

CONOCOPHILLIPS

Embar

Andrews County, Texas

University Andrews #236

VH - Job #320513-KW-527

Survey: Gyro

SDI Standard Survey Report

10 June, 2013



Company:	CONOCOPHILLIPS	Local Co-ordinate Reference:	Well University Andrews #236
Project:	Embar	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Andrews County, Texas	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Well:	University Andrews #236	North Reference:	Grid
Wellbore:	VH - Job #320513-KW-527	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320513-KW-527	Database:	EDM-Regulatory

Project	Embar		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas North Central 4202		

Site	Andrews County, Texas		
Site Position:		Northing:	189,405.00 usft
From:	Lat/Long	Easting:	393,917.64 usft
Position Uncertainty:	0.00 usft	Slot Radius:	0"
		Latitude:	32° 4' 41.780 N
		Longitude:	102° 41' 13.070 W
		Grid Convergence:	-2.83 °

Well	University Andrews #236, Vertical		
Well Position	+N/-S	0.00 usft	Northing: 208,261.39 usft
	+E/-W	0.00 usft	Easting: 381,792.01 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 7' 42.200 N
		Longitude:	102° 43' 44.720 W
		Ground Level:	0.00 usft

Wellbore	VH - Job #320513-KW-527				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	06/20/13	6.93	60.19	48,471

Design	VH - Job #320513-KW-527			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	120.33

Survey Program	Date	06/10/13			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	7,813.00	Gyro (VH - Job #320513-KW-527)	Keeper	Keeper Gyro	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.57	204.19	100.00	-0.45	-0.20	204.19	0.50	0.50
200.00	0.18	256.20	200.00	-0.94	-0.56	210.66	1.10	1.10
300.00	0.31	217.67	300.00	-1.20	-0.88	216.27	1.48	1.48
400.00	0.18	252.52	399.99	-1.46	-1.19	219.30	1.88	1.88
500.00	0.16	257.59	499.99	-1.54	-1.48	223.94	2.13	2.13
600.00	0.10	243.16	599.99	-1.60	-1.69	226.55	2.33	2.33
700.00	0.11	152.15	699.99	-1.73	-1.73	224.97	2.44	2.44
800.00	0.39	188.51	799.99	-2.15	-1.73	218.85	2.76	2.76
900.00	0.48	151.65	899.99	-2.86	-1.58	209.01	3.27	3.27
1,000.00	0.46	147.26	999.99	-3.56	-1.17	198.15	3.75	3.75
1,100.00	0.35	156.93	1,099.98	-4.18	-0.83	191.24	4.26	4.26

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Wellbore:	VH - Job #320513-KW-527	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320513-KW-527	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200.00	0.53	162.78	1,199.98	-4.90	-0.57	186.68	4.94
1,300.00	0.66	159.97	1,299.98	-5.89	-0.24	182.34	5.89
1,400.00	0.88	164.25	1,399.97	-7.17	0.17	178.68	7.17
1,500.00	0.82	162.47	1,499.96	-8.59	0.59	176.07	8.61
1,600.00	0.88	154.17	1,599.94	-9.96	1.14	173.47	10.03
1,700.00	0.76	130.21	1,699.93	-11.08	1.98	169.86	11.26
1,800.00	1.04	100.71	1,799.92	-11.68	3.38	163.86	12.16
1,900.00	1.26	88.96	1,899.90	-11.83	5.37	155.58	12.99
2,000.00	1.43	78.63	1,999.88	-11.56	7.69	146.36	13.89
2,100.00	1.64	68.94	2,099.84	-10.80	10.25	136.49	14.89
2,200.00	1.74	67.66	2,199.80	-9.71	12.99	126.77	16.22
2,300.00	1.77	63.13	2,299.75	-8.43	15.77	118.13	17.89
2,400.00	1.71	57.47	2,399.70	-6.93	18.41	110.64	19.67
2,500.00	1.67	53.30	2,499.66	-5.26	20.83	104.17	21.49
2,600.00	1.42	64.37	2,599.62	-3.85	23.12	99.46	23.44
2,700.00	1.37	58.24	2,699.59	-2.69	25.25	96.08	25.40
2,800.00	1.29	62.34	2,799.57	-1.54	27.27	93.22	27.31
2,900.00	1.21	66.34	2,899.54	-0.59	29.23	91.16	29.24
3,000.00	1.26	72.22	2,999.52	0.17	31.25	89.69	31.25
3,100.00	1.21	82.91	3,099.50	0.64	33.34	88.91	33.35
3,200.00	1.24	86.68	3,199.47	0.83	35.47	88.66	35.48
3,300.00	1.16	101.38	3,299.45	0.69	37.54	88.94	37.55
3,400.00	1.23	102.89	3,399.43	0.25	39.58	89.63	39.58
3,500.00	1.14	116.35	3,499.41	-0.43	41.52	90.59	41.52
3,600.00	1.27	131.01	3,599.39	-1.60	43.24	92.12	43.27
3,700.00	1.32	134.40	3,699.36	-3.13	44.90	93.99	45.01
3,800.00	1.38	140.25	3,799.33	-4.86	46.50	95.97	46.75
3,900.00	1.68	138.67	3,899.30	-6.89	48.23	98.13	48.72
4,000.00	1.72	144.78	3,999.25	-9.22	50.07	100.43	50.91
4,100.00	1.84	143.05	4,099.21	-11.72	51.90	102.73	53.21
4,200.00	1.74	141.76	4,199.16	-14.20	53.80	104.78	55.65
4,300.00	1.60	140.92	4,299.11	-16.48	55.62	106.50	58.01
4,400.00	1.63	141.54	4,399.08	-18.67	57.39	108.02	60.35
4,500.00	1.59	139.31	4,499.04	-20.84	59.18	109.40	62.74
4,600.00	1.60	141.45	4,599.00	-22.98	60.95	110.66	65.14
4,700.00	1.47	146.81	4,698.96	-25.15	62.52	111.91	67.39
4,800.00	1.49	145.00	4,798.93	-27.29	63.97	113.10	69.55
4,900.00	1.22	148.38	4,898.90	-29.26	65.28	114.14	71.53
5,000.00	1.16	137.98	4,998.88	-30.92	66.51	114.93	73.35
5,100.00	1.26	144.85	5,098.86	-32.57	67.82	115.65	75.24
5,200.00	1.32	155.08	5,198.83	-34.51	68.94	116.59	77.10
5,300.00	1.39	159.29	5,298.80	-36.69	69.85	117.71	78.90
5,400.00	0.99	162.14	5,398.78	-38.65	70.55	118.71	80.44
5,500.00	0.90	157.16	5,498.77	-40.19	71.12	119.47	81.69

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Design:	VH - Job #320513-KW-527	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600.00	0.98	175.11	5,598.75	-41.77	71.50	120.29	82.80
5,700.00	1.19	195.95	5,698.74	-43.62	71.28	121.46	83.57
5,800.00	1.16	192.43	5,798.72	-45.61	70.78	122.80	84.20
5,900.00	0.75	200.61	5,898.70	-47.21	70.33	123.87	84.71
6,000.00	0.58	180.09	5,998.69	-48.33	70.10	124.58	85.14
6,100.00	0.50	190.08	6,098.69	-49.26	70.02	125.13	85.62
6,200.00	0.29	171.44	6,198.69	-49.94	69.98	125.51	85.98
6,300.00	0.37	177.64	6,298.69	-50.51	70.04	125.80	86.35
6,400.00	0.46	112.53	6,398.68	-50.99	70.42	125.91	86.94
6,500.00	0.45	75.09	6,498.68	-51.04	71.17	125.65	87.58
6,600.00	0.30	81.41	6,598.68	-50.90	71.81	125.33	88.02
6,700.00	0.10	186.03	6,698.68	-50.95	72.06	125.26	88.25
6,800.00	0.27	132.37	6,798.68	-51.20	72.22	125.33	88.53
6,900.00	0.46	84.22	6,898.68	-51.32	72.80	125.18	89.07
7,000.00	0.26	75.13	6,998.67	-51.22	73.42	124.90	89.51
7,100.00	0.57	68.85	7,098.67	-50.98	74.10	124.53	89.94
7,200.00	0.63	58.23	7,198.67	-50.51	75.03	123.95	90.45
7,300.00	0.39	83.61	7,298.66	-50.18	75.84	123.49	90.94
7,400.00	0.65	60.31	7,398.66	-49.86	76.67	123.04	91.46
7,500.00	0.67	45.30	7,498.65	-49.17	77.57	122.37	91.85
7,600.00	0.58	35.82	7,598.65	-48.35	78.29	121.70	92.01
7,700.00	0.50	42.71	7,698.64	-47.62	78.88	121.12	92.14
7,800.00	0.92	58.73	7,798.63	-46.88	79.86	120.41	92.60
7,813.00	0.52	57.96	7,811.63	-46.80	80.00	120.33	92.68



Scientific Drilling

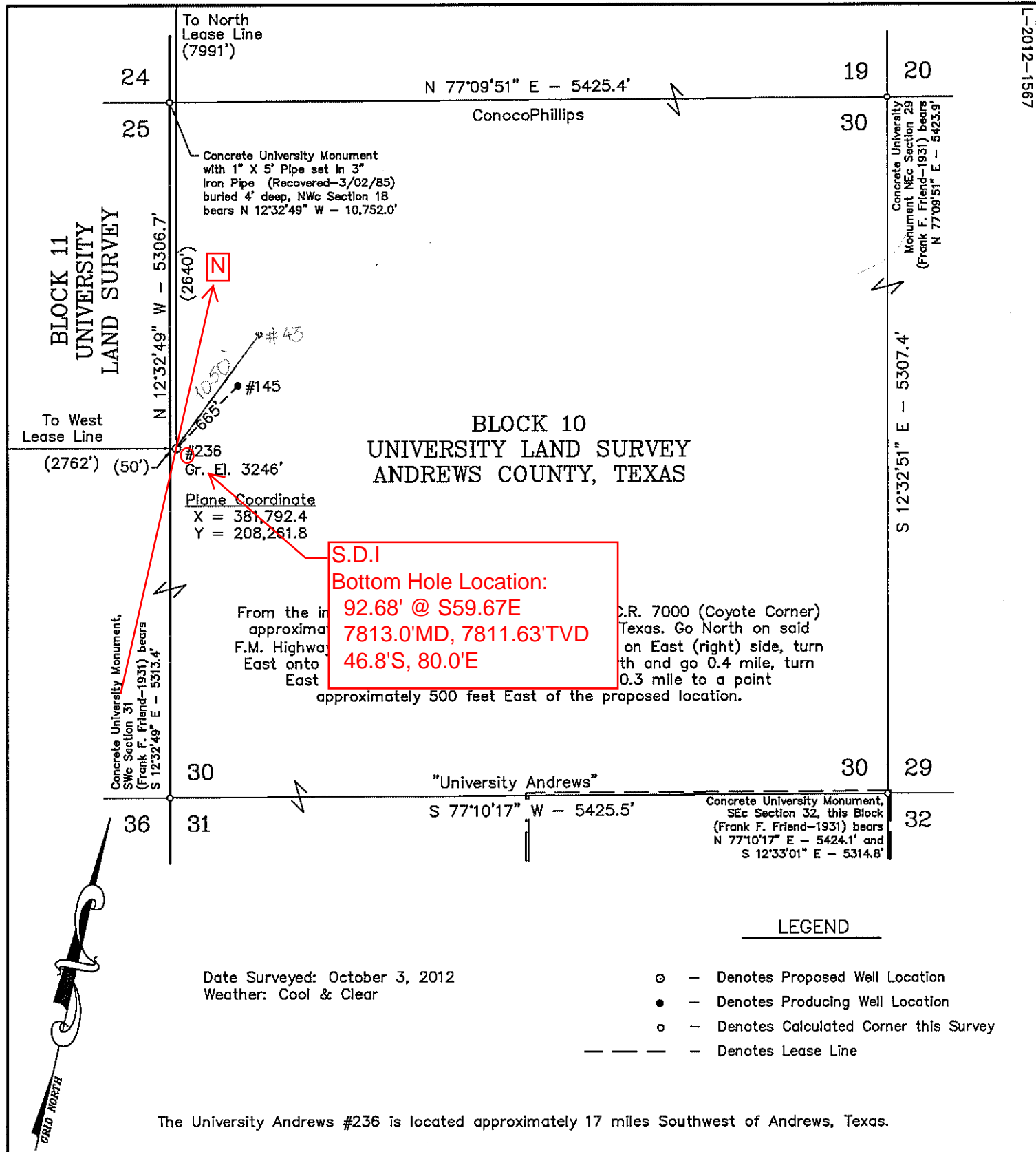
Project: Embar
Andrews County, Texas
Well: University Andrews #236
Wellbore: VH - Job #320513-KW-527
Design: VH - Job #320513-KW-527

WELL DETAILS: University Andrews #236
WELL @ 0.00usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	208261.39	381792.01	32° 7' 42.200 N	102° 43' 44.720 W	



PROJECT DETAILS: Embar	SITE DETAILS: Andrews County, Texas
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 4' 41.780 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 102° 41' 13.070 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.00
Zone: Texas North Central 4202	Convergence: -2.83
System Datum: Mean Sea Level	Local North: Grid



LEGEND

- - Denotes Proposed Well Location
- - Denotes Producing Well Location
- - Denotes Calculated Corner this Survey
- - Denotes Lease Line

Date Surveyed: October 3, 2012
Weather: Cool & Clear

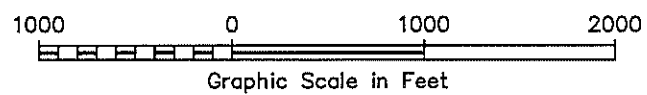
The University Andrews #236 is located approximately 17 miles Southwest of Andrews, Texas.

NOTE:

- 1) Plane Coordinates and Bearings shown hereon are Lambert Grid and Conform to the "Texas Coordinate System", Texas North Central Zone, North American Datum of 1927. Distances shown hereon are mean horizontal surface values.
- 2) Geodetic Coordinate unless otherwise shown hereon references the North American Datum of 1927, (Clarke Spheroid of 1866). Reference Station - "WALKER" (CU0800)
- 3) See information filed in the office of this Surveyor which describes the reconstruction of this Section.

Geodetic Coordinate (NAD 83)
Latitude = 32°07'42.60" N
Longitude = 102°43'46.29" W

Geodetic Coordinate
Latitude = 32°07'42.20" N
Longitude = 102°43'44.72" W



I HEREBY CERTIFY THAT THIS PLAT WAS MADE FROM NOTES TAKEN IN THE FIELD IN A BONA FIDE SURVEY MADE UNDER MY SUPERVISION.

J. FRANK NEWMAN TEXAS R.P.L.S. No. 5011
MACON McDONALD TEXAS R.P.L.S. No. 4398
R. CRAIG ALDERMAN TEXAS R.P.L.S. No. 5285

WEST COMPANY
of Midland, Inc.

110 W. LOUISIANA, STE. 110
MIDLAND TEXAS, 79701
(432) 687-0865 - (432) 687-0868 FAX

ConocoPhillips

Location of the
UNIVERSITY ANDREWS #236
2640' FNL & 50' FWL
Section 30, Block 10
University Land Survey
Andrews County, Texas

Drawn By: SC	Date: October 29, 2012
Scale: 1" = 1000'	Field Book: 546 / 63-70
Revision Date:	Quadrangle: North Cowden NW
W.O. No: 2012-1567	Dwg. No.: L-2012-1567



Scientific Drilling

Scientific Drilling International, Inc.

2034 Trade Drive • Midland, Texas 79706

P.O. Box 9699 • Midland, Texas 79708

Tel: 432-689-5600 • Fax: 432-697-0324

State of Texas
County of Midland

I, Frank Renteria, certify that; I am employed by Scientific Drilling International; that I did on the day(s) of 5/20/2013 through 5/20/2013 conduct or supervise the taking of a Keeper Gyro survey from a depth of 0 feet to a depth of 7813 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Scientific Drilling International; that I am authorized and qualified to make this report; that this survey was conducted at the request of Conoco Phillips for the University Andrews #236 Well, API# 42-003-45088 in Andrews County, Texas; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Scientific Drilling International.

Field Technician