

VLT

BOPCO

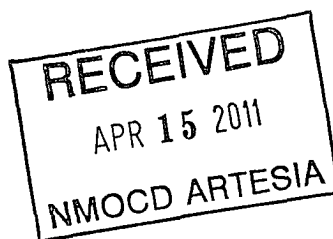
Quahada Ridge
Eddy County, NM
James Ranch Unit #124H
VH - Job #32K1210991

30-015-38113

Survey: Actual

SDI Standard Survey Report

21 December, 2010



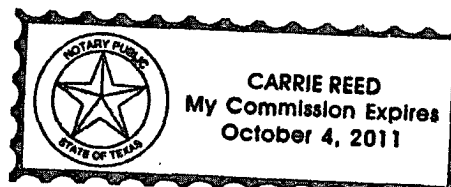
This survey is correct to the best of my knowledge and is supported by actual field data.

Hubert

Notorized this date 3/01 of December 2010.

Carrie 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 #124H
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 #124H	North Reference:	Grid
Wellbore:	VH - Job #32K1210991	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210991	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 #124H, Directional (Baker)					
Well Position	+N/-S	0.0 usft	Northing:	475,076.80 usft	Latitude:	32° 18' 17.970 N
	+E/-W	0.0 usft	Easting:	663,618.15 usft	Longitude:	103° 48' 13.560 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft

Wellbore	VH - Job #32K1210991				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	BGGM2010	12/16/2010	7.82	60.24	48,750

Design	VH - Job #32K1210991				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	273.80	

Survey Program	Date	12/21/2010			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100.0	6,985.0	Actual (VH - Job #32K1210991)	KSRG	Keeper Gyro	

Survey									
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance		
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0		
100.0	0.66	68.53	100.0	0.2	0.5	68.53	0.6		
200.0	0.67	84.52	200.0	0.5	1.7	73.90	1.7		
300.0	0.93	85.94	300.0	0.6	3.0	79.02	3.1		
400.0	0.97	87.62	400.0	0.7	4.7	81.73	4.8		
500.0	0.94	74.53	500.0	0.9	6.3	81.59	6.4		
600.0	0.78	65.85	599.9	1.4	7.7	79.51	7.9		
700.0	0.52	61.65	699.9	1.9	8.8	77.60	9.0		
800.0	0.46	47.12	799.9	2.4	9.5	75.67	9.8		
900.0	0.46	64.27	899.9	2.9	10.1	74.19	10.5		
1,000.0	0.54	61.43	999.9	3.3	10.9	73.32	11.4		
1,100.0	0.59	46.49	1,099.9	3.8	11.7	71.78	12.3		

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Wellbore:	VH - Job #32K1210991	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210991	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	0.50	45.84	1,199.9	4.5	12.4	70.00	13.2
1,300.0	0.50	42.40	1,299.9	5.1	13.0	68.43	14.0
1,400.0	0.52	36.57	1,399.9	5.8	13.5	66.76	14.7
1,500.0	0.50	34.63	1,499.9	6.5	14.1	65.05	15.5
1,600.0	0.42	30.85	1,599.9	7.2	14.5	63.54	16.2
1,700.0	0.36	24.32	1,699.9	7.8	14.8	62.19	16.7
1,800.0	0.27	18.34	1,799.9	8.3	15.0	61.00	17.2
1,900.0	0.19	26.11	1,899.9	8.7	15.2	60.16	17.5
2,000.0	0.11	9.65	1,999.9	8.9	15.3	59.62	17.7
2,100.0	0.25	328.96	2,099.9	9.2	15.2	58.68	17.7
2,200.0	0.23	306.88	2,199.9	9.5	14.9	57.37	17.7
2,300.0	0.29	275.74	2,299.9	9.7	14.5	56.23	17.4
2,400.0	0.27	294.80	2,399.9	9.8	14.0	55.02	17.1
2,500.0	0.23	278.83	2,499.9	9.9	13.6	53.85	16.8
2,600.0	0.19	280.35	2,599.9	10.0	13.2	52.95	16.6
2,700.0	0.14	226.35	2,699.9	9.9	13.0	52.57	16.3
2,800.0	0.15	287.96	2,799.9	9.9	12.8	52.23	16.1
2,900.0	0.15	259.85	2,899.9	9.9	12.5	51.63	16.0
3,000.0	0.15	216.44	2,999.9	9.8	12.3	51.53	15.7
3,100.0	0.14	272.73	3,099.9	9.7	12.1	51.35	15.5
3,200.0	0.23	227.66	3,199.9	9.6	11.8	51.10	15.2
3,300.0	0.22	177.05	3,299.9	9.2	11.7	51.74	14.9
3,400.0	0.45	129.93	3,399.9	8.8	12.0	53.83	14.9
3,500.0	0.67	126.92	3,499.9	8.2	12.8	57.38	15.2
3,600.0	0.70	130.70	3,599.9	7.4	13.7	61.55	15.6
3,700.0	0.60	243.80	3,699.9	6.8	13.7	63.61	15.3
3,800.0	0.73	241.15	3,799.9	6.3	12.7	63.72	14.1
3,900.0	0.74	226.66	3,899.9	5.5	11.6	64.69	12.9
4,000.0	0.65	229.88	3,999.8	4.7	10.7	66.37	11.7
4,100.0	0.65	228.99	4,099.8	4.0	9.9	68.15	10.6
4,200.0	0.61	228.45	4,199.8	3.2	9.1	70.33	9.6
4,300.0	0.65	232.00	4,299.8	2.5	8.2	72.84	8.6
4,400.0	0.62	235.65	4,399.8	1.9	7.3	75.59	7.6
4,500.0	0.60	230.31	4,499.8	1.2	6.5	79.14	6.6
4,600.0	0.63	239.83	4,599.8	0.6	5.6	83.57	5.6
4,700.0	0.62	242.22	4,699.8	0.1	4.6	88.76	4.6
4,800.0	0.65	247.59	4,799.8	-0.4	3.6	95.79	3.6
4,900.0	0.66	254.86	4,899.8	-0.7	2.5	106.08	2.7
5,000.0	0.46	260.61	4,999.8	-1.0	1.6	120.76	1.9
5,100.0	0.61	264.26	5,099.8	-1.1	0.7	147.89	1.3
5,200.0	0.54	269.89	5,199.8	-1.1	-0.3	196.37	1.2
5,300.0	0.68	259.06	5,299.8	-1.2	-1.4	228.21	1.9
5,400.0	0.58	260.41	5,399.8	-1.4	-2.5	239.82	2.9
5,500.0	0.29	250.84	5,499.8	-1.6	-3.2	243.44	3.6

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Site:	Eddy County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	James Ranch Unit #124H	North Reference:	Grid
Wellbore:	VH - Job #32K1210991	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1210991	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	0.27	241.74	5,599.8	-1.8	-3.7	243.80	4.1	
5,700.0	0.24	245.03	5,699.8	-2.0	-4.0	243.75	4.5	
5,800.0	0.32	200.03	5,799.8	-2.3	-4.3	241.56	4.9	
5,900.0	0.46	190.85	5,899.8	-3.0	-4.5	236.31	5.4	
6,000.0	0.42	176.26	5,999.8	-3.8	-4.6	230.44	5.9	
6,100.0	0.37	197.43	6,099.8	-4.4	-4.6	226.21	6.4	
6,200.0	0.46	190.79	6,199.8	-5.1	-4.8	223.05	7.0	
6,300.0	0.57	194.57	6,299.7	-6.0	-5.0	219.74	7.8	
6,400.0	0.71	198.84	6,399.7	-7.1	-5.3	216.94	8.9	
6,500.0	0.71	198.84	6,499.7	-8.3	-5.7	214.75	10.0	
6,600.0	0.97	208.90	6,599.7	-9.6	-6.3	213.47	11.5	
6,700.0	0.99	211.04	6,699.7	-11.1	-7.2	213.02	13.2	
6,800.0	0.85	202.43	6,799.7	-12.5	-7.9	212.37	14.8	
6,900.0	0.93	205.97	6,899.7	-13.9	-8.6	211.61	16.3	
6,985.0	0.98	188.14	6,984.7	-15.2	-9.0	210.45	17.7	



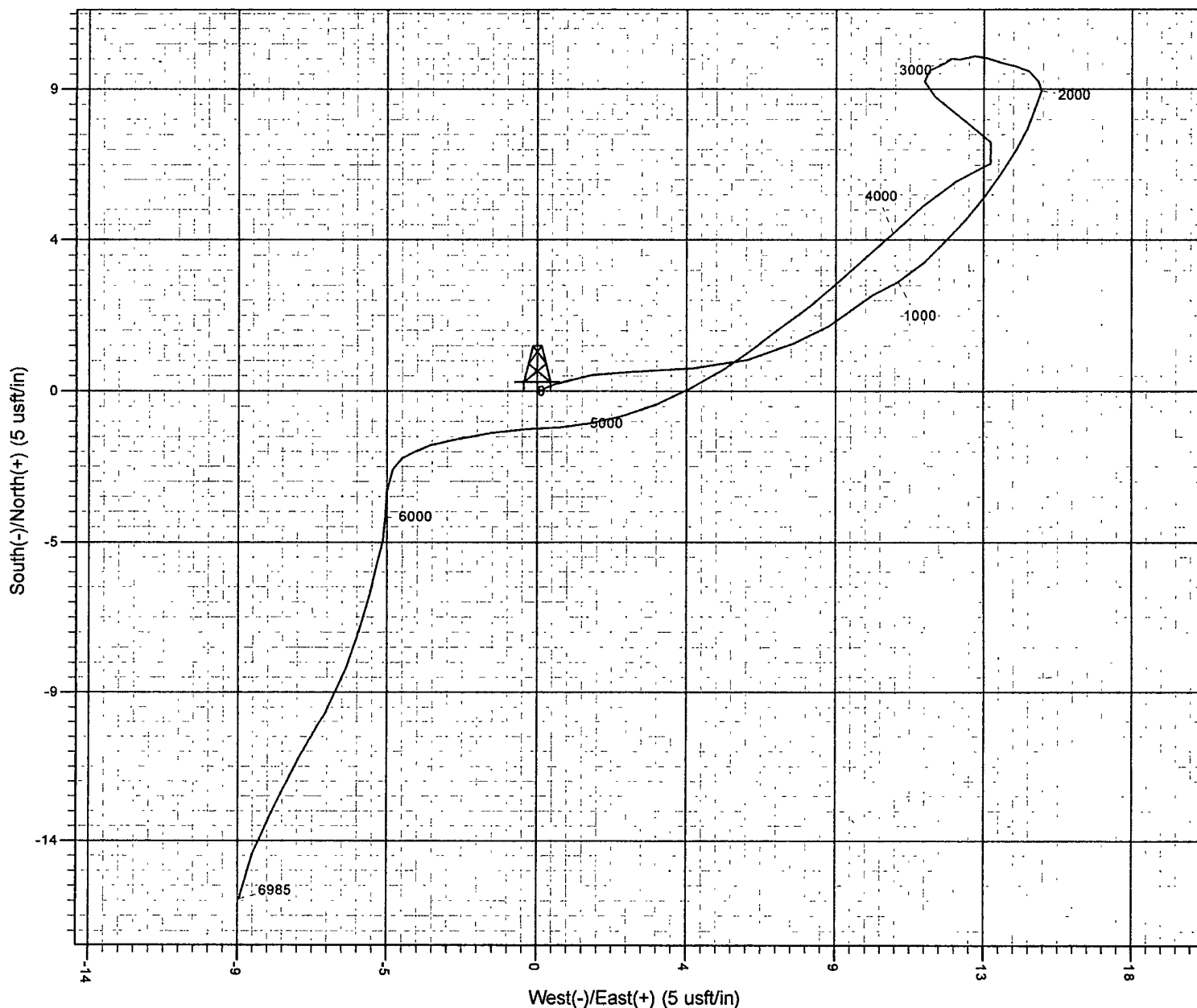
Project: Quahada Ridge
Eddy County, NM
Well: James Ranch Unit #124H
Wellbore: VH - Job #32K1210991
Design: VH - Job #32K1210991



Azimuths to Grid North
True North: -0.28°
Magnetic North: 7.53°
Magnetic Field
Strength: 48750.2snT
Dip Angle: 60.24°
Date: 12/16/2010
Model BGGM2010

WELL DETAILS: James Ranch Unit #124H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	475076.80	663618.15	32° 18' 17.970 N	103° 48' 13.560 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