

Results of Directional Survey

API number:	30-025-39555		
OGRID:		Operator:	COG OPERATING LLC
		Property:	TUSK FEDERAL # 2H

surface	ULSTR:	D	25	T 19S	R 34E
				330 FNL	330 FWL

BH Loc	ULSTR:	M	25	T 19S	R 34E
15345	MD	10890.5	TVD	327 FSL	427 FWL
				4953 FNL	

Top Perf/OH	ULSTR:	D	25	T 19S	R 34E
11025	MD	10843.0	TVD	637 FNL	411 FWL

Bot Perf/OH	ULSTR:	M	25	T 19S	R 34E
15216	MD	10888.8	TVD	456 FSL	427 FWL
				4824 FNL	

	MD	N/S	E/W	VD
	11005	-288.02	81.79	10837.4
TOP PERFS/OH	11025	-307.21	81.42	10843.00
	11036	-317.76	81.22	10846.08
	15177	-4454.53	96.70	10888.51
BOT PERFS/OH	15216	-4493.53	96.82	10888.75
	15297	-4574.52	97.06	10889.25

NEXT TO LAST	15297	-4574.52	97.06	10889.25
LAST READING	15345	-4622.50	97.35	10890.46
TD	15345	-4622.50	97.35	10890.46

Surface Location	330	FN	330	FW
Projected BHL	4953	FN	427	FW
Location of				
Top Perfs/OH	637	FN	411	FW
Bottom Perfs/OH	4824	FN	427	FW

SUMMARY of Subsurface Locations

Surface Location	D-25-19S-34E	330	FN	330	FW	Vert. Depth
Top Perfs/OH	D-25-19S-34E	637	FN	411	FW	10843.00
Bottom Perfs/OH	M-25-19S-34E	4824	FN	427	FW	10888.75
Projected TD	M-25-19S-34E	4953	FN	427	FW	10890.46

MAR 22 2012

**McVAY DRILLING COMPANY**

P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

HOBBS OCD**MAR 08 2012**

Well Name and Num: Tusk Federal 2H
Location: Sec. 25, T19S, R34E
Operator: COG
Drilling Contractor: McVay Drilling Company

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The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

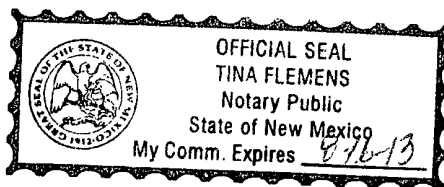
<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
1.14	328	0.62	6293	91.28	11223
0.31	626	0.55	7266	90.31	11408
0.62	1057	0.61	7718	92.24	11887
0.58	1555	1.39	8218	90.75	12361
0.54	2033	1.79	8699	91.10	12836
0.84	2379	1.71	9194	91.54	12929
0.39	2599	1.35	9676	90.75	13208
0.11	2827	1.76	10143	86.97	13763
1.21	2921	1.58	10204	88.64	14402
1.41	3173	1.58	10297	87.76	14531
1.03	3487	32.62	10638	89.60	14984
1.11	3617	35.88	10669	88.55	15297
2.70	4117	39.13	10700		
2.36	4473	65.07	10948		
1.40	4945	57.97	10947		
1.16	5317	75.62	11036		
0.47	5817	87.05	11161		

SUR: D-25-19S-34E, 330/N & 330/W
BHL: M-25-19S-34E, 4953/N & 427/W
API # 30-025-39555

By: H. H. Crampton

Subscribed and sworn to before me this 25th day of October, 2011

Tina Flemens
Notary Public, Lea County, New Mexico



SUR: D-25-19S-34E, 330/N & 330/W
BHL: M-25-19S-34E, 4953/N & 427/W
API # 30-025-39555

COG OPERATING

Lea

Lea County, NM

Tusk Federal #2H

VH - Job #32K1011972

HOBBS OCD

MAR 08 2012

Survey: Gyro

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SDI Standard Survey Report

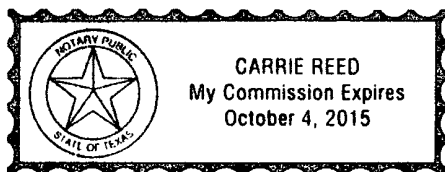
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 31st of December, 2011.

[Signature]

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Tusk Federal #2H
Project:	Lea	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Tusk Federal #2H	North Reference:	Grid
Wellbore:	VH - Job #32K1011972	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1011972	Database:	EDM-Regulatory

Project:	Lea		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:		Lea County, NM			
Site Position:		Northing:	596,603 51 usft	Latitude:	32° 38' 15 130 N
From:	Lat/Long	Easting:	750,131 73 usft	Longitude:	103° 31' 14 815 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0 44 °

Well:	Tusk Federal #2H, Directional (Pathfinder)					
Well Position	+N/-S	0 0 usft	Northing:	596,603 51 usft	Latitude:	32° 38' 15 130 N
	+E/-W	0 0 usft	Easting:	750,131 73 usft	Longitude:	103° 31' 14 815 W
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft	

Wellbore		VH - Job #32K1011972			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/9/2011	7 56	60 57	48,866

Design:	VH - Job #32K1011972				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD)	N/S	E/W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0 0	0 0	0 0	178 88	

Survey Program		Date	1/22/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100 0	10,112 0	Gyro (VH - Job #32K1011972)	Keeper	Keeper Gyro	

Survey	Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance
	(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)
	0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0
	100 0	0 60	197 47	100 0	-0 5	-0 2	197 47	0 5
	200 0	0 53	194 05	200 0	-1 4	-0 4	196 42	1 5
	300 0	0 12	176 90	300 0	-2 0	-0 5	194 92	2 1
	400 0	0 17	78 03	400 0	-2 1	-0 4	190 45	2 1
	500 0	0 05	203 87	500 0	-2 1	-0 3	186 98	2 1
	600 0	0 12	77 91	600 0	-2 1	-0 2	184 63	2 1
	700 0	0 13	356 88	700 0	-2 0	-0 1	182 16	2 0
	800 0	0 18	47 55	800 0	-1 7	0 0	178 83	1 7
	900 0	0 16	16 38	900 0	-1 5	0 2	172 78	1 5
	1,000 0	0 11	359 14	1,000 0	-1 3	0 2	169 84	1 3
	1,100 0	0 11	339 52	1,100 0	-1 1	0 2	169 93	1 1

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Project:	Lea	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Tusk Federal #2H	North Reference:	Grid
Wellbore:	VH - Job #32K1011972	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1011972	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,200 0	0 10	280 48	1,200 0	-1 0	0 1	175 68	1 0	
1,300 0	0 01	69 43	1,300 0	-1 0	0 0	180 19	1 0	
1,400 0	0 03	189 18	1,400 0	-1 0	0 0	179 95	1 0	
1,500 0	0 12	203 85	1,500 0	-1 1	0 0	182 36	1 1	
1,600 0	0 39	208 97	1,600 0	-1 5	-0 3	189 54	1 5	
1,700 0	0 64	209 66	1,700 0	-2 3	-0 7	196 88	2 4	
1,800 0	0 65	214 24	1,800 0	-3 2	-1 3	201 69	3 5	
1,900 0	0 42	186 57	1,900 0	-4 1	-1 7	202 05	4 4	
2,000 0	0 65	104 33	2,000 0	-4 6	-1 1	194 02	4 7	
2,100 0	0 68	90 96	2,100 0	-4 7	0 0	180 00	4 7	
2,200 0	0 80	86 54	2,200 0	-4 7	1 3	164.64	4 9	
2,300 0	0 84	98 09	2,299 9	-4 8	2 7	150 32	5 5	
2,400 0	0 77	98 29	2,399 9	-5 0	4 1	140 39	6 4	
2,500 0	0 65	91 45	2,499 9	-5 1	5 3	133 54	7 4	
2,600 0	0 34	83 72	2,599 9	-5 1	6 2	129 19	8 0	
2,700 0	0 08	334 35	2,699 9	-5 0	6 5	127 49	8 1	
2,800 0	0 47	45 17	2,799 9	-4 6	6 7	124 41	8 1	
2,900 0	0 92	51 32	2,899 9	-3 8	7 6	116 52	8 5	
3,000 0	1 32	39 84	2,999 9	-2 4	9 0	105 09	9 3	
3,100 0	1 28	31 76	3,099 9	-0 6	10 3	93 29	10 3	
3,200 0	1 14	27 21	3,199 8	1 2	11 4	83 77	11 4	
3,300 0	1 10	24 57	3,299 8	3 0	12 2	76 22	12 6	
3,400 0	1 15	25 52	3,399 8	4 8	13 1	69 91	13 9	
3,500 0	1 07	18 49	3,499 8	6 6	13 8	64 53	15 3	
3,600 0	1 15	14 49	3,599 8	8 4	14 3	59 55	16 6	
3,700 0	1 39	5 78	3,699 7	10 6	14 7	54 21	18 1	
3,800 0	2 05	4 21	3,799 7	13 6	15 0	47 74	20 2	
3,900 0	2 56	4 45	3,899 6	17 6	15 3	40 93	23 3	
4,000 0	2 82	4 06	3,999 5	22 3	15 6	35 02	27 2	
4,100 0	2 85	3 75	4,099 4	27 2	15 9	30 37	31 5	
4,200 0	2 97	5 91	4,199 3	32 3	16 4	26 91	36 2	
4,300 0	2 57	6 26	4,299 1	37 1	16 9	24 49	40 7	
4,400 0	2 38	6 48	4,399 0	41 4	17 4	22 77	44 9	
4,500 0	2 19	9 72	4,499 0	45 3	17 9	21 58	48 7	
4,600 0	2 03	10 54	4,598 9	48 9	18 6	20 78	52 4	
4,700 0	1 85	13 59	4,698 8	52 3	19 3	20 25	55 7	
4,800 0	1 86	14 81	4,798 8	55 4	20 1	19 92	58 9	
4,900 0	1 62	14 46	4,898 7	58 3	20 8	19 66	61 9	
5,000 0	1 48	16 01	4,998 7	60 9	21 5	19 47	64 6	
5,100 0	1 50	17 64	5,098 7	63 4	22 3	19 37	67 2	
5,200 0	1 31	16 55	5,198 6	65 8	23 0	19 29	69 7	
5,300 0	1 09	13 32	5,298 6	67 8	23 6	19 17	71 8	
5,400 0	1 04	22 19	5,398 6	69 6	24 1	19 13	73 6	
5,500 0	0 86	16 83	5,498 6	71 1	24 7	19 14	75 3	

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Design:	VH - Job #32K1011972	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,600 0	0 89	24 50	5,598 6	72 5	25 2	19 18	76 8	
5,700 0	0 80	23 36	5,698 6	73 9	25 8	19 27	78 3	
5,800 0	0 94	28 82	5,798 6	75 3	26 5	19 40	79 8	
5,900 0	0 66	37 61	5,898 5	76 4	27 2	19 62	81 1	
6,000 0	0 64	55 26	5,998 5	77 2	28 1	19 97	82 1	
6,100 0	0 60	61 69	6,098 5	77 8	29 0	20 44	83 0	
6,200 0	0 77	62 34	6,198 5	78 3	30 0	20 98	83 9	
6,300 0	0 79	57 26	6,298 5	79 0	31 2	21 55	85 0	
6,400 0	0 95	66 17	6,398 5	79 7	32 5	22 21	86 1	
6,500 0	0 87	68 28	6,498 5	80 3	34 0	22 94	87 2	
6,600 0	0 72	62 24	6,598 5	80 9	35 3	23 55	88 3	
6,700 0	0 51	45 29	6,698 5	81 5	36 1	23 91	89 2	
6,800 0	0 26	352 53	6,798 5	82 1	36 4	23 94	89 8	
6,900 0	0 13	49 39	6,898 5	82 4	36 5	23 90	90 1	
7,000 0	0 22	234 90	6,998 5	82 3	36 4	23 86	90 0	
7,100 0	0 41	169 00	7,098 5	81 9	36 3	23 93	89 6	
7,200 0	0 42	177 52	7,198 5	81 1	36 4	24 17	88 9	
7,300 0	0 47	166 11	7,298 5	80 4	36 5	24 44	88 3	
7,400 0	0 59	175 15	7,398 5	79 5	36 7	24 77	87 5	
7,500 0	0 68	183 28	7,498 5	78 4	36 7	25 08	86 5	
7,600 0	0 65	170 62	7,598 5	77 2	36 7	25 45	85 5	
7,700 0	0 75	199 00	7,698 4	76 0	36 6	25 72	84 4	
7,800 0	0 82	233 43	7,798 4	75 0	35 8	25 54	83 1	
7,900 0	0 98	244 23	7,898 4	74 2	34 5	24 93	81 8	
8,000 0	1 13	272 10	7,998 4	73 8	32 7	23 90	80 8	
8,100 0	1 36	274 86	8,098 4	74 0	30 6	22 44	80 0	
8,200 0	1 46	277 84	8,198 4	74 3	28 1	20 74	79 4	
8,300 0	1 78	281 71	8,298 3	74 7	25 3	18 72	78 9	
8,400 0	2 01	296 87	8,398 3	75 9	22 2	16 35	79 0	
8,500 0	2 21	306 30	8,498 2	77 8	19 1	13 81	80 1	
8,600 0	1 92	319 74	8,598 1	80 2	16 5	11 62	81 9	
8,700 0	1 63	338 64	8,698 1	82 8	14 9	10 19	84 1	
8,800 0	0 96	11 40	8,798 1	85 0	14 5	9 71	86 2	
8,900 0	1 33	58 22	8,898 0	86 4	15 7	10 29	87 8	
9,000 0	1 87	77 08	8,998 0	87 4	18 3	11 81	89 3	
9,100 0	1 68	85 41	9,098 0	87 8	21 3	13 64	90 4	
9,200 0	1 57	87 91	9,197 9	88 0	24 1	15 34	91 3	
9,300 0	1 56	92 93	9,297 9	88 0	26 9	16 98	92 0	
9,400 0	1 44	100 58	9,397 8	87 7	29 5	18 58	92 5	
9,500 0	1 47	101 40	9,497 8	87 2	32 0	20 13	92 9	
9,600 0	1 38	91 11	9,597 8	86 9	34 4	21 60	93 5	
9,700 0	1 26	85 96	9,697 7	87 0	36 7	22 89	94 4	
9,800 0	1 50	84 13	9,797 7	87 2	39 1	24 17	95 6	
9,900 0	1 71	89 12	9,897 7	87 4	41 9	25 63	96 9	

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SDI Standard Survey Report



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Project:	Lea	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Tusk Federal #2H	North Reference:	Grid
Wellbore:	VH - Job #32K1011972	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1011972	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
10,000 0	1 64	100 64	9,997 6	87 1	44 8	27 22	98 0
10,100 0	1 78	105 75	10,097 6	86 4	47 7	28 90	98 7
10,112 0	1 75	104 60	10,109 6	86 3	48 1	29 11	98 8



Scientific Drilling
Directional Drilling Operations

Project: Lea
Lea County, NM
Well: Tusk Federal #2H
Wellbore: VH - Job #32K1011972
Design: VH - Job #32K1011972

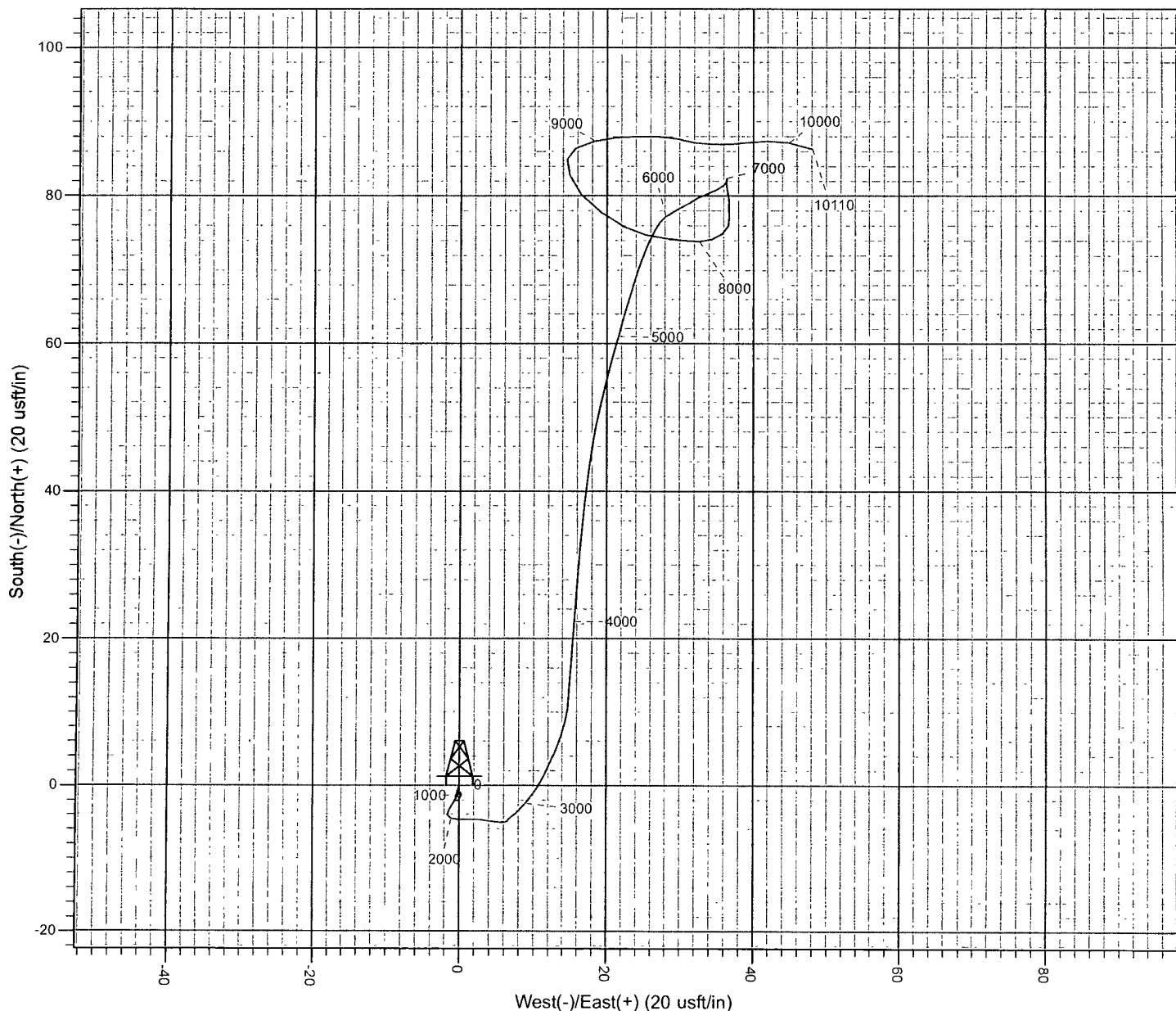


Azimuths to Grid North
True North -0.44°
Magnetic North 7.12°

Magnetic Field
Strength 48865.8 nT
Dip Angle 60.57°
Date 10/9/2011
Model IGRF2010

WELL DETAILS: Tusk Federal #2H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	596603.51	750131.73	32° 38' 15.130 N	103° 31' 14.815 W	



PROJECT DETAILS: Lea
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

SITE DETAILS: Lea County, NM
Site Centre Latitude: 32° 38' 15.130 N
Longitude: 103° 31' 14.815 W
Positional Uncertainty: 0.0
Convergence: 0.44
Local North: Grid



Job Number: ☐
 Company: ☐
 Lease/Well: ☐
 Location: ☐
 Rig Name: ☐
 RKB: ☐
 G.L. or M.S.L.: ☐

State/Country: ☐
 Declination: ☐
 Grid: ☐
 File name: F:\3926.SVY
 Date/Time: 19-Oct-11 / 05:13
 Curve Name: As Drilled

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 178.88
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
Tie In To GYRO									
10112.00	1.75	104.60	10109.59	86.35	48.01	-85.40	98.80	29.07	.00
10143.00	1.67	105.29	10140.58	86.11	48.90	-85.14	99.03	29.59	.27
10174.00	1.58	107.93	10171.56	85.86	49.75	-84.87	99.23	30.09	.38
10267.00	1.58	105.56	10264.53	85.12	52.20	-84.09	99.85	31.52	.07
10297.00	1.49	108.72	10294.52	84.89	52.97	-83.83	100.06	31.96	.41
10327.00	2.29	135.88	10324.50	84.33	53.76	-83.26	100.01	32.52	3.93
10358.00	4.57	155.92	10355.45	82.76	54.69	-81.67	99.20	33.46	8.20
10389.00	7.47	163.65	10386.27	79.70	55.76	-78.59	97.27	34.98	9.69
10420.00	10.64	168.84	10416.88	74.95	56.88	-73.83	94.09	37.20	10.55
10451.00	13.98	171.12	10447.16	68.44	58.02	-67.30	89.72	40.29	10.89
10483.00	16.71	172.35	10478.02	60.06	59.23	-58.90	84.35	44.60	8.59
10514.00	19.61	172.00	10507.47	50.49	60.54	-49.30	78.84	50.17	9.36
10545.00	22.77	170.16	10536.37	39.43	62.29	-38.20	73.72	57.67	10.42

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
10576.00	25.94	170.16	10564.61	26.83	64.48	-25.57	69.84	67.40	10.23
10607.00	29.28	171.30	10592.08	12.66	66.78	-11.35	67.97	79.27	10.91
10638.00	32.62	172.46	10618.66	-3.13	69.03	4.47	69.10	92.59	10.94
10669.00	35.88	173.31	10644.28	-20.44	71.18	21.82	74.06	106.02	10.63
10701.00	39.13	175.45	10669.67	-39.82	73.08	41.24	83.22	118.59	10.94
10732.00	41.94	177.42	10693.22	-59.93	74.32	61.37	95.47	128.88	9.96
10763.00	45.55	177.81	10715.62	-81.34	75.21	82.79	110.78	137.24	11.68
10794.00	49.15	178.16	10736.62	-104.12	76.01	105.59	128.91	143.87	11.64
10825.00	53.11	178.31	10756.07	-128.24	76.75	129.72	149.45	149.10	12.78
10856.00	58.04	177.31	10773.59	-153.78	77.73	155.27	172.31	153.18	16.12
10886.00	61.55	177.51	10788.68	-179.68	78.90	181.19	196.24	156.29	11.71
10917.00	63.58	177.36	10802.96	-207.17	80.14	208.69	222.12	158.85	6.56
10948.00	65.07	177.37	10816.39	-235.07	81.42	236.62	248.78	160.90	4.81
10974.00	67.97	179.88	10826.75	-258.91	81.99	260.46	271.58	162.43	14.24
11005.00	71.84	180.87	10837.40	-288.02	81.79	289.56	299.40	164.15	12.84
11036.00	75.62	181.33	10846.08	-317.76	81.22	319.29	327.98	165.66	12.28
11067.00	78.61	181.53	10852.99	-347.97	80.47	349.48	357.15	166.98	9.67
11098.00	81.60	181.36	10858.32	-378.50	79.70	379.98	386.79	168.11	9.66
11128.00	84.59	180.82	10861.93	-408.27	79.13	409.74	415.87	169.03	10.13
11161.00	87.05	180.18	10864.33	-441.18	78.84	442.63	448.17	169.87	7.70
11192.00	89.43	180.62	10865.28	-472.16	78.63	473.61	478.66	170.55	7.81
11223.00	91.28	180.00	10865.09	-503.16	78.46	504.59	509.24	171.14	6.29
11315.00	90.84	180.09	10863.39	-595.14	78.39	596.56	600.28	172.50	.49
11408.00	90.31	180.26	10862.46	-688.14	78.10	689.53	692.55	173.52	.60
11504.00	89.43	180.79	10862.67	-784.13	77.22	785.49	787.92	174.38	1.07
11600.00	88.11	181.49	10864.73	-880.09	75.31	881.39	883.30	175.11	1.56
11695.00	89.16	180.79	10867.00	-975.04	73.42	976.29	977.80	175.69	1.33
11791.00	90.66	181.49	10867.15	-1071.02	71.51	1072.21	1073.40	176.18	1.72
11887.00	92.24	178.95	10864.72	-1166.97	71.15	1168.14	1169.14	176.51	3.12
11982.00	91.80	178.68	10861.37	-1261.89	73.11	1263.08	1264.01	176.68	.54
12075.00	90.66	177.72	10859.37	-1354.82	76.03	1356.05	1356.96	176.79	1.60
12171.00	89.43	175.08	10859.30	-1450.62	82.06	1451.95	1452.94	176.76	3.03
12266.00	90.75	179.65	10859.15	-1545.50	86.42	1546.89	1547.91	176.80	5.01
12361.00	90.75	182.11	10857.91	-1640.47	84.96	1641.82	1642.67	177.04	2.59

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
12457.00	90.13	179.56	10857.17	-1736.45	83.57	1737.75	1738.46	177.24	2.73
12552.00	89.34	182.29	10857.61	-1831.43	82.03	1832.68	1833.26	177.44	2.99
12648.00	88.20	182.46	10859.67	-1927.32	78.06	1928.48	1928.90	177.68	1.20
12742.00	88.64	181.06	10862.26	-2021.24	75.17	2022.32	2022.63	177.87	1.56
12836.00	91.10	181.14	10862.47	-2115.21	73.36	2116.24	2116.48	178.01	2.62
12929.00	91.54	179.82	10860.33	-2208.18	72.59	2209.18	2209.37	178.12	1.50
13022.00	92.51	177.98	10857.04	-2301.10	74.37	2302.12	2302.30	178.15	2.24
13113.00	90.75	178.07	10854.46	-2392.01	77.50	2393.06	2393.26	178.14	1.94
13208.00	90.75	178.68	10853.21	-2486.96	80.20	2488.05	2488.25	178.15	.64
13301.00	89.52	179.12	10852.99	-2579.94	81.98	2581.05	2581.24	178.18	1.40
13393.00	87.41	178.95	10855.46	-2671.89	83.53	2673.01	2673.19	178.21	2.30
13486.00	87.58	178.95	10859.52	-2764.78	85.23	2765.92	2766.10	178.23	.18
13578.00	88.64	180.09	10862.56	-2856.73	86.00	2857.86	2858.02	178.28	1.69
13670.00	87.32	180.53	10865.80	-2948.67	85.51	2949.78	2949.91	178.34	1.51
13763.00	86.97	180.44	10870.43	-3041.55	84.72	3042.62	3042.73	178.40	.39
13858.00	87.41	181.41	10875.09	-3136.42	83.19	3137.45	3137.52	178.48	1.12
13950.00	88.29	181.76	10878.54	-3228.32	80.65	3229.28	3229.33	178.57	1.03
14042.00	88.64	181.85	10881.01	-3320.24	77.75	3321.13	3321.15	178.66	.39
14135.00	87.76	182.29	10883.93	-3413.13	74.39	3413.94	3413.94	178.75	1.06
14228.00	89.87	181.14	10885.85	-3506.07	71.61	3506.79	3506.80	178.83	2.58
14320.00	91.98	178.60	10884.36	-3598.04	71.82	3598.76	3598.76	178.86	3.59
14413.00	90.48	178.07	10882.37	-3690.98	74.52	3691.73	3691.73	178.84	1.71
14505.00	90.04	177.72	10881.95	-3782.91	77.90	3783.71	3783.71	178.82	.61
14599.00	88.46	177.80	10883.18	-3876.83	81.57	3877.68	3877.69	178.79	1.68
14695.00	87.93	178.77	10886.20	-3972.74	84.44	3973.63	3973.64	178.78	1.15
14791.00	90.31	177.63	10887.68	-4068.67	87.46	4069.60	4069.61	178.77	2.75
14887.00	90.22	178.07	10887.24	-4164.60	91.06	4165.59	4165.60	178.75	.47
14984.00	89.60	178.86	10887.39	-4261.57	93.66	4262.58	4262.59	178.74	1.04
15081.00	89.16	178.77	10888.44	-4358.54	95.67	4359.58	4359.59	178.74	.46
15177.00	90.75	180.00	10888.51	-4454.53	96.70	4455.57	4455.58	178.76	2.09
15297.00	88.55	179.65	10889.25	-4574.52	97.06	4575.54	4575.55	178.78	1.86
Straight line projection to bit									
15345.00	88.55	179.65	10890.46	-4622.50	97.35	4623.52	4623.53	178.79	.00