

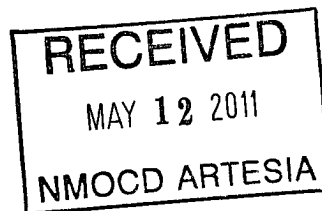
VLT

BOPCO

Quahada Ridge
Eddy County, NM
James Ranch Unit #121H
VH - Job #32K0111076

30-015-38119

Survey: Actual



SDI Standard Survey Report

27 January, 2011

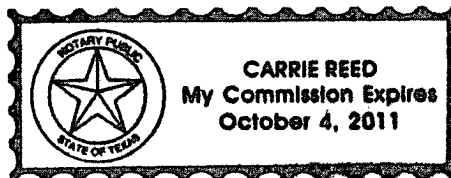
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 27th of January, 2011.

[Signature]

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 #121H
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 #121H	North Reference:	Grid
Wellbore:	VH - Job #32K0111076	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0111076	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 #121H, Directional (Baker Inteq)					
Well Position	+N/-S	0.0 usft	Northing:	475,077.15 usft	Latitude:	32° 18' 17.970 N
	+E/-W	0.0 usft	Easting:	663,688.52 usft	Longitude:	103° 48' 12.740 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft

Wellbore	VH - Job #32K0111076				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	1/25/2011	7.80	60.24	48,738

Design		VH - Job #32K0111076		
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	285.03

Survey Program	Date 1/27/2011				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	6,974.0	Actual (VH - Job #32K0111076)	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	0.41	299.56	100.0	0.2	-0.3	299.56	0.4	
200.0	0.43	287.59	200.0	0.5	-1.0	295.45	1.1	
300.0	0.45	278.52	300.0	0.6	-1.7	290.28	1.8	
400.0	0.91	253.67	400.0	0.5	-2.9	279.34	2.9	
500.0	1.38	242.61	500.0	-0.3	-4.7	266.30	4.7	
600.0	1.39	242.76	599.9	-1.4	-6.9	258.35	7.0	
700.0	1.21	245.20	699.9	-2.4	-8.9	254.83	9.2	
800.0	1.22	241.37	799.9	-3.4	-10.8	252.67	11.3	
900.0	1.29	242.78	899.9	-4.4	-12.7	250.96	13.5	
1,000.0	1.22	243.61	999.8	-5.4	-14.7	249.88	15.6	
1,100.0	1.05	242.98	1,099.8	-6.3	-16.4	249.14	17.6	

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Wellbore:	VH - Job #32K0111076	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0111076	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	0.99	243.68	1,199.8	-7.1	-18.0	248.61	19.4
1,300.0	0.87	251.65	1,299.8	-7.7	-19.5	248.51	21.0
1,400.0	0.74	243.55	1,399.8	-8.2	-20.8	248.48	22.4
1,500.0	0.53	242.03	1,499.8	-8.7	-21.8	248.21	23.5
1,600.0	0.29	237.33	1,599.8	-9.1	-22.4	247.98	24.2
1,700.0	0.31	214.97	1,699.8	-9.4	-22.8	247.53	24.7
1,800.0	0.16	225.68	1,799.8	-9.8	-23.1	247.08	25.0
1,900.0	0.14	192.83	1,899.8	-10.0	-23.2	246.74	25.2
2,000.0	0.12	238.81	1,999.8	-10.1	-23.3	246.48	25.4
2,100.0	0.12	261.57	2,099.8	-10.2	-23.5	246.51	25.6
2,200.0	0.07	196.91	2,199.8	-10.3	-23.6	246.47	25.8
2,300.0	0.16	300.17	2,299.8	-10.3	-23.8	246.62	25.9
2,400.0	0.01	29.96	2,399.8	-10.2	-23.9	246.88	26.0
2,500.0	0.07	327.56	2,499.8	-10.1	-23.9	247.02	26.0
2,600.0	0.09	87.50	2,599.8	-10.1	-23.9	247.09	25.9
2,700.0	0.08	64.76	2,699.8	-10.0	-23.7	247.04	25.8
2,800.0	0.09	84.19	2,799.8	-10.0	-23.6	246.99	25.6
2,900.0	0.16	172.74	2,899.8	-10.1	-23.5	246.64	25.6
3,000.0	0.25	182.00	2,999.8	-10.5	-23.5	245.90	25.7
3,100.0	0.30	171.65	3,099.8	-11.0	-23.4	244.91	25.9
3,200.0	0.37	163.84	3,199.8	-11.5	-23.3	243.66	26.0
3,300.0	0.57	141.40	3,299.8	-12.2	-22.9	241.88	26.0
3,400.0	0.68	142.99	3,399.8	-13.1	-22.2	239.49	25.8
3,500.0	0.55	282.34	3,499.8	-13.5	-22.4	238.92	26.1
3,600.0	0.55	276.86	3,599.7	-13.3	-23.3	240.25	26.8
3,700.0	0.45	238.76	3,699.7	-13.5	-24.1	240.82	27.6
3,800.0	0.46	232.91	3,799.7	-13.9	-24.8	240.68	28.4
3,900.0	0.43	223.10	3,899.7	-14.4	-25.3	240.35	29.2
4,000.0	0.41	226.96	3,999.7	-14.9	-25.9	239.98	29.9
4,100.0	0.38	241.81	4,099.7	-15.3	-26.4	239.85	30.5
4,200.0	0.47	240.72	4,199.7	-15.7	-27.1	239.88	31.3
4,300.0	0.70	258.25	4,299.7	-16.0	-28.0	240.24	32.3
4,400.0	0.66	258.64	4,399.7	-16.3	-29.2	240.87	33.4
4,500.0	0.44	233.68	4,499.7	-16.6	-30.1	241.08	34.3
4,600.0	0.42	219.06	4,599.7	-17.1	-30.6	240.78	35.1
4,700.0	0.37	210.58	4,699.7	-17.7	-31.0	240.30	35.7
4,800.0	0.42	214.79	4,799.7	-18.3	-31.4	239.80	36.3
4,900.0	0.40	208.02	4,899.7	-18.9	-31.7	239.27	36.9
5,000.0	0.24	206.12	4,999.7	-19.4	-32.0	238.82	37.4
5,100.0	0.16	218.58	5,099.7	-19.7	-32.2	238.57	37.7
5,200.0	0.20	254.43	5,199.7	-19.8	-32.4	238.57	38.0
5,300.0	0.13	251.14	5,299.7	-19.9	-32.7	238.68	38.3
5,400.0	0.16	291.16	5,399.7	-19.9	-32.9	238.88	38.5
5,500.0	0.21	2.99	5,499.7	-19.7	-33.1	239.27	38.5

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Well:	James Ranch Unit #121H	North Reference:	Grid
Wellbore:	VH - Job #32K0111076	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0111076	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	0.14	311.05	5,599.7	-19.4	-33.1	239.67	38.4	
5,700.0	0.14	311.45	5,699.7	-19.2	-33.3	240.02	38.5	
5,800.0	0.15	86.52	5,799.7	-19.1	-33.3	240.11	38.4	
5,900.0	0.26	42.16	5,899.7	-19.0	-33.0	240.12	38.1	
6,000.0	0.30	33.54	5,999.7	-18.6	-32.7	240.41	37.6	
6,100.0	0.28	51.87	6,099.7	-18.2	-32.4	240.65	37.1	
6,200.0	0.27	92.11	6,199.7	-18.1	-31.9	240.51	36.7	
6,300.0	0.17	94.93	6,299.7	-18.1	-31.6	240.19	36.4	
6,400.0	0.36	182.24	6,399.7	-18.4	-31.4	239.63	36.4	
6,500.0	0.79	164.76	6,499.7	-19.4	-31.3	238.19	36.8	
6,600.0	1.23	181.48	6,599.7	-21.1	-31.1	235.81	37.6	
6,700.0	1.47	191.52	6,699.6	-23.5	-31.4	233.23	39.2	
6,800.0	1.43	191.10	6,799.6	-25.9	-31.9	230.87	41.1	
6,900.0	1.30	193.27	6,899.6	-28.3	-32.4	228.88	43.0	
6,974.0	1.40	198.87	6,973.6	-29.9	-32.9	227.67	44.5	



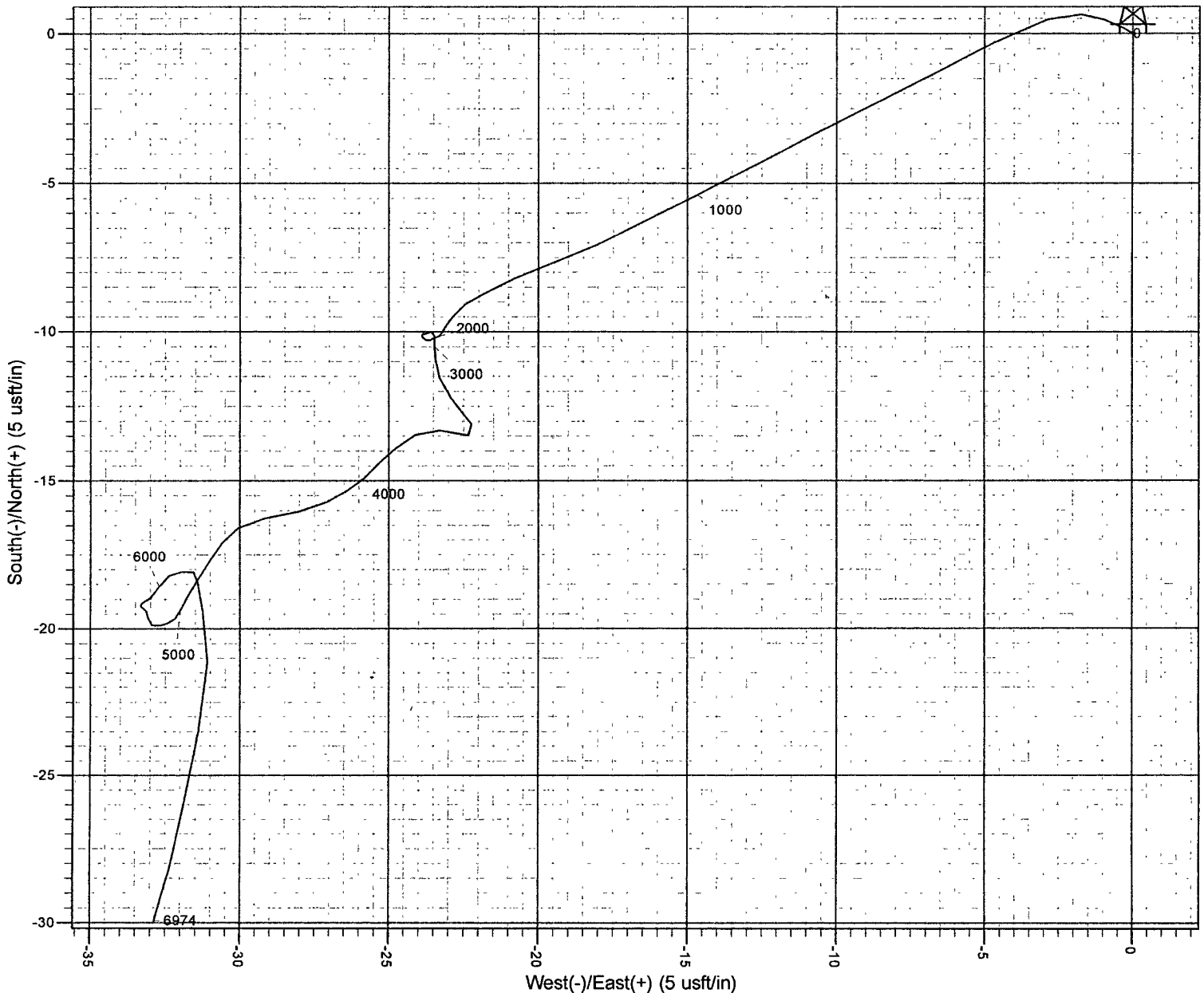
Project: Quahada Ridge
Eddy County, NM
Well: James Ranch Unit #121H
Wellbore: VH - Job #32K0111076
Design: VH - Job #32K0111076



Azimuths to Grid North
True North: -0.28°
Magnetic North: 7.52°
Magnetic Field
Strength: 48738.2snT
Dip Angle: 60.24°
Date: 1/25/2011
Model: BGGM2010

WELL DETAILS: James Ranch Unit #121H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	475077.15	663688.52	32° 18' 17.970 N	103° 48' 12.740 W	



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° 20' 24.020 N
Longitude: 103° 48' 38.740 W
Positional Uncertainty: 0.0
Convergence: 0.28
Local North: Grid