

APACHE CORP

Caprito

Ward County, Texas

State of Texas DL #7WC

VH - Job #32K0512542

Survey: Gyro

SDI Standard Survey Report

18 June, 2012



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company: APACHE CORP	Local Co-ordinate Reference: Well State of Texas DL #7WC
Project: Caprito	TVD Reference: WELL @ 0.00usft (Original Well Elev)
Site: Ward County, Texas	MD Reference: WELL @ 0.00usft (Original Well Elev)
Well: State of Texas DL #7WC	North Reference: Grid
Wellbore: VH - Job #32K0512542	Survey Calculation Method: Minimum Curvature
Design: VH - Job #32K0512542	Database: EDM-Regulatory

Project Caprito		
Map System: US State Plane 1983	System Datum: Mean Sea Level	
Geo Datum: North American Datum 1983		
Map Zone: Texas Central Zone		

Site Ward County, Texas			
Site Position:	Northing: 10,551,021.21 usft	Latitude: 31° 34' 56.920 N	
From: Lat/Long	Easting: 1,395,140.41 usft	Longitude: 103° 13' 42.750 W	
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16"	Grid Convergence: -1.49 °	

Well State of Texas DL #7WC, Directional (Sidetrack)					
Well Position	+N/-S 0.00 usft	Northing: 10,551,021.20 usft	Latitude: 31° 34' 56.920 N		
	+E/-W 0.00 usft	Easting: 1,395,140.41 usft	Longitude: 103° 13' 42.750 W		
Position Uncertainty	0.00 usft	Wellhead Elevation: usft	Ground Level: 0.00 usft		

Wellbore VH - Job #32K0512542					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	05/11/12	7.27	59.62	48,200

Design VH - Job #32K0512542					
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	238.19	

Survey Program Date 06/18/12					
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	11,282.00	Gyro (VH - Job #32K0512542)	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
100.00	0.33	203.73	100.00	-0.26	-0.12	203.73	0.29
200.00	0.37	205.99	200.00	-0.82	-0.37	204.54	0.90
300.00	0.38	202.56	300.00	-1.41	-0.64	204.42	1.55
400.00	0.24	200.25	399.99	-1.92	-0.84	203.71	2.09
500.00	0.29	255.64	499.99	-2.18	-1.16	208.05	2.47
600.00	0.85	265.62	599.99	-2.30	-2.14	223.05	3.14
700.00	1.34	246.14	699.97	-2.82	-3.95	234.45	4.86
800.00	1.55	245.02	799.94	-3.87	-6.25	238.23	7.35
900.00	1.56	239.03	899.90	-5.14	-8.64	239.25	10.05
1,000.00	1.56	230.88	999.86	-6.70	-10.86	238.34	12.76
1,100.00	1.43	223.55	1,099.83	-8.46	-12.78	236.49	15.33

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Wellbore:	VH - Job #32K0512542	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0512542	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	0.99	220.45	1,199.81	-10.02	-14.20	234.78	17.38
1,300.00	1.15	226.96	1,299.79	-11.37	-15.49	233.73	19.22
1,400.00	1.24	193.52	1,399.77	-13.10	-16.48	231.51	21.06
1,500.00	1.04	141.40	1,499.75	-14.87	-16.17	227.40	21.96
1,600.00	1.24	74.47	1,599.74	-15.29	-14.56	223.61	21.11
1,700.00	1.76	47.07	1,699.70	-13.95	-12.39	221.62	18.66
1,800.00	2.11	26.88	1,799.65	-11.26	-10.44	222.82	15.35
1,900.00	2.46	7.27	1,899.57	-7.49	-9.33	231.24	11.97
2,000.00	2.44	349.46	1,999.48	-3.27	-9.45	250.92	10.00
2,100.00	2.02	334.27	2,099.40	0.41	-10.60	272.22	10.61
2,200.00	1.60	326.44	2,199.35	3.16	-12.14	284.60	12.55
2,300.00	1.56	336.86	2,299.32	5.58	-13.45	292.53	14.56
2,400.00	1.24	339.51	2,399.29	7.84	-14.36	298.64	16.36
2,500.00	1.22	343.56	2,499.26	9.88	-15.04	303.29	17.99
2,600.00	1.27	346.80	2,599.24	11.98	-15.60	307.53	19.66
2,700.00	1.15	343.52	2,699.22	14.02	-16.13	310.99	21.37
2,800.00	0.90	317.58	2,799.20	15.56	-16.95	312.56	23.01
2,900.00	0.38	269.50	2,899.20	16.14	-17.81	312.18	24.03
3,000.00	0.54	152.20	2,999.19	15.72	-17.92	311.25	23.84
3,100.00	0.31	100.90	3,099.19	15.25	-17.44	311.17	23.16
3,200.00	0.48	287.16	3,199.19	15.32	-17.57	311.09	23.31
3,300.00	1.29	261.05	3,299.18	15.27	-19.08	308.67	24.44
3,400.00	1.56	225.30	3,399.15	14.14	-21.16	303.75	25.45
3,500.00	1.25	189.19	3,499.12	12.10	-22.30	298.49	25.38
3,600.00	1.04	153.69	3,599.10	10.21	-22.08	294.83	24.32
3,700.00	0.84	100.66	3,699.09	9.26	-20.95	293.85	22.91
3,800.00	1.15	88.47	3,799.07	9.16	-19.23	295.46	21.30
3,900.00	2.10	57.44	3,899.04	10.17	-16.68	301.37	19.54
4,000.00	1.85	33.94	3,998.98	12.49	-14.24	311.27	18.94
4,100.00	1.45	13.99	4,098.94	15.06	-13.03	319.14	19.91
4,200.00	1.28	304.69	4,198.91	16.92	-13.64	321.13	21.74
4,300.00	1.38	251.91	4,298.89	17.19	-15.70	317.58	23.28
4,400.00	1.32	204.10	4,398.87	15.76	-17.32	312.30	23.42
4,500.00	1.32	146.08	4,498.84	13.75	-17.15	308.73	21.98
4,600.00	1.44	134.33	4,598.81	11.92	-15.61	307.37	19.64
4,700.00	1.41	97.53	4,698.79	10.88	-13.49	308.89	17.33
4,800.00	1.19	11.72	4,798.77	11.74	-12.06	314.23	16.83
4,900.00	1.22	300.95	4,898.75	13.30	-12.76	316.19	18.43
5,000.00	1.33	242.19	4,998.73	13.31	-14.70	312.15	19.83
5,100.00	1.70	279.46	5,098.70	13.01	-17.19	307.12	21.56
5,200.00	1.29	274.31	5,198.66	13.34	-19.77	304.00	23.85
5,300.00	1.18	279.86	5,298.64	13.60	-21.91	301.82	25.79
5,400.00	1.07	285.84	5,398.62	14.03	-23.82	300.49	27.65
5,500.00	1.03	297.34	5,498.60	14.70	-25.52	299.94	29.45

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Wellbore:	VH - Job #32K0512542	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0512542	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	1.13	290.78	5,598.59	15.46	-27.24	299.58	31.32
5,700.00	1.00	274.76	5,698.57	15.88	-29.03	298.68	33.09
5,800.00	0.78	261.40	5,798.56	15.85	-30.57	297.41	34.44
5,900.00	0.44	260.44	5,898.55	15.69	-31.63	296.38	35.30
6,000.00	0.78	255.83	5,998.55	15.46	-32.66	295.32	36.14
6,100.00	0.49	242.45	6,098.54	15.09	-33.70	294.12	36.93
6,200.00	0.29	252.74	6,198.54	14.82	-34.32	293.35	37.39
6,300.00	0.49	277.91	6,298.53	14.80	-34.99	292.93	37.99
6,400.00	0.52	250.14	6,398.53	14.71	-35.84	292.31	38.74
6,500.00	0.33	261.84	6,498.53	14.51	-36.55	291.65	39.33
6,600.00	0.63	278.54	6,598.52	14.55	-37.38	291.27	40.11
6,700.00	0.64	244.78	6,698.52	14.40	-38.43	290.54	41.04
6,800.00	0.42	231.00	6,798.51	13.93	-39.22	289.55	41.62
6,900.00	0.41	263.21	6,898.51	13.66	-39.86	288.91	42.13
7,000.00	0.77	248.63	6,998.51	13.37	-40.84	288.12	42.97
7,100.00	0.42	243.23	7,098.50	12.96	-41.79	287.23	43.76
7,200.00	0.69	241.62	7,198.50	12.51	-42.65	286.34	44.45
7,300.00	0.61	177.23	7,298.49	11.69	-43.15	285.16	44.71
7,400.00	0.75	176.13	7,398.48	10.50	-43.08	283.70	44.35
7,500.00	0.90	164.46	7,498.47	9.09	-42.83	281.99	43.78
7,600.00	0.98	136.93	7,598.46	7.71	-42.04	280.40	42.74
7,700.00	1.42	130.84	7,698.44	6.28	-40.51	278.81	41.00
7,800.00	1.43	115.73	7,798.41	4.93	-38.45	277.30	38.77
7,900.00	1.22	103.70	7,898.38	4.13	-36.29	276.50	36.53
8,000.00	0.97	129.83	7,998.36	3.34	-34.61	275.51	34.77
8,100.00	0.58	121.58	8,098.35	2.53	-33.53	274.32	33.62
8,200.00	0.79	131.84	8,198.35	1.81	-32.58	273.17	32.63
8,300.00	0.96	143.03	8,298.34	0.68	-31.57	271.23	31.57
8,400.00	1.19	132.21	8,398.32	-0.69	-30.29	268.69	30.30
8,500.00	0.10	85.67	8,498.31	-1.38	-29.44	267.31	29.47
8,600.00	0.30	78.70	8,598.31	-1.32	-29.09	267.40	29.12
8,700.00	0.06	227.07	8,698.31	-1.31	-28.88	267.41	28.90
8,800.00	0.70	283.72	8,798.31	-1.20	-29.51	267.67	29.53
8,900.00	0.40	335.55	8,898.30	-0.74	-30.25	268.61	30.25
9,000.00	0.25	48.25	8,998.30	-0.27	-30.23	269.48	30.23
9,100.00	1.30	215.74	9,098.29	-1.05	-30.73	268.05	30.74
9,200.00	2.43	193.39	9,198.24	-4.03	-31.88	262.79	32.13
9,300.00	2.24	192.61	9,298.16	-8.00	-32.80	256.29	33.76
9,400.00	2.36	201.96	9,398.08	-11.82	-33.99	250.83	35.99
9,500.00	1.95	191.12	9,498.01	-15.40	-35.09	246.31	38.32
9,600.00	1.94	217.31	9,597.95	-18.41	-36.45	243.20	40.83
9,700.00	1.97	207.41	9,697.89	-21.28	-38.26	240.91	43.79
9,800.00	2.25	208.12	9,797.83	-24.54	-39.98	238.46	46.91
9,900.00	2.84	215.01	9,897.73	-28.30	-42.33	236.23	50.92

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Well:	State of Texas DL #7WC	North Reference:	Grid
Wellbore:	VH - Job #32K0512542	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0512542	Database:	EDM-Regulatory

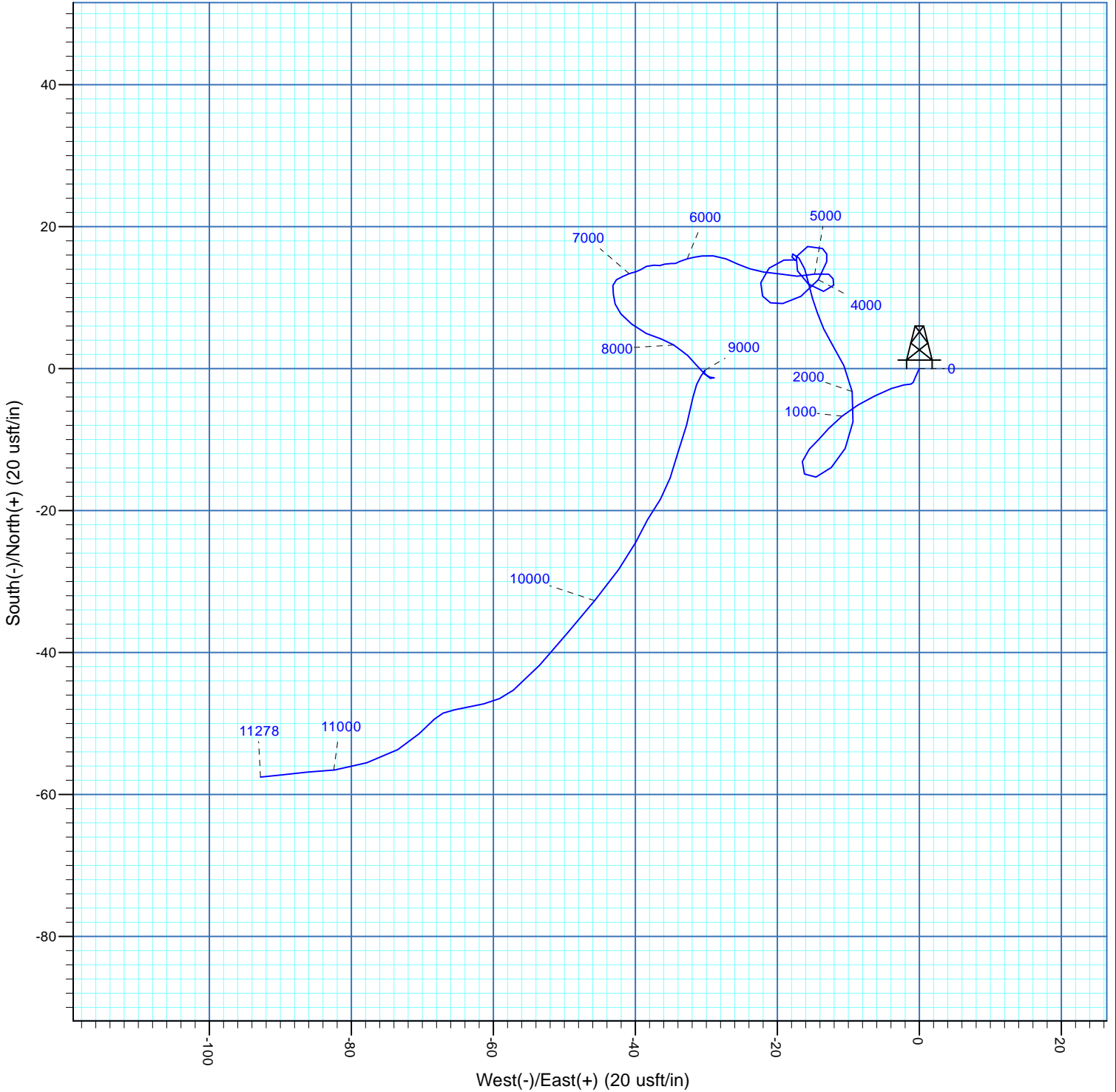
Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
10,000.00	3.37	219.94	9,997.58	-32.58	-45.64	234.47	56.07
10,100.00	3.60	219.98	10,097.39	-37.24	-49.54	233.06	61.98
10,200.00	3.28	221.96	10,197.21	-41.78	-53.47	232.00	67.85
10,300.00	2.63	231.98	10,297.08	-45.32	-57.19	231.61	72.97
10,400.00	2.74	257.44	10,396.98	-47.25	-61.33	232.39	77.42
10,500.00	2.12	260.21	10,496.88	-48.08	-65.49	233.71	81.24
10,600.00	1.60	224.87	10,596.83	-49.39	-68.29	234.13	84.28
10,700.00	1.84	227.02	10,696.79	-51.47	-70.45	233.85	87.25
10,800.00	2.46	238.71	10,796.72	-53.68	-73.46	233.84	90.99
10,900.00	3.01	253.35	10,896.61	-55.55	-77.81	234.48	95.60
11,000.00	2.31	262.49	10,996.50	-56.56	-82.32	235.51	99.88
11,100.00	2.09	268.77	11,096.42	-56.87	-86.15	236.57	103.22
11,200.00	2.17	259.33	11,196.36	-57.26	-89.83	237.49	106.52
11,282.00	2.00	269.54	11,278.30	-57.56	-92.79	238.19	109.19



Project: Caprito
 Ward County, Texas
 Well: State of Texas DL #7WC
 Wellbore: VH - Job #32K0512542
 Design: VH - Job #32K0512542

WELL DETAILS: State of Texas DL #7WC
 WELL @ 0.00usft (Original Well Elev)
 Ground Level: 0.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	10551021.20	1395140.41	31° 34' 56.920 N	103° 13' 42.750 W	



PROJECT DETAILS: Caprito
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Texas Central Zone
 System Datum: Mean Sea Level

SITE DETAILS: Ward County, Texas
 Site Centre Latitude: 31° 34' 56.920 N
 Longitude: 103° 13' 42.750 W
 Positional Uncertainty: 0.00
 Convergence: -1.49
 Local North: Grid

Block 18
University Lands Survey

13

35

4

N

Apache Corporation

1030'

No. 7WC
Elev. 2702'

2

842'

1765'

1806'

8WC

1

3

4

State of Texas "DL"
320.35 Acres

36

Block 17
University Lands Survey

Found Concrete
University Monument

15

2

37



Michael L. Stanford

Date Well Location Staked January 18, 2012

NAD 27 X = 1098483

NAD 27 Y = 706376

EMERGENCY RESPONSE LOCATOR

NAD 27 Lat. = 31° 34' 35.92" / 31.576646

NAD 27 Long. = 103° 13' 42.75" / 103.228540

1000 0 1000 2000 3000 Feet



This plat is for Texas Railroad Commission Permit Purposes Only and is NOT a boundary survey and is NOT to be used to convey or establish interests in real property.

BASIS OF BEARINGS is the Texas State Plane Coordinate System Central Zone NAD 83.

Application for Well No. 7WC
21.5 Miles West of Monahans, Texas



Apache Corporation
State of Texas "DL" No. 7WC - 1030' FNL & 1765' FWL
Section 3, Block 18, University Lands Survey
Ward County, Texas

STANFORD SURVEYING COMPANY
P.O. BOX 8490
MIDLAND, TEXAS 79708-8490
432-699-5708

DRAWN BY Adam Welch

Rev. 05-08-2012 ABW
DATE 01-20-12

SCALE 1" = 1000'

FILE NAME A-6494

S.D.I
Bottom Hole Location:
109.19' @ S58.19W
11282.0'MD, 11278.3'TVD
57.56'S, 92.79'W



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 05/11/12 through 05/11/12 conduct or supervise the taking of a Keeper Gyro survey from a depth of 0 feet to a depth of 11282 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 Apache Corporation for the State of Texas DL #7WC Well, API# 42-475-36001 in Ward 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