

District I 1625 N. French Dr., Hobbs, NM 88240 Phone:(575) 393-8161 Fax:(575) 393-0720 District II 811 S. First St., Artesia, NM 88210 Phone:(575) 748-1283 Fax:(575) 748-9720 District III 1000 Rio Brazos Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170 District IV 1220 S. St Francis Dr., Santa Fe, NM 87505 Phone:(505) 476-3470 Fax:(505) 476-3462	State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 S. St Francis Dr. Santa Fe, NM 87505	Form C-103 August 1, 2011 Permit 234851 WELL API NUMBER 30-025-43704 5. Indicate Type of Lease P 6. State Oil & Gas Lease No. 7. Lease Name or Unit Agreement Name SODBUSTER 21 FEE																																																
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)																																																		
1. Type of Well: O	8. Well Number 004H																																																	
2. Name of Operator MANZANO LLC	9. OGRID Number 231429																																																	
3. Address of Operator PO BOX 2107 , ROSWELL , NM 882022107	10. Pool name or Wildcat																																																	
4. Well Location Unit Letter <u>N</u> : <u>200</u> feet from the <u>S</u> line and feet <u>1650</u> from the <u>W</u> line Section <u>21</u> Township <u>09S</u> Range <u>35E</u> NMPM _____ County <u>Lea</u>																																																		
11. Elevation (Show whether DR, KB, BT, GR, etc.) 4152 GR																																																		
Pit or Below-grade Tank Application ☐ or Closure ☐ Pit Type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____ Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____																																																		
12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data <table style="width:100%;"> <tr> <td colspan="2" style="text-align: center;">NOTICE OF INTENTION TO:</td> <td colspan="2" style="text-align: center;">SUBSEQUENT REPORT OF:</td> </tr> <tr> <td>PERFORM REMEDIAL WORK ☐</td> <td>PLUG AND ABANDON ☐</td> <td>REMEDIAL WORK ☐</td> <td>ALTER CASING ☐</td> </tr> <tr> <td>TEMPORARILY ABANDON ☐</td> <td>CHANGE OF PLANS ☐</td> <td>COMMENCE DRILLING OPNS. ☐</td> <td>PLUG AND ABANDON ☐</td> </tr> <tr> <td>PULL OR ALTER CASING ☐</td> <td>MULTIPLE COMPL ☐</td> <td>CASING/CEMENT JOB ☐</td> <td></td> </tr> <tr> <td colspan="2">Other: _____</td> <td colspan="2">Other: <u>Drilling/Cement</u> ☒</td> </tr> </table>			NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:		PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTER CASING ☐	TEMPORARILY ABANDON ☐	CHANGE OF PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDON ☐	PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐		Other: _____		Other: <u>Drilling/Cement</u> ☒																													
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13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work.) SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion. 3/31/17 Spud Well 4/3/17 TD surface hole @ 2246'. Run 50 jts 8-5/8 32# J-55. Cement with 1200 sxs. Circulated 510 sxs to surface. WOC 4/4/17 - 4/5/17 TD pilot hole @ 5000'. Attempt to run E-logs. Couldn't get past 3000'. 4/6/17 TIH and spot 40 sx Class C plug 1.33 yield. Spot kick off plug with 258 sx Class H 17.5ppg/0.959 yield. WOC 4/7/17 Tag TOC on kick off plug at 3,940'. 4/15/17 TD well at 9348. 4/16/17 Run 215 jts 5.5 20# L-80. Cement with 1900 sxs Class C. Circulated 140 sxs to surface. Bump plug and hold at 3622. 4/17/17 RDMO Norton Drilling Rig #6 See Attached 3/31/2017 Spudded well.																																																		
Casing and Cement Program <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Date</th> <th>String</th> <th>Fluid Type</th> <th>Hole Size</th> <th>Csg Size</th> <th>Weight lb/ft</th> <th>Grade</th> <th>Est TOC</th> <th>Dpth Set</th> <th>Sacks</th> <th>Yield</th> <th>Class</th> <th>1" Dpth</th> <th>Pres Held</th> <th>Pres Drop</th> <th>Open Hole</th> </tr> </thead> <tbody> <tr> <td>04/03/17</td> <td>Surf</td> <td>FreshWater</td> <td>12.25</td> <td>8.625</td> <td>32</td> <td>J55</td> <td>0</td> <td>2246</td> <td>1200</td> <td>1.33</td> <td>C</td> <td></td> <td>1200</td> <td>0</td> <td>N</td> </tr> <tr> <td>04/16/17</td> <td>Prod</td> <td>CutBrine</td> <td>7.875</td> <td>5.5</td> <td>20</td> <td>L80</td> <td>0</td> <td>9348</td> <td>1900</td> <td>1.22</td> <td>C</td> <td></td> <td>3622</td> <td>0</td> <td>N</td> </tr> </tbody> </table>			Date	String	Fluid Type	Hole Size	Csg Size	Weight lb/ft	Grade	Est TOC	Dpth Set	Sacks	Yield	Class	1" Dpth	Pres Held	Pres Drop	Open Hole	04/03/17	Surf	FreshWater	12.25	8.625	32	J55	0	2246	1200	1.33	C		1200	0	N	04/16/17	Prod	CutBrine	7.875	5.5	20	L80	0	9348	1900	1.22	C		3622	0	N
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I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐ , a general permit ☐ or an (attached) alternative OCD-approved plan ☐ .																																																		
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MANZANO
ENERGY PARTNERS

Project: Lea Co., NM (NAD 83)
Site: Sec 21-T9S-R35E
Well: Sodbuster 21 FEE #4H
Wellbore: HZ [240537]
Design: FINAL



CATHEDRAL
ENERGY



Azimuths to Grid North
True North: -0.53°
Magnetic North: 6.40°

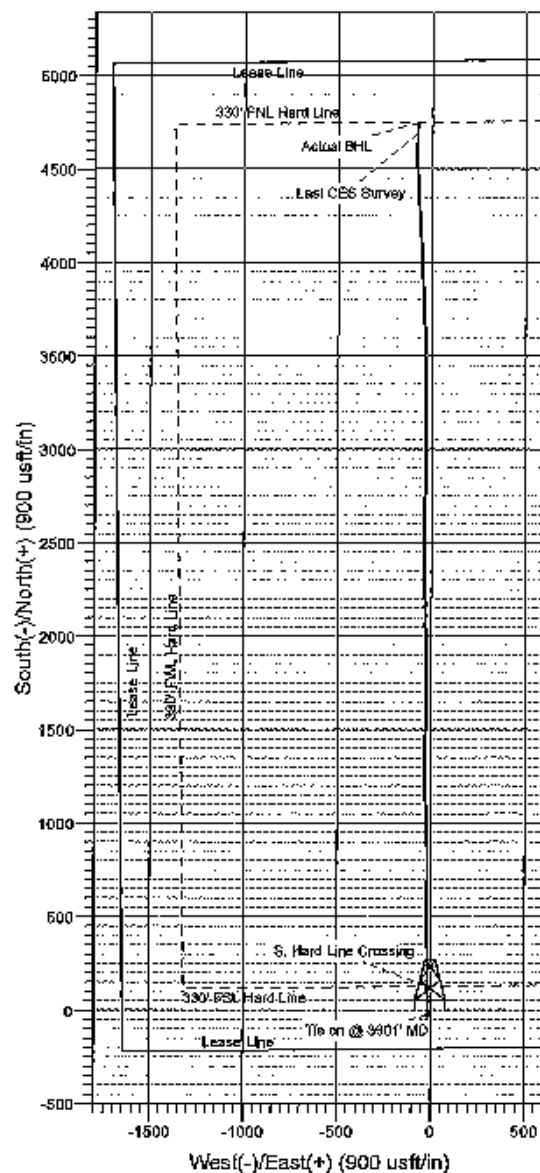
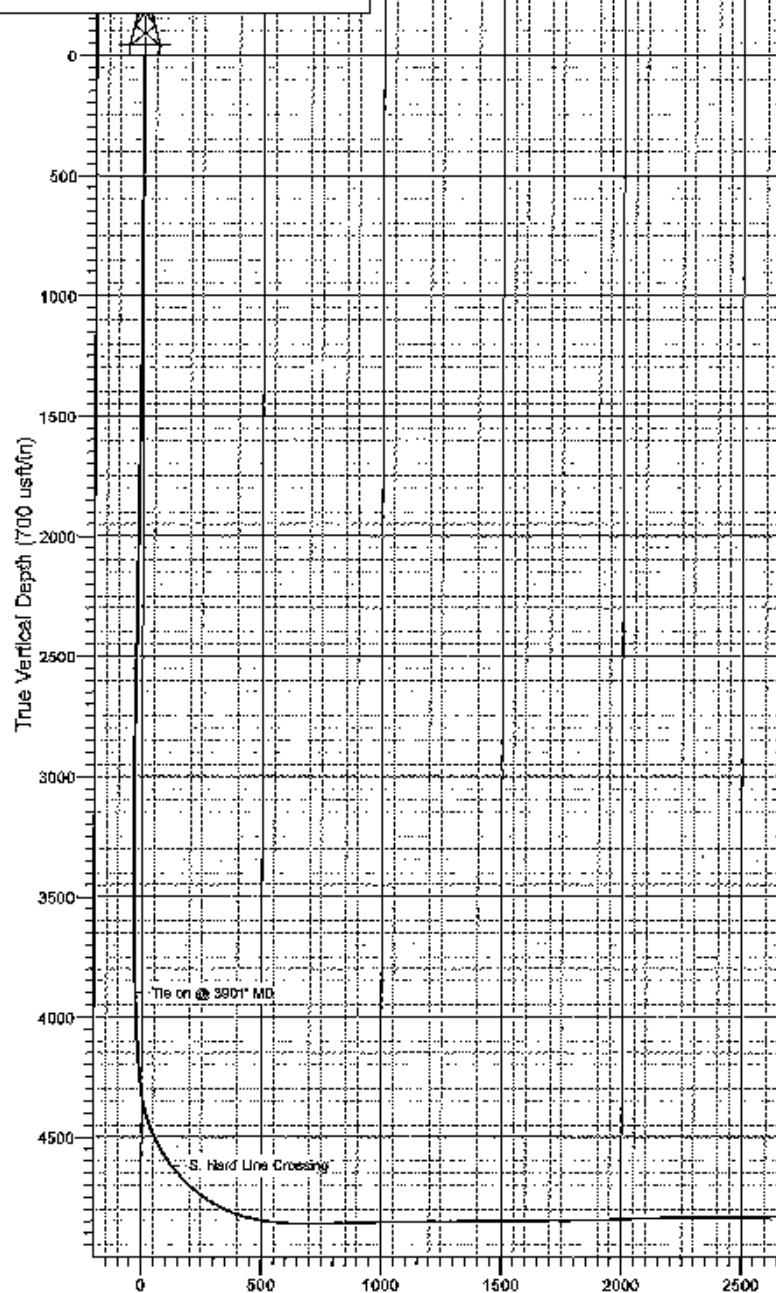
Magnetic Field
Strength: 48803.1snT
Dip Angle: 61.30°
Date: 2/3/2017
Model: HDGM

+N/-S	+E/-W	Northing	Ground Level: Easting	4152.00	Latitude	Longitude
0.00	0.00	915554.90	835306.30		33.513005	-103.358855

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
3901.00	3901.40	0.60	28.00	-27.96	-18.20	-27.77	Tie on @ 3901' MD
4618.58	4650.00	36.88	0.65	127.46	-18.58	127.64	S. Hard Line Crossing
4823.70	9292.00	91.40	0.90	4691.15	-77.85	4691.73	Last CES Survey
4822.33	9348.00	91.40	0.90	4747.13	-76.97	4747.70	Actual BHL

Actual Bottom Hole Location
332' FNL / 1625' FWL
X:835229.33 Y:920302.03



Vertical Section at 359.36° (700 usft/in)



Cathedral Energy Services Survey Report



Company:	Manzano LLC	Project:	Well Sodbuster 21 FEE #4H
Block:	Sec 21 T9S R35E	Client:	13 KB @ 4165.00usft (Norton #4)
Section:	Sec 21 T9S R35E	Client:	13 KB @ 4165.00usft (Norton #4)
Well:	Sodbuster 21 FEE #4H	Client:	Grid
Wellhead:	HZ [240537]	Client:	Minimum Curvature
Design:	FINAL	Client:	USA EDM 5000 Multi Users DB

Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Sec 21 T9S R35E		
Site Position:		Northing:	915,554.90 usft
From:	Map	Easting:	835,308.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	33.513005
		Longitude:	-103.368855
		Grid Convergence:	0.53 °

Sodbuster 21 FEE #4H						
Well Position	+N-S	0.00 usft	Northing:	915,554.90 usft	Latitude:	33.513005
	+E-W	0.00 usft	Easting:	835,308.30 usft	Longitude:	-103.368855
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,152.00 usft

Wellhead:	HZ 240537				
Wellhead:	MWD NAME	STATION NAME	DESTINATION	DATE	TIME
	HDGM	3/31/2017	6.33	61.30	48.802

Design:	FINAL			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 3,801.40
Vertical Section:	North Section 1.00"	2.00"	3.00"	4.00"
	0.00	0.00	0.00	359.36

Survey Station:	DATE	TIME	Survey Wellhead	Well Name	Description
200.40	3,901.40		Inviclus Surveys (Pilot Hole)	ISCWSA MWD	MWD - ISCWSA
3,979.00	9,348.00		CES MWD (HZ [240537])	MWD+HDGM	OWSG MWD + HDGM

Station	Depth	Interval	Vertical	Horizontal	Vertical	Horizontal	Depth	Interval	Vertical	Horizontal
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.40	0.40	142.00	200.40	-0.55	0.43	-0.56	0.20	0.20		
285.40	0.70	184.00	285.39	-1.39	0.59	-1.40	0.51	0.32		
367.40	0.70	151.00	367.38	-2.44	0.83	-2.45	0.43	0.00		
477.40	0.30	302.00	477.39	-2.80	0.89	-2.81	1.08	-0.44		
586.40	0.80	150.00	586.38	-3.09	0.83	-3.10	0.96	0.33		
660.40	0.30	64.00	660.38	-3.40	1.39	-3.41	0.71	-0.33		
759.40	0.80	272.00	759.38	-3.28	0.88	-3.27	1.22	0.62		
851.40	0.80	188.00	851.37	-3.79	0.81	-3.80	1.74	0.00		
947.40	0.80	218.00	947.37	-4.87	0.70	-4.88	1.15	-0.10		
1,042.40	0.50	132.00	1,042.36	-5.68	0.59	-5.67	0.97	-0.32		
1,232.40	1.20	179.00	1,232.34	-8.21	1.24	-8.22	0.48	0.37		



Cathedral Energy Services
Survey Report



Company:	Manzano LLC	Location:	Well Saddle 24 FEE #4H
Project:	Lea Co., NM (NAD 83)	Tool:	13' KB @ 4165.00umf (Norton #4)
Survey:	Sec 21 T8S R35E	Method:	13' KB @ 4165.00umf (Norton #4)
Well:	Saddle 24 FEE #4H	Grid:	Grid
Notes:	HZ (240537)	Curvature:	Minimum Curvature
Drawn:	FINAL	Software:	USA EDM 5000 Multi Users DB

Measured	Interval	Known	Vertical	Horizontal	Angle	Angle	Angle	Angle	Angle
Depth	Interval	Known	Depth	Interval	Angle	Angle	Angle	Angle	Angle
1,328.40	0.50	281.00	1,328.33	-9.28	0.84	-9.29	1.28	-0.73	
1,423.40	1.30	223.00	1,423.32	-10.13	-0.30	-10.13	1.01	0.84	
1,518.40	1.00	228.00	1,518.30	-11.47	-1.65	-11.45	0.33	-0.32	
1,613.40	1.20	233.00	1,613.28	-12.63	-3.06	-12.59	0.23	0.21	
1,708.40	0.30	179.00	1,708.28	-13.48	-3.88	-13.44	1.10	-0.94	
1,804.40	0.70	218.00	1,804.27	-14.18	-4.22	-14.14	0.53	0.42	
1,935.00	1.20	202.00	1,934.85	-16.09	-5.22	-16.03	0.43	0.38	
1,995.40	1.00	251.00	1,995.24	-16.84	-5.96	-16.78	1.54	-0.33	
2,090.40	1.40	223.00	2,090.22	-17.88	-7.53	-17.88	0.74	0.42	
2,188.40	1.40	198.00	2,188.20	-19.85	-8.85	-19.85	0.88	0.00	
2,282.40	1.40	219.00	2,282.17	-21.99	-9.71	-21.88	0.58	0.00	
2,377.40	1.00	215.00	2,377.15	-23.57	-10.92	-23.44	0.43	-0.42	
2,472.40	1.20	219.00	2,472.13	-25.02	-12.02	-24.88	0.23	0.21	
2,567.40	1.20	222.00	2,567.11	-26.53	-13.31	-26.38	0.07	0.00	
2,663.40	1.20	188.00	2,663.09	-28.25	-14.26	-28.08	0.56	0.00	
2,758.40	1.20	214.00	2,758.07	-30.03	-15.09	-29.85	0.40	0.00	
2,864.40	1.10	205.00	2,864.05	-31.63	-16.04	-31.51	0.21	-0.10	
2,948.40	0.80	224.00	2,948.04	-32.98	-16.88	-32.78	0.46	-0.32	
3,044.40	0.30	221.00	3,044.03	-33.86	-17.51	-33.46	0.52	-0.52	
3,139.40	0.30	355.00	3,139.03	-33.80	-17.70	-33.40	0.58	0.00	
3,235.40	0.40	344.00	3,235.03	-33.02	-17.81	-32.82	0.13	0.10	
3,330.40	0.10	272.00	3,330.03	-32.70	-17.98	-32.50	0.40	-0.32	
3,426.40	0.20	296.00	3,426.03	-32.63	-18.22	-32.42	0.12	0.10	
3,520.40	0.70	11.00	3,520.03	-31.98	-18.26	-31.78	0.72	0.53	
3,617.40	0.80	29.00	3,617.02	-30.79	-17.88	-30.58	0.19	0.10	
3,712.40	0.70	31.00	3,712.01	-29.68	-17.32	-28.48	0.15	-0.11	
3,806.40	0.60	37.00	3,806.00	-28.78	-16.73	-26.80	0.13	-0.11	
3,901.40	0.60	28.00	3,901.00	-27.96	-16.20	-27.77	0.10	0.00	Tie on @ 3801' MD
3,978.00	2.40	351.60	3,978.57	-25.99	-16.24	-25.81	2.51	2.32	
4,075.00	3.80	5.80	4,074.42	-20.75	-16.21	-20.57	1.75	1.58	
4,170.00	4.80	12.10	4,168.15	-19.55	-15.05	-13.48	1.07	0.95	
4,265.00	4.80	353.10	4,263.81	-5.74	-14.70	-5.57	1.89	0.11	
4,287.00	4.80	353.70	4,285.70	-3.02	-15.02	-2.65	0.16	0.00	
4,328.00	7.10	352.80	4,327.52	0.30	-15.42	0.47	6.88	6.87	
4,381.00	11.70	357.40	4,359.08	5.50	-15.82	5.68	14.57	14.37	
4,392.00	15.80	0.70	4,389.18	12.88	-15.91	13.07	13.78	13.56	
4,424.00	18.90	4.40	4,418.71	22.45	-15.48	22.62	9.99	8.37	
4,456.00	21.00	4.50	4,449.79	33.33	-14.62	33.48	6.56	6.56	
4,488.00	23.20	1.00	4,479.44	45.35	-14.06	45.51	8.01	6.87	
4,520.00	25.80	359.60	4,508.58	58.62	-13.99	58.77	8.32	8.12	
4,552.00	29.90	356.80	4,536.85	73.65	-14.48	73.71	13.45	12.81	
4,583.00	32.40	355.40	4,563.37	89.65	-15.59	89.72	8.40	8.06	
4,615.00	34.30	358.70	4,590.11	107.11	-16.48	107.29	8.21	5.94	
4,647.00	36.80	0.60	4,616.17	125.67	-16.58	125.85	7.87	7.19	
4,680.00	38.88	0.65	4,618.58	127.48	-16.58	127.64	9.42	9.37	S. Hard Line Crossing
4,679.00	38.60	1.10	4,641.35	145.41	-16.28	145.59	9.42	9.38	
4,710.00	41.80	2.00	4,664.84	165.83	-15.74	165.80	7.66	7.42	
4,742.00	45.30	1.80	4,688.01	187.89	-15.04	187.85	10.88	10.62	
4,774.00	48.50	0.30	4,709.88	211.23	-14.68	211.38	13.46	13.12	
4,806.00	52.40	359.30	4,729.82	238.08	-14.76	238.23	9.38	9.08	
4,838.00	54.60	358.80	4,748.81	261.83	-15.18	261.99	7.80	7.50	
4,869.00	58.20	359.40	4,785.82	287.68	-16.59	287.83	11.09	10.97	
4,801.00	61.40	0.30	4,782.01	316.33	-15.66	315.48	10.29	10.00	



Cathedral Energy Services
Survey Report



Company	Manzano LLC	Location	State	Reference	Well
County	Lea Co., NM (NAD 83)	Work	County		13" KB @ 4165.00uak (Norton #4)
Sec	Sec 21-T9S-R36E	Work	County		13" KB @ 4165.00uak (Norton #4)
Sub	Subduster 21 FEE #4H	Work	County		GID
Well	HZ (240597)	Survey	County		Minimum Curvature
Depth	FINAL	Database	County		USA EDM 5000 Multi Users DB

MEASUREMENT	DEPTH	INCLINATION	AZIMUTH	CHANGING	DEPTH	INCLINATION	AZIMUTH	CHANGING	DEPTH	INCLINATION	AZIMUTH	CHANGING
USAL	FEET	DEG	DEG	DEG	FEET	DEG	DEG	DEG	FEET	DEG	DEG	DEG
4,899.00	64.20	0.20	4,796.64	343.79	-15.53	343.84	8.75	8.75				
4,885.00	66.70	359.20	4,809.63	372.89	-15.69	373.04	8.31	7.81				
4,898.00	70.40	358.30	4,821.27	401.73	-18.32	401.89	12.24	11.84				
5,028.00	74.10	357.10	4,831.02	432.18	-17.55	432.35	12.10	11.58				
5,080.00	76.80	357.30	4,839.08	463.11	-19.06	463.30	8.46	8.44				
5,091.00	78.70	358.20	4,845.37	493.43	-20.25	493.63	9.78	9.35				
5,123.00	82.00	359.00	4,850.48	525.02	-21.02	525.22	7.60	7.19				
5,165.00	84.30	0.30	4,854.28	558.78	-21.21	558.89	6.24	7.19				
5,187.00	86.30	1.10	4,858.90	588.67	-20.82	588.87	6.73	6.25				
5,218.00	88.50	1.80	4,858.30	618.63	-20.01	619.81	7.55	7.10				
5,314.00	90.20	0.90	4,859.39	715.59	-17.67	715.74	2.05	1.77				
5,410.00	91.30	0.50	4,858.14	811.67	-18.48	811.70	1.22	1.15				
5,504.00	91.30	358.50	4,858.00	905.50	-18.95	905.85	4.25	0.00				
5,600.00	90.80	357.40	4,854.16	1,001.34	-24.06	1,001.55	1.03	-0.42				
5,695.00	91.00	358.80	4,852.58	1,096.26	-27.13	1,096.51	1.58	0.11				
5,790.00	89.70	359.80	4,852.00	1,191.26	-28.12	1,191.51	1.73	-1.37				
5,885.00	91.10	0.10	4,851.34	1,288.28	-28.12	1,288.60	1.48	1.47				
5,980.00	89.60	359.70	4,850.84	1,381.26	-28.29	1,381.48	1.74	-1.88				
6,078.00	91.50	0.40	4,850.01	1,477.25	-28.20	1,477.47	2.21	2.08				
6,171.00	90.10	0.30	4,848.86	1,572.23	-27.62	1,572.44	1.48	-1.47				
6,266.00	91.30	0.60	4,847.52	1,667.22	-28.88	1,667.42	1.30	1.28				
6,361.00	90.50	359.70	4,846.03	1,762.21	-28.63	1,762.40	1.27	-0.84				
6,456.00	91.40	359.20	4,844.45	1,857.19	-27.54	1,857.38	1.08	0.95				
6,551.00	90.90	359.10	4,842.54	1,952.16	-28.95	1,952.36	0.54	-0.63				
6,646.00	92.20	359.40	4,839.98	2,047.11	-30.19	2,047.32	1.40	1.37				
6,742.00	91.80	359.30	4,836.82	2,143.05	-31.28	2,143.26	0.43	-0.42				
6,836.00	91.00	359.20	4,834.33	2,237.01	-32.51	2,237.24	0.86	-0.85				
6,932.00	90.10	359.10	4,833.41	2,333.00	-33.93	2,333.23	0.84	-0.94				
7,027.00	90.30	359.00	4,833.07	2,427.98	-34.85	2,428.23	0.77	0.21				
7,122.00	91.30	0.20	4,831.75	2,522.96	-34.85	2,523.21	1.13	1.05				
7,217.00	90.10	0.60	4,830.58	2,617.97	-34.18	2,618.18	1.33	-1.26				
7,312.00	89.10	0.40	4,831.25	2,712.98	-33.35	2,713.16	1.07	-1.05				
7,407.00	89.90	0.20	4,832.16	2,807.95	-32.86	2,808.16	0.77	0.74				
7,502.00	90.80	359.70	4,831.87	2,902.95	-32.94	2,903.14	1.18	1.05				
7,597.00	91.10	359.80	4,830.09	2,997.94	-33.27	2,998.12	0.38	0.32				
7,692.00	91.80	0.20	4,827.85	3,092.91	-33.18	3,093.09	0.61	0.53				
7,787.00	92.00	359.70	4,824.67	3,187.88	-33.27	3,188.04	0.87	0.42				
7,883.00	90.40	358.50	4,822.86	3,283.84	-33.84	3,284.01	1.68	-1.87				
7,978.00	86.40	0.80	4,825.51	3,378.78	-33.86	3,378.85	4.37	-4.21				
8,073.00	88.10	0.30	4,831.72	3,473.57	-33.12	3,473.73	0.45	-0.32				
8,168.00	88.30	358.80	4,828.36	3,568.45	-33.88	3,568.60	2.80	2.32				
8,263.00	89.80	357.70	4,837.94	3,663.39	-36.76	3,663.57	1.96	1.58				
8,358.00	90.10	357.80	4,838.02	3,758.31	-40.49	3,758.53	0.33	0.32				
8,453.00	90.10	357.40	4,837.86	3,853.23	-44.47	3,853.48	0.42	0.00				
8,548.00	89.80	357.10	4,837.88	3,948.12	-48.03	3,948.42	0.38	-0.21				
8,643.00	91.60	357.40	4,836.81	4,043.00	-53.59	4,043.35	1.82	1.79				
8,738.00	91.50	357.10	4,834.04	4,137.85	-58.14	4,138.25	0.33	-0.11				
8,833.00	91.40	356.80	4,831.84	4,232.69	-63.19	4,233.13	0.33	-0.11				
8,929.00	90.70	356.70	4,829.88	4,328.52	-66.64	4,329.02	0.74	-0.73				
9,024.00	90.40	356.10	4,828.97	4,423.33	-74.80	4,423.89	0.71	-0.32				
9,119.00	91.40	356.80	4,827.48	4,518.21	-76.83	4,518.81	3.03	1.05				
9,214.00	91.10	0.90	4,825.40	4,613.18	-79.06	4,613.78	2.23	-0.32				
9,282.00	91.40	0.90	4,823.70	4,691.15	-77.85	4,691.73	0.36	0.36	Last CES Survey			



Cathedral Energy Services
Survey Report



Company:	Manzano LLC	Control Point (Map Reference):	Well Sodbuster 21 FEE #41
Project:	Lea Co. NM (NAD 83)	Well ID:	13" KB @ 4165.00usft (Norton #4)
Site:	Sec 21, T9S, R35E	Map Date:	13" KB @ 4195.00usft (Norton #4)
Well:	Sodbuster 21 FEE #4H	Well ID:	Grid:
Well ID:	HZ 240537	Survey Method:	Minimum Curvature
Depth:	FINAL	Calculator:	USA EDM 5000 Multi Users DB

Measured	Vertical	Horizontal	Depth	MD	PLAN	Section	Angle	Radius	Correction
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)
8,346.00	91.40	0.80	4,822.33	4,747.13	-76.97	4,747.70	0.00	0.00	Actual BHL

Measured	Vertical	Horizontal	Depth	MD	PLAN	Section	Angle	Radius	Correction
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)
8,346.00	91.40	0.80	4,822.33	4,747.13	-76.97	4,747.70	0.00	0.00	Actual BHL
P3 PBHL - Sodbuster 21									
- actual wellpath misses target center by 24.85usft at 9346.00usft MD (4822.33 TVD, 4747.13 N, -76.97 E)									
- Point									

Measured	Vertical	Horizontal	Depth	MD	PLAN	Section	Angle	Radius	Correction
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)
3,901.40	3,901.00	-27.68	-16.20	Tie on @ 3901' MD					
4,650.00	4,618.58	127.48	-16.56	S. Hard Line Crossing					
8,292.00	4,823.70	4,891.15	-77.85	Last CES Survey					
9,346.00	4,822.33	4,747.13	-76.97	Actual BHL					

Checked By: _____ Approved By: _____ Date: _____

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Comments

Permit 234851

DRILLING COMMENTS

Operator: MANZANO LLC PO BOX 2107 ROSWELL , NM 882022107	OGRID: 231429
	Permit Number: 234851
	Permit Type: Drilling

Comments

Created By	Comment	Comment Date
lpack	3/31/17 Spud Well 4/3/17 TD surface hole @ 2246'. Run 50 jts 8-5/8 32# J-55. Cement with 1200 sxs. Circulated 510 sxs to surface. WOC. 4/4/17 - 4/5/17 TD pilot hole @ 5000'. Attempt to run E-logs. Couldn't get past 3000'. 4/6/17 TIH and spot 40 sx Class C plug 1.33 yield. Spot kick off plug with 258 sx Class H 17.5ppg/0.959 yield. WOC 4/7/17 Tag TOC on kick off plug at 3,940'. 4/15/17 TD well at 9348. 4/16/17 Run 215 jts 5.5 20# L-80. Cement with 1900 sxs Class C. Circulated 140 sxs to surface. Bump plug and hold at 3622. 4/17/17 RDMO Norton Drilling Rig #6	4/17/2017