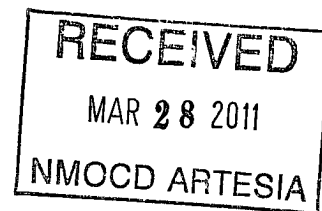


BOPCO

Quahada Ridge
Eddy County, NM
James Ranch Unit #119H
VH - Job #32K0111006

30-015-38117



Survey: Actual

SDI Standard Survey Report

09 January, 2011

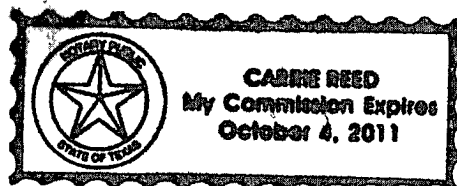
This survey is correct to the best of my knowledge and is supported by actual field data.

R. Wharton

Notarized this date 21st of February, 2011.

Carmie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

SDI Standard Survey Report

Company:	BOPCO	Local Co-ordinate Reference:	Well James Ranch Unit #119H
Project:	Quahada Ridge	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	James Ranch Unit #119H	North Reference:	Grid
Wellbore:	VH - Job #32K0111006	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0111006	Database:	EDM-Regulatory

Project	Quahada Ridge		
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	Eddy County, NM			
Site Position:		Northing:	487,803.60 usft	Latitude: 32° 20' 24.020 N
From:	Lat/Long	Easting:	661,394.96 usft	Longitude: 103° 48' 38.740 W
Position Uncertainty:	0.0 usft	Slot Radius:	0"	Grid Convergence: 0.28 °

Well	James Ranch Unit #119H, Directional (Weatherford)			
Well Position	+N/-S	0.0 usft	Northing:	479,181.35 usft
	+E/-W	0.0 usft	Easting:	665,607.69 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft
			Ground Level:	0.0 usft

Wellbore	VH - Job #32K0111006				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	1/1/2011	7.81	60.25	48,753

Design	VH - Job #32K0111006			
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	271.91

Survey Program	Date 1/9/2011				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	7,200.0	Actual (VH - Job #32K0111006)	KSRG	Keeper Gyro	

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	
100.0	0.21	125.71	100.0	-0.1	0.1	125.71	0.2	
200.0	0.29	119.35	200.0	-0.3	0.5	123.11	0.6	
300.0	0.42	171.92	300.0	-0.8	0.8	136.23	1.1	
400.0	0.51	212.34	400.0	-1.6	0.6	158.89	1.7	
500.0	0.49	231.78	500.0	-2	0.0	179.23	2.2	
600.0	0.62	241.90	600.0	-2.7	-0.8	196.05	2.8	
700.0	0.70	242.44	700.0	-3.3	-1.8	208.93	3.7	
800.0	0.78	243.12	800.0	-3.9	-3.0	217.46	4.9	
900.0	0.79	247.44	900.0	-4.4	-4.2	223.48	6.1	
1,000.0	0.96	240.75	999.9	-5.1	-5.6	227.50	7.5	
1,100.0	1.09	248.22	1,099.9	-5.9	-7.2	230.77	9.3	

Scientific Drilling International, Inc.

SDI Standard Survey Report

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Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	James Ranch Unit #119H	North Reference:	Grid
Wellbore:	VH - Job #32K0111006	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0111006	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	1.15	245.18	1,199.9	-6.6	-9.0	233.52	11.2
1,300.0	1.08	250.19	1,299.9	-7.4	-10.8	235.59	13.1
1,400.0	1.24	248.10	1,399.9	-8.1	-12.7	237.39	15.0
1,500.0	1.28	245.00	1,499.9	-9.0	-14.7	238.56	17.2
1,600.0	1.38	253.71	1,599.8	-9.8	-16.8	239.85	19.5
1,700.0	1.54	251.34	1,699.8	-10.6	-19.3	241.30	22.0
1,800.0	1.71	251.10	1,799.8	-11.5	-22.0	242.43	24.8
1,900.0	1.54	242.35	1,899.7	-12.6	-24.6	242.89	27.6
2,000.0	1.51	233.37	1,999.7	-14.0	-26.8	242.46	30.2
2,100.0	1.60	232.78	2,099.6	-15.6	-29.0	241.69	32.9
2,200.0	1.48	231.19	2,199.6	-17.3	-31.1	240.96	35.6
2,300.0	1.23	218.15	2,299.6	-18.9	-32.8	240.00	37.8
2,400.0	1.32	207.67	2,399.6	-20.8	-34.0	238.53	39.8
2,500.0	1.57	201.13	2,499.5	-23.1	-35.0	236.59	41.9
2,600.0	2.01	195.72	2,599.5	-26.0	-36.0	234.08	44.4
2,700.0	1.29	189.76	2,699.4	-28.8	-36.6	231.78	46.6
2,800.0	0.65	178.86	2,799.4	-30.5	-36.8	230.33	47.8
2,900.0	0.61	191.51	2,899.4	-31.6	-36.9	229.41	48.6
3,000.0	0.50	204.31	2,999.4	-32.5	-37.2	228.82	49.4
3,100.0	0.37	313.77	3,099.4	-32.7	-37.6	228.98	49.8
3,200.0	0.27	19.42	3,199.4	-32.3	-37.8	229.49	49.7
3,300.0	1.44	113.65	3,299.4	-32.5	-36.5	228.30	48.9
3,400.0	2.07	123.22	3,399.3	-34.0	-33.9	224.86	48.0
3,500.0	1.50	115.45	3,499.3	-35.6	-31.2	221.21	47.3
3,600.0	1.53	120.00	3,599.3	-36.8	-28.8	218.07	46.8
3,700.0	1.49	126.04	3,699.2	-38.2	-26.6	214.84	46.6
3,800.0	1.31	130.64	3,799.2	-39.8	-24.7	211.86	46.8
3,900.0	0.74	131.75	3,899.2	-40.9	-23.4	209.71	47.1
4,000.0	0.51	103.89	3,999.2	-41.5	-22.4	208.42	47.2
4,100.0	0.56	92.94	4,099.2	-41.6	-21.5	207.35	46.8
4,200.0	0.57	82.81	4,199.2	-41.6	-20.5	206.30	46.4
4,300.0	0.56	74.98	4,299.2	-41.4	-19.6	205.32	45.8
4,400.0	0.54	69.64	4,399.2	-41.1	-18.7	204.43	45.1
4,500.0	0.58	63.47	4,499.1	-40.7	-17.8	203.58	44.4
4,600.0	0.59	72.18	4,599.1	-40.3	-16.8	202.65	43.7
4,700.0	0.57	74.29	4,699.1	-40.0	-15.9	201.61	43.0
4,800.0	0.54	70.51	4,799.1	-39.7	-14.9	200.60	42.4
4,900.0	0.41	53.74	4,899.1	-39.4	-14.2	199.84	41.8
5,000.0	0.27	80.62	4,999.1	-39.1	-13.7	199.28	41.4
5,100.0	0.09	49.27	5,099.1	-39.0	-13.4	198.93	41.2
5,200.0	0.12	53.59	5,199.1	-38.9	-13.2	198.80	41.1
5,300.0	0.08	75.16	5,299.1	-38.8	-13.1	198.63	41.0
5,400.0	0.09	116.31	5,399.1	-38.8	-13.0	198.44	40.9
5,500.0	0.09	46.06	5,499.1	-38.8	-12.8	198.28	40.9

Scientific Drilling International, Inc.

SDI Standard Survey Report

Company:	BOPCO	Local Co-ordinate Reference:	Well James Ranch Unit #119H
Project:	Quahada Ridge	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	James Ranch Unit #119H	North Reference:	Grid
Wellbore:	VH - Job #32K0111006	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0111006	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	0.04	148.22	5,599.1	-38.8	-12.7	198.19	40.8	
5,700.0	0.07	343.51	5,699.1	-38.8	-12.7	198.20	40.8	
5,800.0	0.07	193.90	5,799.1	-38.8	-12.8	198.25	40.8	
5,900.0	0.04	201.50	5,899.1	-38.9	-12.8	198.24	40.9	
6,000.0	0.14	196.03	5,999.1	-39.0	-12.9	198.24	41.1	
6,100.0	0.24	210.06	6,099.1	-39.3	-13.0	198.29	41.4	
6,200.0	0.16	190.83	6,199.1	-39.6	-13.1	198.32	41.7	
6,300.0	0.31	190.43	6,299.1	-40.0	-13.2	198.25	42.1	
6,400.0	0.42	197.55	6,399.1	-40.6	-13.4	198.19	42.8	
6,500.0	0.41	204.13	6,499.1	-41.3	-13.6	198.24	43.5	
6,600.0	0.47	203.37	6,599.1	-42.0	-13.9	198.33	44.3	
6,700.0	0.53	206.81	6,699.1	-42.8	-14.3	198.46	45.1	
6,800.0	0.44	200.81	6,799.1	-43.6	-14.6	198.57	46.0	
6,900.0	0.35	198.05	6,899.1	-44.2	-14.9	198.58	46.7	
7,000.0	0.52	184.57	6,999.1	-45.0	-15.0	198.45	47.4	
7,100.0	0.52	206.13	7,099.1	-45.8	-15.2	198.39	48.3	
7,200.0	0.54	200.33	7,199.1	-46.7	-15.6	198.48	49.2	



Project: Quahada Ridge
Eddy County, NM
Well: James Ranch Unit #119H
Wellbore: VH - Job #32K0111006
Design: VH - Job #32K0111006

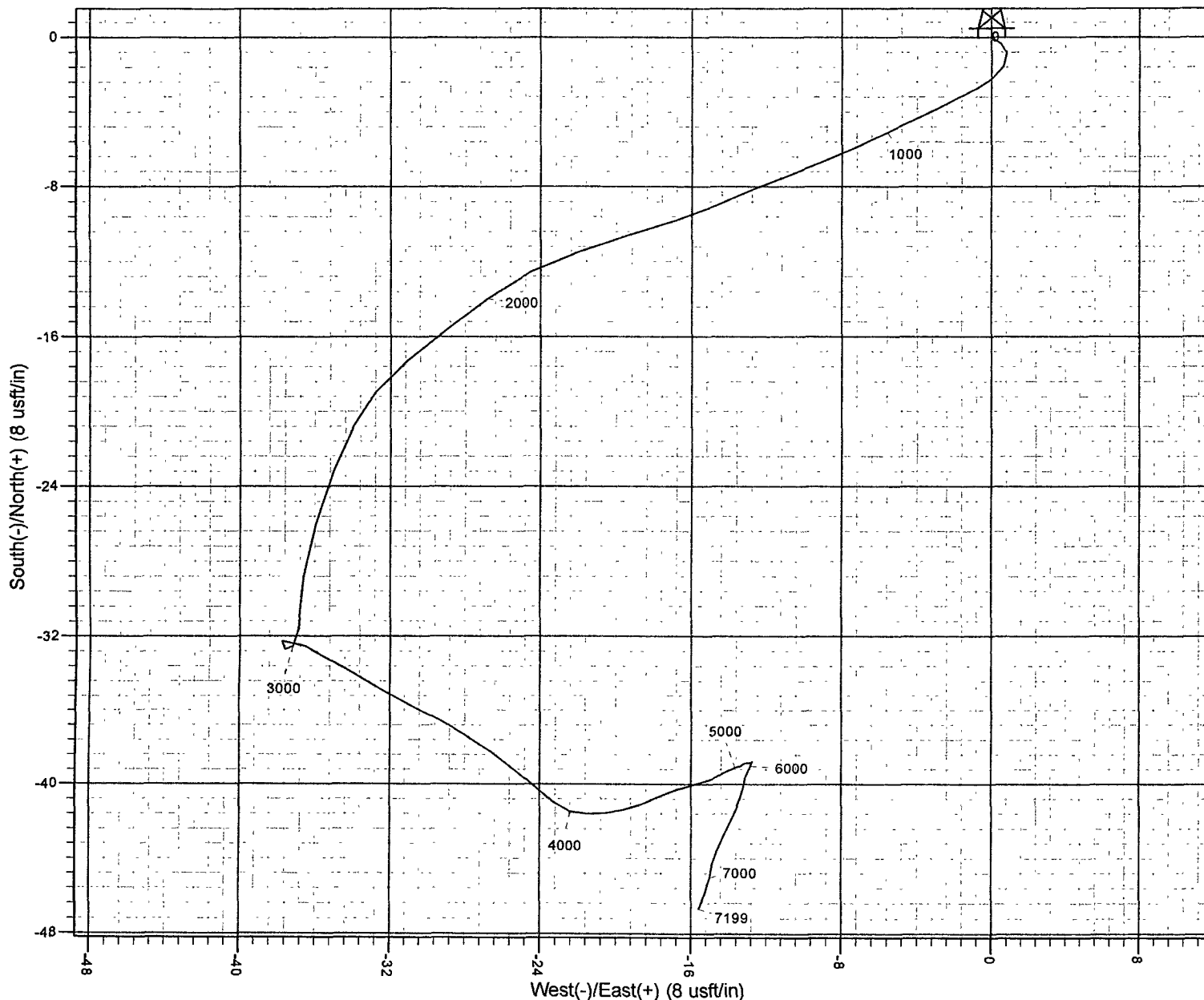


Azimuths to Grd North
True North: -0.29°
Magnetic North: 7.52°

Magnetic Field
Strength: 48753 1nT
Dip Angle: 60.25°
Date: 1/1/2011
Model: BGGM2010

WELL DETAILS: James Ranch Unit #119H
WELL @ 0.0usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	479181.35	665607.69	$32^\circ 18' 58.490\text{ N}$	$103^\circ 47' 50.140\text{ W}$	
Ground Level: 0.0						



PROJECT DETAILS: Quahada Ridge
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: Eddy County, NM
Site Centre Latitude: $32^\circ 20' 24.020\text{ N}$
Longitude: $103^\circ 48' 38.740\text{ W}$
Positional Uncertainty: 0.0
Convergence: 0.28
Local North: Grid