



APACHE CORPORATION

Crane County, TX (NAD27 TC)

North McElroy Unit #4005BH

NMU #4005BH

OH

Survey: Gyro Survey

SDI Standard Survey Report

08 May, 2011





Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	APACHE CORPORATION	Local Co-ordinate Reference:	Well NMU #4005BH
Project:	Crane County, TX (NAD27 TC)	TVD Reference:	KB Elev (13') @ 2570.0usft (Capstar #26)
Site:	North McElroy Unit #4005BH	MD Reference:	KB Elev (13') @ 2570.0usft (Capstar #26)
Well:	NMU #4005BH	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project	Crane County, TX (NAD27 TC)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Site	North McElroy Unit #4005BH			
Site Position:		Northing:	658,871.00 usft	Latitude: 31° 27' 44.758 N
From:	Map	Easting:	1,367,381.00 usft	Longitude: 102° 21' 44.746 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence: -1.05 °

Well	NMU #4005BH			
Well Position	+N/-S	0.0 usft	Northing:	658,871.00 usft
	+E/-W	0.0 usft	Easting:	1,367,381.00 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level: 2,557.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/30/2011	6.99	59.69	48,311

Design	Actual			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	300.65

Survey Program	Date 5/8/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
88.8	2,281.0	Gyro Survey (OH)	Keeper	Keeper Standard Rate Gyro
2,319.0	7,625.0	MWD Survey (OH)	MWD	MWD - Standard ISCWSA

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
88.8	0.20	77.81	88.8	0.0	0.2	77.81	0.2
175.9	0.30	95.80	175.9	0.0	0.5	85.47	0.5
263.1	0.56	142.76	263.1	-0.3	1.0	107.58	1.1
350.3	0.59	103.05	350.3	-0.8	1.7	114.03	1.9
437.4	0.32	95.47	437.4	-0.9	2.4	110.36	2.5
524.6	0.09	168.52	524.6	-1.0	2.6	110.27	2.8
611.7	0.22	221.40	611.7	-1.2	2.5	114.66	2.8
706.6	0.28	215.73	706.6	-1.5	2.3	123.12	2.7
801.4	0.38	253.34	801.4	-1.8	1.9	133.71	2.6
991.0	0.68	254.83	991.0	-2.2	0.2	175.81	2.3



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Project:	Crane County, TX (NAD27 TC)	TVD Reference:	KB Elev (13') @ 2570.0usft (Capstar #26)
Site:	North McElroy Unit #4005BH	MD Reference:	KB Elev (13') @ 2570.0usft (Capstar #26)
Well:	NMU #4005BH	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,085.9	0.73	248.16	1,085.9	-2.6	-0.9	199.75	2.8
1,180.7	0.66	248.25	1,180.7	-3.0	-2.0	213.39	3.6
1,275.5	0.25	217.86	1,275.5	-3.4	-2.6	217.76	4.3
1,370.4	0.30	43.21	1,370.4	-3.4	-2.6	217.45	4.3
1,465.2	0.94	36.41	1,465.2	-2.6	-2.0	217.25	3.2
1,560.0	1.56	49.21	1,559.9	-1.1	-0.5	205.31	1.2
1,654.9	1.50	45.51	1,654.8	0.6	1.3	65.93	1.5
1,749.7	1.66	62.05	1,749.6	2.1	3.4	58.43	4.0
1,844.5	1.48	69.21	1,844.3	3.2	5.8	61.17	6.6
1,939.3	1.44	79.43	1,939.1	3.8	8.1	64.65	9.0
2,034.2	1.49	82.88	2,034.0	4.2	10.5	68.15	11.3
2,129.0	1.53	80.98	2,128.7	4.6	13.0	70.62	13.8
2,223.8	1.45	85.20	2,223.5	4.9	15.4	72.50	16.2
2,281.0	1.45	86.30	2,280.7	5.0	16.9	73.58	17.6



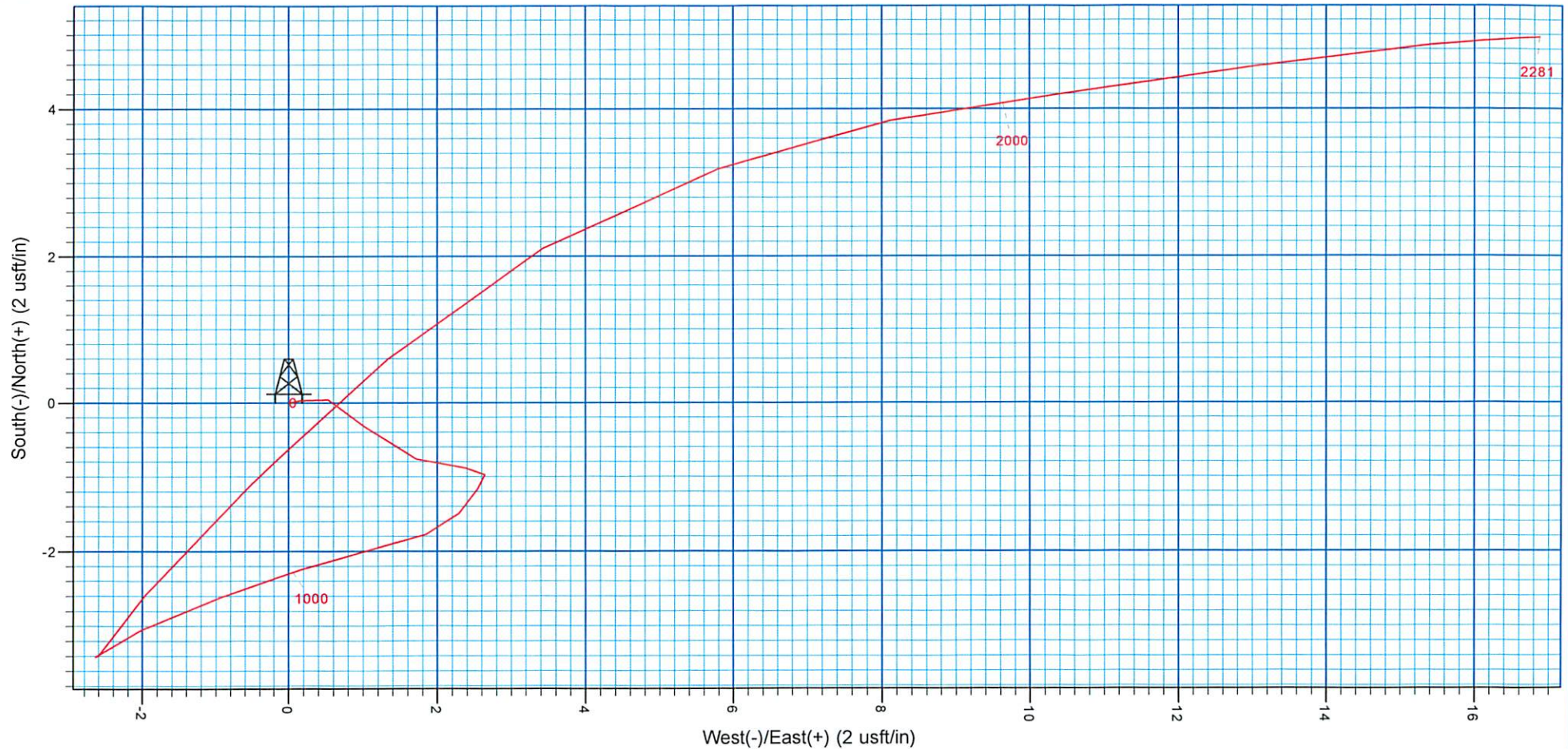
Project: Crane County, TX (NAD27 TC)
North McElroy Unit #4005BH
Well: NMU #4005BH
Wellbore: OH
Design: Actual



Azimuths to Grid North
True North: 1.04°
Magnetic North: 8.04°
Magnetic Field
Strength: 48310.7snT
Dip Angle: 59.69°
Date: 3/30/2011
Model: IGRF2010

WELL DETAILS: NMU #4005BH
KB Elev (13') @ 2570.0usft (Capstar #26)
Ground Level: 2557.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	658871.00	1367381.00	31° 27' 44.758 N	102° 21' 44.746 W	



PROJECT DETAILS: Crane County, TX (NAD27 TC)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Texas Central 4203
System Datum: Mean Sea Level

SITE DETAILS: North McElroy Unit #4005BH
Site Centre Latitude: 31° 27' 44.758 N
Longitude: 102° 21' 44.746 W
Positional Uncertainty: 0.0
Convergence: -1.05
Local North: Grid

