	-22.93	0.20	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,397.00	0.53	76.34	5,396.65	-4.05	-4.17	-22.11	0.11	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,492.00	0.70	42.40	5,491.64	-3.52	-3.63	-21.29	0.41	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,586.00	0.44	69.59	5,585.64	-2.98	-3.08	-20.57	0.39	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,681.00	0.70	63.01	5,680.63	-2.59	-2.69	-19.71	0.28	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,775.00	0.53	43.20	5,774.63	-2.02	-2.12	-18.90	0.29	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,870.00	0.88	159.17	5,869.62	-2.38	-2.48	-18.34	1.27	MWD	PATHFINDER ENERGY SE...	
4/1/2015	5,964.00	0.79	147.02	5,963.61	-3.60	-3.70	-17.73	0.21	MWD	PATHFINDER ENERGY SE...	
4/1/2015	6,059.00	2.02	168.48	6,058.58	-5.80	-5.89	-17.04	1.39	MWD	PATHFINDER ENERGY SE...	
4/1/2015	6,153.00	2.20	178.82	6,152.52	-9.23	-9.31	-16.67	0.45	MWD	PATHFINDER ENERGY SE...	
4/1/2015	6,248.00	2.29	172.45	6,247.45	-12.93	-13.02	-16.38	0.28	MWD	PATHFINDER ENERGY SE...	





# Directional Survey

**Well Name: DUNKEL 7 STATE 2H**

Sub-Division DELAWARE BASIN		Region DELAWARE SLOPE EAST		Field Name WEIHEN		County LEA		State/Province NM	
Surface Legal Location SECTION 7 T18S R36E		API/UWI 3002542368		Latitude (°) 32° 45' 19.073" N		Longitude (°) 103° 23' 43.083" W		Orig KB Elevation (ft) 3,888.00	
								Ground Elev MSL (ft) 3,863.00	
								KB - GL (ft) 25.00	

**Survey Data**

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
4/1/2015	11,184.00	92.42	0.23	9,171.01	1,972.30	1,972.17	-28.63	0.02	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,279.00	92.15	0.45	9,167.22	2,067.21	2,067.10	-28.07	0.37	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,373.00	92.24	1.22	9,163.62	2,161.13	2,161.02	-26.70	0.82	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,467.00	92.51	1.37	9,159.72	2,255.01	2,254.91	-24.58	0.33	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,562.00	92.24	0.95	9,155.79	2,349.90	2,349.81	-22.66	0.53	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,656.00	92.33	0.35	9,152.04	2,443.81	2,443.73	-21.59	0.64	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,751.00	93.83	359.41	9,146.93	2,538.67	2,538.59	-21.79	1.86	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,845.00	94.09	359.90	9,140.44	2,632.44	2,632.36	-22.36	0.59	MWD	PATHFINDER ENERGY SE...
4/1/2015	11,940.00	94.35	0.27	9,133.45	2,727.18	2,727.10	-22.21	0.48	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,034.00	94.53	0.05	9,126.18	2,820.90	2,820.82	-21.95	0.30	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,129.00	94.70	0.50	9,118.53	2,915.58	2,915.51	-21.50	0.50	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,223.00	95.06	0.23	9,110.54	3,009.24	3,009.17	-20.90	0.48	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,318.00	93.47	1.02	9,103.47	3,103.96	3,103.90	-19.87	1.87	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,412.00	94.44	1.06	9,096.99	3,197.71	3,197.66	-18.17	1.03	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,507.00	94.35	1.04	9,089.71	3,292.40	3,292.36	-16.43	0.10	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,601.00	93.30	1.00	9,083.44	3,386.17	3,386.14	-14.76	1.12	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,696.00	94.26	0.30	9,077.17	3,480.95	3,480.92	-13.68	1.25	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,790.00	94.79	359.64	9,069.76	3,574.65	3,574.63	-13.73	0.90	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,884.00	95.85	0.02	9,061.04	3,668.24	3,668.22	-14.01	1.20	MWD	PATHFINDER ENERGY SE...
4/1/2015	12,979.00	96.20	359.67	9,051.07	3,762.72	3,762.70	-14.27	0.52	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,073.00	93.65	358.93	9,043.00	3,856.36	3,856.33	-15.41	2.82	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,168.00	94.00	359.43	9,036.66	3,951.14	3,951.11	-16.77	0.64	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,262.00	92.86	359.19	9,031.04	4,044.97	4,044.93	-17.90	1.24	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,357.00	90.31	359.11	9,028.41	4,139.92	4,139.88	-19.31	2.69	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,451.00	89.78	359.08	9,028.34	4,233.92	4,233.87	-20.79	0.56	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,546.00	89.78	359.30	9,028.70	4,328.91	4,328.86	-22.14	0.23	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,640.00	89.08	359.85	9,029.64	4,422.91	4,422.85	-22.83	0.95	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,735.00	88.99	359.55	9,031.24	4,517.89	4,517.83	-23.33	0.33	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,829.00	88.64	359.92	9,033.18	4,611.87	4,611.81	-23.76	0.54	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,852.00	88.37	359.70	9,033.78	4,634.87	4,634.80	-23.84	1.51	MWD	PATHFINDER ENERGY SE...
4/1/2015	13,920.00	88.37	359.70	9,035.72	4,702.84	4,702.78	-24.20	0.00	BIT	PATHFINDER ENERGY SE...

Wellbore Name ST01	Parent Wellbore OH	SAP Well ID	Vertical Section Direction (°)
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**Kick Offs & Key Depths**

Date 4/15/2015	Type Kick Off	Top Depth (ftKB) 12,646.0
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



# Directional Survey

## Well Name: DUNKEL 7 STATE 2H

Sub-Division DELAWARE BASIN	Region DELAWARE SLOPE EAST	Field Name WEIHEN	County LEA	State/Province NM
Surface Legal Location SECTION 7 T18S R36E	API/UWI 3002542368	Latitude (°) 32° 45' 19.073" N	Longitude (°) 103° 23' 43.083" W	Orig KB Elevation (ft) 3,888.00
				Ground Elev MSL (ft) 3,863.00
				KB - GL (ft) 25.00

Wellbore Name OH	Parent Wellbore OH	SAP Well ID 38174	Vertical Section Direction (°)
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### Kick Offs & Key Depths

Date 4/4/2015	Type Kick Off	Top Depth (ftKB) 8,571.0
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)	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
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Wellbore Name ST01	Parent Wellbore OH	SAP Well ID	Vertical Section Direction (°)
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### Kick Offs & Key Depths

Date 4/15/2015	Type Kick Off	Top Depth (ftKB) 12,646.0
Actual Deviation Survey MWD ST01, Proposed? No	Definitive? No	Proposed? No
		Proposed Deviation Survey

### Deviation Survey

Date 4/14/2015	Description MWD ST01
MD Tie In (ftKB) 12,620.00	TVD Tie In (ftKB) 9,082.33
Inclination Tie In (°) 93.49	Azimuth Tie In (°) 0.86
NSTie In (ft) 3,404.87	EW Tie In (ft) -14.73

### Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
4/15/2015	12,697.00	92.24	1.70	9,078.48	3,481.75	3,481.75	-13.01	1.96	MWD	PATHFINDER ENERGY SE...
4/15/2015	12,791.00	90.48	0.02	9,076.25	3,575.71	3,575.71	-11.60	2.59	MWD	PATHFINDER ENERGY SE...
4/15/2015	12,886.00	90.92	0.06	9,075.09	3,670.70	3,670.70	-11.54	0.47	MWD	PATHFINDER ENERGY SE...
4/15/2015	12,980.00	88.46	358.89	9,075.60	3,764.68	3,764.69	-12.40	2.90	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,074.00	88.02	359.82	9,078.49	3,858.63	3,858.64	-13.45	1.09	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,169.00	88.20	0.06	9,081.62	3,953.58	3,953.58	-13.55	0.32	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,263.00	87.93	0.00	9,084.79	4,047.53	4,047.53	-13.50	0.29	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,358.00	90.04	0.24	9,086.48	4,142.51	4,142.51	-13.31	2.24	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,452.00	90.22	0.24	9,086.26	4,236.51	4,236.51	-12.91	0.19	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,547.00	90.48	0.45	9,085.68	4,331.50	4,331.50	-12.34	0.35	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,641.00	90.31	0.62	9,085.03	4,425.50	4,425.50	-11.46	0.26	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,736.00	90.22	358.90	9,084.59	4,520.49	4,520.49	-11.86	1.81	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,830.00	91.10	359.29	9,083.51	4,614.47	4,614.47	-13.34	1.02	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,854.00	90.84	359.48	9,083.11	4,638.47	4,638.47	-13.60	1.34	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,920.00	90.84	359.48	9,082.14	4,704.46	4,704.46	-14.20	0.00	MWD	PATHFINDER ENERGY SE...
4/15/2015	13,950.00	91.28	359.35	9,081.58	4,734.45	4,734.45	-14.51	1.53	BIT	PATHFINDER ENERGY SE...