

Scientific Drilling

SUR: H-24-25s-33e, 1980/N & 990/E
BHL: C-19-25s-34e, 1271/N & 1437/W
API #30-025-36676

E.O.G.

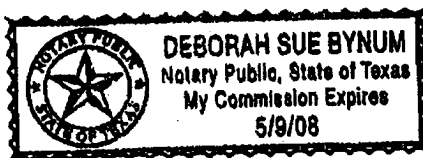
Field: Red Hills
Site: Lea County, NM
Well: Vaca 24 Fed #1
Wellpath: VH - Job #32K1104678
Survey: 11/01/04

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

Bicky Sharto Company Representative

Notorized this date 20th of December, 2004.

Deborah Sue Bynum
Notary Signature
County of Midland
State of Texas





Scientific
Drilling

Scientific Drilling International Survey Report

Company: E.O.G. Date: 12/20/2004 Time: 08:48:09 Page: 1
Field: Red Hills Co-ordinate(NE) Reference: Site: Lea County, NM, Grid North
Site: Lea County, NM Vertical (TVD) Reference: SITE 0.0
Well: Vaca 24 Fed #1 Section (VS) Reference: Well (0.00N,0.00E,73.89Azi)
Wellpath: VH - Job #32K1104678 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 11/01/04 Start Date: 11/1/2004
KSRG 0'-12293'
Company: Scientific Drilling Internatio Engineer: Carter w/P&M
Tool: Keeper;Keeper Surface Readout GYRO Tied-to: From Surface

Survey

MD ft	Incl deg	Azbn deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00
100.0	0.41	131.51	100.0	0.2	-0.2	0.3	0.41	0.4	131.51
200.0	0.58	224.36	200.0	-0.1	-0.8	0.2	0.73	0.9	167.72
300.0	0.49	207.82	300.0	-0.8	-1.6	-0.4	0.18	1.6	193.26
400.0	0.43	211.02	400.0	-1.4	-2.3	-0.8	0.07	2.4	198.56
500.0	0.43	219.26	500.0	-1.9	-2.9	-1.2	0.06	3.1	202.48
600.0	0.45	222.69	600.0	-2.6	-3.5	-1.7	0.03	3.9	206.11
700.0	0.43	230.07	700.0	-3.3	-4.0	-2.3	0.06	4.6	209.41
800.0	0.44	229.14	800.0	-4.0	-4.5	-2.8	0.01	5.3	212.24
900.0	0.52	235.53	900.0	-4.7	-5.0	-3.5	0.10	6.1	214.98
1000.0	0.50	238.32	1000.0	-5.6	-5.5	-4.2	0.03	6.9	217.72
1100.0	0.50	233.38	1100.0	-6.4	-6.0	-5.0	0.04	7.8	219.72
1200.0	0.48	235.57	1200.0	-7.2	-6.5	-5.7	0.03	8.6	221.17
1300.0	0.50	226.98	1300.0	-8.0	-7.0	-6.3	0.08	9.4	222.07
1400.0	0.37	233.81	1400.0	-8.7	-7.5	-6.9	0.14	10.2	222.65
1500.0	0.59	246.54	1500.0	-9.5	-7.9	-7.6	0.24	11.0	224.07
1600.0	0.47	236.60	1599.9	-10.4	-8.3	-8.4	0.15	11.9	225.45
1700.0	0.48	218.46	1699.9	-11.2	-8.9	-9.1	0.15	12.7	225.58
1800.0	0.33	214.56	1799.9	-11.7	-9.4	-9.5	0.15	13.4	225.12
1900.0	0.49	236.19	1899.9	-12.4	-9.9	-10.0	0.22	14.1	225.24
2000.0	0.59	243.18	1999.9	-13.3	-10.4	-10.8	0.12	15.0	226.16
2100.0	0.65	243.06	2099.9	-14.3	-10.9	-11.8	0.06	16.0	227.28
2200.0	0.74	241.82	2199.9	-15.5	-11.4	-12.9	0.09	17.2	228.34
2300.0	0.84	237.33	2299.9	-16.9	-12.1	-14.0	0.12	18.6	229.16
2400.0	0.82	224.39	2399.9	-18.2	-13.0	-15.2	0.19	20.0	229.28
2500.0	0.67	219.39	2499.9	-19.3	-14.0	-16.0	0.16	21.3	228.85
2600.0	0.56	197.65	2599.9	-20.0	-14.9	-16.5	0.26	22.3	227.95
2700.0	0.41	184.79	2699.9	-20.4	-15.7	-16.7	0.18	23.0	226.73
2800.0	0.41	157.14	2799.9	-20.5	-16.4	-16.6	0.20	23.4	225.32
2900.0	0.46	134.68	2899.9	-20.3	-17.0	-16.2	0.18	23.5	223.53
3000.0	0.54	112.99	2999.9	-19.7	-17.5	-15.5	0.20	23.4	221.46
3100.0	0.71	100.11	3099.9	-18.8	-17.8	-14.4	0.22	22.9	219.02
3200.0	0.85	87.88	3199.9	-17.5	-17.9	-13.1	0.22	22.2	216.17
3300.0	1.38	87.41	3299.8	-15.6	-17.8	-11.1	0.53	21.0	212.02
3400.0	1.54	90.16	3399.8	-13.2	-17.8	-8.6	0.17	19.7	205.81
3500.0	1.51	86.81	3499.8	-10.6	-17.7	-5.9	0.09	18.6	198.53
3600.0	1.59	87.66	3599.7	-8.0	-17.6	-3.2	0.08	17.8	190.41
3700.0	1.58	90.05	3699.7	-5.3	-17.5	-0.5	0.07	17.5	181.50
3800.0	1.61	90.73	3799.7	-2.6	-17.5	2.3	0.04	17.7	172.44
3900.0	1.67	89.92	3899.6	0.1	-17.5	5.2	0.06	18.3	163.52
4000.0	1.72	84.11	3999.6	3.0	-17.4	8.1	0.18	19.2	154.91
4100.0	1.68	80.75	4099.5	5.9	-17.0	11.1	0.11	20.3	146.89
4200.0	1.52	75.69	4199.5	8.7	-16.4	13.8	0.21	21.5	139.94
4300.0	1.29	73.37	4299.5	11.2	-15.8	16.2	0.24	22.6	134.28
4400.0	1.41	66.83	4399.4	13.5	-15.0	18.4	0.20	23.7	129.15
4500.0	1.42	67.06	4499.4	16.0	-14.0	20.7	0.01	25.0	124.13
4600.0	1.35	70.03	4599.4	18.4	-13.1	22.9	0.10	26.4	119.79
4700.0	1.23	71.54	4699.3	20.6	-12.4	25.0	0.12	27.9	116.30
4800.0	1.24	88.73	4799.3	22.7	-12.0	27.1	0.37	29.7	113.88



Scientific
Drilling

Scientific Drilling International Survey Report

Company: E.O.G.
Field: Red Hills
Site: Lea County, NM
Well: Vaca 24 Fed #1
Wellpath: VH - Job #32K1104678

Date: 12/20/2004 Time: 08:48:09 Page: 2
Co-ordinate(NE) Reference: Site: Lea County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,73.89Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.0	1.29	98.94	4899.3	24.8	-12.2	29.3	0.23	31.7	112.52
5000.0	1.23	95.33	4999.3	26.8	-12.4	31.5	0.10	33.9	111.54
5100.0	0.93	99.94	5099.3	28.5	-12.7	33.4	0.31	35.7	110.79
5200.0	0.90	101.02	5199.2	30.0	-13.0	34.9	0.03	37.3	110.35
5300.0	0.99	96.90	5299.2	31.5	-13.2	36.6	0.11	38.9	109.87
5400.0	0.97	83.27	5399.2	33.1	-13.2	38.3	0.23	40.5	109.06
5500.0	0.92	78.83	5499.2	34.7	-13.0	39.9	0.09	41.9	108.01
5600.0	1.00	83.11	5599.2	36.4	-12.7	41.5	0.11	43.4	107.00
5700.0	0.97	78.00	5699.2	38.1	-12.4	43.2	0.09	45.0	106.03
5800.0	1.00	86.83	5799.2	39.8	-12.2	44.9	0.15	46.6	105.19
5900.0	0.90	75.65	5899.1	41.4	-12.0	46.6	0.21	48.1	104.40
6000.0	0.89	72.61	5999.1	43.0	-11.5	48.1	0.05	49.4	103.49
6100.0	0.92	78.90	6099.1	44.6	-11.1	49.6	0.10	50.8	102.66
6200.0	0.67	84.52	6199.1	45.9	-10.9	51.0	0.26	52.1	102.11
6300.0	0.81	79.34	6299.1	47.2	-10.7	52.3	0.16	53.3	101.62
6400.0	0.76	92.35	6399.1	48.6	-10.6	53.6	0.18	54.7	101.23
6500.0	0.75	88.63	6499.1	49.8	-10.7	54.9	0.05	55.9	100.98
6600.0	0.75	96.21	6599.1	51.1	-10.7	56.2	0.10	57.2	100.78
6700.0	0.79	100.09	6699.1	52.3	-10.9	57.6	0.07	58.6	100.73
6800.0	0.74	106.61	6799.1	53.4	-11.2	58.9	0.10	59.9	100.78
6900.0	0.71	107.21	6899.1	54.5	-11.6	60.1	0.03	61.2	100.91
7000.0	0.67	105.55	6999.0	55.5	-11.9	61.2	0.04	62.4	101.01
7100.0	0.57	117.65	7099.0	56.4	-12.3	62.2	0.16	63.4	101.18
7200.0	0.56	149.20	7199.0	56.9	-13.0	62.9	0.31	64.2	101.63
7300.0	0.53	149.70	7299.0	57.1	-13.8	63.4	0.03	64.9	102.26
7400.0	0.81	141.03	7399.0	57.4	-14.6	64.0	0.12	65.6	102.85
7500.0	0.59	154.13	7499.0	57.7	-15.5	64.5	0.14	66.4	103.48
7600.0	0.66	169.80	7599.0	57.7	-16.5	64.9	0.18	66.9	104.27
7700.0	0.69	169.16	7699.0	57.6	-17.7	65.1	0.03	67.4	105.18
7800.0	0.97	163.84	7799.0	57.6	-19.1	65.4	0.29	68.1	106.24
7900.0	1.16	164.54	7899.0	57.6	-20.8	65.9	0.19	69.1	107.55
8000.0	1.04	167.04	7999.0	57.5	-22.7	66.4	0.13	70.2	108.88
8100.0	0.96	166.20	8098.9	57.4	-24.4	66.8	0.08	71.1	110.07
8200.0	1.06	158.87	8198.9	57.5	-26.1	67.3	0.16	72.2	111.17
8300.0	1.11	156.95	8298.9	57.7	-27.8	68.0	0.06	73.5	112.25
8400.0	1.22	158.19	8398.9	57.9	-29.7	68.8	0.11	75.0	113.35
8500.0	1.27	153.34	8498.9	58.2	-31.7	69.7	0.12	76.6	114.45
8600.0	1.32	155.05	8598.8	58.6	-33.7	70.7	0.06	78.3	115.50
8700.0	1.41	148.75	8698.8	59.1	-35.8	71.8	0.17	80.3	116.51
8800.0	1.28	155.96	8798.8	59.5	-37.9	72.9	0.21	82.2	117.46
8900.0	1.23	149.57	8898.8	60.0	-39.8	73.9	0.15	84.0	118.32
9000.0	1.08	152.18	8998.7	60.4	-41.6	74.9	0.16	85.7	119.05
9100.0	1.04	156.82	9098.7	60.7	-43.3	75.7	0.09	87.2	119.75
9200.0	1.02	163.87	9198.7	60.8	-45.0	76.3	0.13	88.6	120.51
9300.0	1.02	179.11	9298.7	60.6	-46.7	76.6	0.27	89.7	121.38
9400.0	1.04	198.13	9398.7	59.9	-48.5	76.3	0.34	90.4	122.42
9500.0	1.56	215.09	9498.7	58.3	-50.4	75.2	0.64	90.6	123.84
9600.0	1.24	223.97	9598.6	56.3	-52.3	73.7	0.39	90.4	125.37
9700.0	1.27	210.69	9698.6	54.5	-54.1	72.4	0.29	90.3	126.75
9800.0	0.95	189.42	9798.6	53.2	-55.8	71.5	0.39	90.7	127.95
9900.0	0.98	205.02	9898.6	52.2	-57.3	70.9	0.10	91.2	128.97
10000.0	0.42	193.77	9998.6	51.5	-58.5	70.4	0.57	91.6	129.69



Scientific Drilling International Survey Report

Company: E.O.G.
Field: Red Hills
Site: Lea County, NM
Well: Vaca 24 Fed #1
Wellpath: VH - Job #32K1104678

Date: 12/20/2004 Time: 08:48:09 Page: 3
Co-ordinate(N/E) Reference: Site: Lea County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,73.89Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

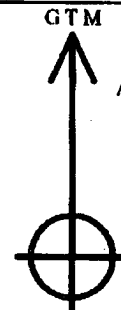
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
10100.0	0.45	238.65	10098.6	50.9	-59.0	70.0	0.33	91.6	130.13
10200.0	0.90	274.40	10198.5	49.8	-59.2	68.9	0.60	90.8	130.66
10300.0	0.86	270.42	10298.5	48.3	-59.1	67.4	0.07	89.6	131.26
10400.0	1.38	282.53	10398.5	46.5	-58.8	65.4	0.57	88.0	131.96
10500.0	1.52	288.02	10498.5	44.4	-58.2	63.0	0.20	85.8	132.72
10600.0	1.72	275.35	10598.4	41.9	-57.6	60.3	0.41	83.4	133.72
10700.0	1.45	280.93	10698.4	39.4	-57.2	57.5	0.31	81.2	134.86
10800.0	1.35	260.53	10798.4	37.1	-57.2	55.1	0.51	79.4	136.06
10900.0	1.41	260.92	10898.3	34.7	-57.6	52.7	0.06	78.1	137.52
11000.0	1.68	257.63	10998.3	32.0	-58.1	50.1	0.28	76.7	139.23
11100.0	1.52	265.21	11098.3	29.2	-58.5	47.3	0.26	75.3	141.03
11200.0	1.71	259.69	11198.2	26.5	-58.9	44.5	0.25	73.8	142.90
11300.0	1.57	244.02	11298.2	23.6	-59.8	41.8	0.47	73.0	145.00
11400.0	1.78	263.57	11398.2	20.7	-60.5	39.1	0.61	72.1	147.16
11500.0	2.92	259.16	11498.1	16.7	-61.2	35.0	1.15	70.5	150.21
11600.0	3.09	262.87	11597.9	11.5	-62.0	29.9	0.26	68.8	154.29
11700.0	3.09	263.78	11697.8	6.2	-62.6	24.5	0.05	67.3	158.64
11800.0	3.07	266.09	11797.6	0.9	-63.1	19.1	0.13	65.9	163.12
11900.0	2.52	268.21	11897.5	-3.9	-63.4	14.3	0.56	64.9	167.30
12000.0	2.03	254.33	11997.4	-7.8	-63.9	10.4	0.73	64.7	170.78
12100.0	1.75	244.78	12097.4	-11.0	-65.0	7.3	0.42	65.4	173.60
12200.0	1.39	252.19	12197.3	-13.8	-66.1	4.8	0.41	66.2	175.88
12293.0	1.07	266.61	12290.3	-15.7	-66.5	2.8	0.48	66.5	177.58



**Scientific
Drilling**

Field: Red Hills
Site: Lea County, NM
Well: Vaca 24 Fed #1
Wellpath: VH - Job #32K1104678
Survey: 11/01/04

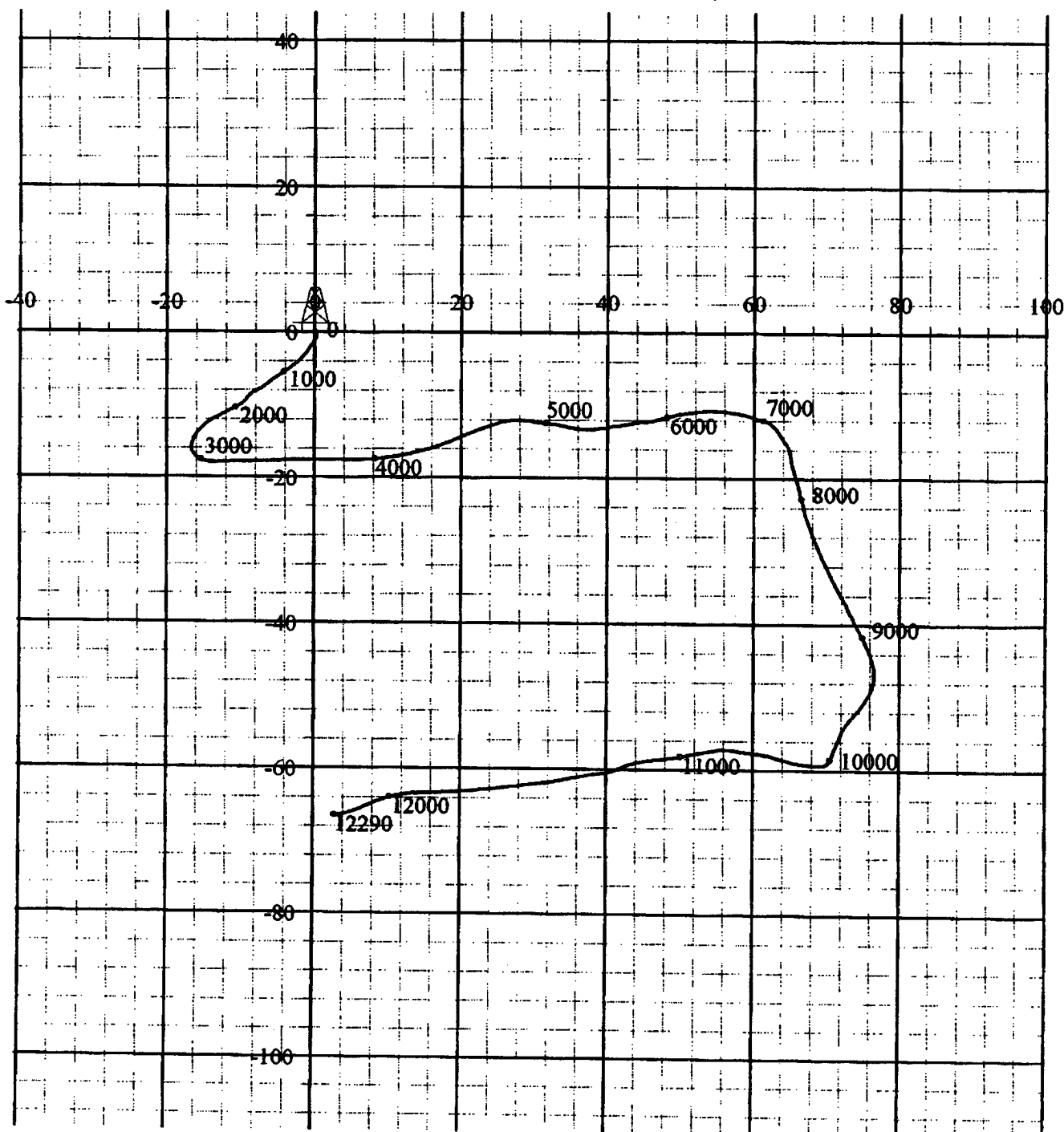


Azimuths to Grid North
True North: 0.00°
Magnetic North: 0.00°

Magnetic Field
Strength: 0nT
Dip Angle: 0.00°
Date: 12 19 2004
Model: igr2000

West(-)/East(+) [20ft/in]

South(-)/North(+) [20ft/in]





Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3382)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION:	73.89
TOTAL CORRECTION:	8.54

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
Tie-In	11800.00	3.07	266.09	11797.64	-63.11	19.15		
1	11908.00	12.40	85.71	11904.94	-58.51	26.88	9.59	14.18
2	11929.00	16.00	81.61	11925.30	-56.21	31.48	14.65	17.79
3	11981.00	21.80	60.37	11955.56	-51.17	40.54	24.75	18.17
bit	12003.00	29.34	63.00	11993.42	-42.83	56.51	42.46	18.15

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3382)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION: 73.89
TOTAL CORRECTION: 8.54

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
1	11908.00	12.40	65.71	11904.94	-58.51	26.88	9.59	14.18
2	11929.00	16.00	61.61	11925.30	-56.21	31.48	14.66	17.79
3	11961.00	21.80	60.37	11955.56	-51.17	40.54	24.75	18.17
4	11993.00	28.74	60.74	11984.48	-44.46	52.43	38.03	21.69
5	12024.00	33.92	63.62	12010.95	-36.97	66.69	53.81	17.39
6	12056.00	37.03	69.14	12037.02	-29.57	83.70	72.21	13.94
7	12087.00	37.04	69.97	12061.76	-23.04	101.19	90.83	1.61
8	12118.00	36.61	70.95	12086.58	-16.83	118.70	109.37	2.35
9	12149.00	39.22	68.64	12111.03	-10.24	136.57	128.37	9.58
10	12180.00	40.85	65.71	12134.77	-2.50	154.94	148.17	8.04
11	12212.00	44.65	66.56	12158.26	6.28	174.81	169.69	12.01
12	12243.00	48.40	67.71	12179.59	15.01	195.53	192.02	12.39
bht	12285.00	54.20	68.00	12205.84	27.36	225.88	224.60	13.82

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (BPE-3382)

OPERATOR: EOG Resources
WELL: Vaca 24 Fod #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004065

PROPOSED DIRECTION: 73.89
TOTAL CORRECTION: 8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
9	12149.00	39.22	88.84	12111.03	-10.24	136.57	128.37	9.58
10	12180.00	40.85	85.71	12134.77	-2.50	154.94	148.17	8.04
11	12212.00	44.65	86.58	12158.26	6.28	174.81	169.69	12.01
12	12243.00	48.40	87.71	12179.59	15.01	195.53	192.02	12.39
13	12275.00	51.88	88.08	12200.10	24.26	218.29	216.45	10.91
14	12306.00	57.15	85.80	12218.09	34.18	241.49	241.49	18.00
15	12336.00	63.18	64.48	12233.00	45.11	265.09	267.20	20.47
16	12375.00	71.88	65.21	12247.90	60.41	297.68	302.75	22.38
17	12396.00	74.62	65.32	12253.95	68.82	315.94	322.63	13.06
18	12451.00	80.18	66.47	12265.94	90.73	364.92	375.76	10.31
19	12481.00	81.25	66.97	12267.56	94.63	373.98	385.56	11.78
EOC	12503.00	86.30	67.00	12272.11	110.85	412.40	426.99	12.02

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3382)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION:	73.89
TOTAL CORRECTION:	8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
11	12212.00	44.65	66.56	12158.26	6.28	174.81	169.89	12.01
12	12243.00	48.40	67.71	12179.59	15.01	195.53	192.02	12.39
13	12275.00	51.88	68.06	12200.10	24.26	218.29	218.45	10.91
14	12306.00	57.15	65.80	12218.09	34.16	241.49	241.49	18.00
15	12336.00	63.18	64.46	12233.00	45.11	265.09	267.20	20.47
16	12368.00	70.08	65.83	12245.69	57.44	291.73	296.21	21.92
17	12399.00	74.85	65.94	12255.03	69.51	318.70	325.47	15.39
18	12430.00	78.08	65.56	12262.28	81.89	346.18	355.31	10.49
19	12461.00	81.23	67.63	12267.85	94.00	374.16	385.55	12.10
20	12480.00	84.13	69.63	12270.27	100.86	391.71	404.31	18.49
21	12492.00	85.23	71.06	12271.38	104.88	402.96	416.24	14.99
22	12524.00	89.50	73.88	12272.85	114.51	433.43	448.18	15.98
bit	12568.00	86.80	76.80	12274.27	125.63	475.97	492.14	9.04

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION:	73.89
TOTAL CORRECTION:	8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
15	12336.00	63.18	64.46	12233.00	45.11	265.09	267.20	20.47
16	12368.00	70.08	65.83	12245.69	57.44	291.73	296.21	21.92
17	12399.00	74.85	65.94	12255.03	69.51	318.70	325.47	15.39
18	12430.00	78.08	65.56	12262.28	81.89	346.18	355.31	10.49
19	12461.00	81.23	67.63	12267.85	94.00	374.16	385.55	12.10
20	12480.00	84.13	69.63	12270.27	100.66	391.71	404.31	18.49
21	12492.00	85.23	71.06	12271.38	104.88	402.96	416.24	14.99
22	12524.00	89.50	73.88	12272.85	114.51	433.43	448.18	15.98
23	12555.00	87.53	74.53	12273.66	122.94	463.25	479.17	6.69
24	12585.00	87.45	74.56	12274.97	130.93	492.14	509.14	0.28
25	12617.00	88.47	73.68		139.68	522.89	541.12	4.21
26	12679.00	89.18	72.26	12277.38	157.83	582.16	603.10	2.58
27	12743.00	88.63	70.58	12278.60	178.22	642.81	667.02	2.76
28	12774.00	88.63	70.16	12279.35	188.63	672.00	697.95	1.35
bit	12818.00	88.55	69.90	12280.43	203.65	713.34	741.84	0.62

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION:	73.89
TOTAL CORRECTION:	8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
28	12774.00	88.63	70.16	12279.35	188.63	672.00	697.95	1.35
29	12837.00	88.55	72.06	12280.90	209.02	731.59	760.86	3.02
30	12881.00	88.55	72.06	12282.01	222.57	773.44	804.82	0.00
31	12900.00	88.60	72.16	12282.48	228.40	791.51	823.81	0.59
32	12961.00	88.05	71.91	12284.26	247.21	849.51	884.75	0.99
33	13024.00	89.13	73.11	12285.81	266.14	909.58	947.71	2.56
34	13054.00	91.10	74.11	12285.75	274.80	938.36	977.71	7.36
35	13117.00	95.53	75.08	12282.11	291.31	998.98	1040.58	7.20
36	13149.00	95.70	74.78	12278.98	299.59	1029.73	1072.42	1.07
bit	13193.00	95.87	74.56	12274.55	311.16	1071.95	1116.19	0.63

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION:	73.89
TOTAL CORRECTION:	8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
30	12900.00	88.60	72.16	12282.46	228.37	791.52	823.81	0.18
31	12961.00	88.05	71.91	12284.25	247.17	849.52	884.75	0.99
32	13024.00	89.13	73.11	12285.80	266.10	909.59	947.71	2.56
33	13054.00	91.10	74.11	12285.74	274.56	938.37	977.71	7.36
34	13117.00	95.53	75.08	12282.09	291.27	998.99	1040.58	7.20
35	13149.00	95.70	74.78	12278.96	299.55	1029.74	1072.42	1.07
36	13180.00	95.45	74.86	12275.95	307.63	1059.52	1103.27	0.85
37	13212.00	95.68	74.41	12272.85	316.07	1090.23	1135.12	1.57
38	13243.00	95.60	74.38	12269.80	324.37	1119.84	1165.97	0.28
39	13275.00	93.45	73.86	12267.28	333.09	1150.62	1197.87	6.91
40	13306.00	92.68	74.31	12265.62	341.58	1180.39	1228.82	2.88
41	13338.00	93.07	73.78	12264.01	350.37	1211.12	1260.78	2.05
bit	13382.00	93.40	73.23	12261.53	362.84	1253.24	1304.71	1.46
Proj	13400.00	91.97	74.00	12260.69	367.91	1270.49	1322.69	9.02

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION: 73.89

TOTAL CORRECTION: 8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
37	13212.00	95.68	74.41	12272.85	318.07	1090.23	1135.12	1.57
38	13243.00	95.60	74.38	12289.80	324.37	1119.94	1165.97	0.28
39	13275.00	93.45	73.86	12267.28	333.09	1150.62	1197.87	6.91
40	13306.00	92.68	74.31	12265.62	341.58	1180.39	1228.82	2.88
41	13338.00	93.07	73.78	12284.01	350.37	1211.12	1260.78	2.05
42	13399.00	92.27	74.88	12261.17	366.83	1269.78	1321.71	2.20
43	13431.00	92.37	75.06	12259.88	375.13	1300.66	1353.68	0.70
bit	13474.00	92.47	75.26	12258.06	386.14	1342.19	1396.83	0.52

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3382)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION	73.89
TOTAL CORRECTION	8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
40	13308.00	92.68	74.31	12265.45	341.58	1180.38	1228.81	2.88
41	13338.00	93.07	73.78	12263.85	350.36	1211.10	1260.76	2.05
42	13399.00	92.27	74.86	12261.01	366.83	1269.77	1321.70	2.20
43	13431.00	92.37	75.06	12259.71	375.13	1300.65	1353.68	0.70
44	13462.00	92.61	75.05	12258.37	383.11	1330.57	1384.63	0.77
45	13492.00	93.23	75.07	12258.84	390.84	1358.52	1414.58	2.07
46	13554.00	92.13	72.65	12253.94	408.05	1419.00	1476.51	4.28
47	13616.00	92.30	72.58	12251.54	426.57	1478.13	1538.45	0.30
48	13678.00	84.63	71.77	12253.20	445.52	1537.09	1600.35	12.44
49	13708.00	83.77	71.62	12258.23	454.90	1565.42	1630.18	2.91
50	13740.00	86.84	72.37	12258.85	464.75	1595.75	1662.05	9.87
bit	13781.00	90.50	73.20	12259.80	476.88	1634.90	1703.02	9.15

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3382)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION: 73.89

TOTAL CORRECTION: 8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
50	13740.00	88.84	72.37	12258.85	464.75	1595.75	1662.05	9.87
51	13771.00	91.20	74.92	12259.38	473.48	1625.48	1693.03	16.29
52	13803.00	92.65	75.03	12258.31	481.77	1656.37	1725.01	4.54
53	13833.00	89.70	74.17	12257.69	489.73	1685.28	1754.99	10.24
54	13864.00	90.41	73.41	12257.66	498.39	1715.05	1785.99	3.35
55	13896.00	90.17	73.27	12257.50	507.56	1745.71	1817.99	0.87
56	13923.00	90.58	73.23	12257.32	515.34	1771.56	1844.99	1.53
57	13959.00	90.72	73.53	12256.92	525.64	1806.05	1880.99	0.92
58	13990.00	92.08	74.61	12256.16	534.14	1835.85	1911.98	5.55
59	14021.00	92.75	74.49	12254.88	542.39	1865.71	1942.95	2.28
bit	14080.00	94.00	74.00	12250.80	561.10	1932.00	2011.82	1.95

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION:	73.89
TOTAL CORRECTION:	8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
55	13896.00	90.17	73.27	12257.50	507.58	1745.71	1817.99	0.87
56	13923.00	90.58	73.23	12257.32	515.34	1771.58	1844.99	1.53
57	13959.00	90.72	73.53	12258.92	525.64	1806.05	1880.99	0.92
58	13990.00	92.08	74.61	12258.16	534.14	1835.85	1911.98	5.55
59	14021.00	92.75	74.49	12254.86	542.39	1865.71	1942.95	2.28
60	14052.00	94.40	73.87	12252.93	550.83	1895.47	1973.88	5.68
61	14083.00	94.92	74.21	12250.41	559.32	1925.18	2004.78	2.00
62	14114.00	93.09	73.18	12248.25	568.01	1954.86	2035.70	6.77
bkt	14157.00	93.09	73.18	12245.93	580.43	1995.96	2078.64	0.00



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION: 73.89
TOTAL CORRECTION: 8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
60	14082.00	94.40	73.87	12262.93	550.83	1895.47	1973.88	5.88
61	14083.00	94.92	74.21	12250.41	559.32	1925.18	2004.78	2.00
62	14114.00	93.09	73.18	12248.25	568.01	1954.88	2035.70	6.77
63	14144.00	93.60	72.71	12246.50	576.79	1983.49	2065.65	2.31
64	14175.00	92.57	72.18	12244.83	586.13	2013.00	2096.59	3.74
65	14207.00	92.20	72.28	12243.50	595.89	2043.45	2128.55	1.18
66	14238.00	89.43	72.68	12243.05	605.22	2073.00	2159.54	9.04
67	14270.00	89.28	73.16	12243.41	614.62	2103.59	2191.63	1.57
68	14302.00	89.82	73.08	12243.67	623.91	2134.21	2223.53	1.71
69	14334.00	90.75	75.18	12243.51	632.66	2164.99	2255.52	7.18
70	14365.00	91.28	75.13	12242.96	640.61	2194.95	2286.51	1.72
71	14395.00	89.28	73.78	12242.81	648.64	2223.85	2316.51	8.04
bk	14439.00	89.35	73.88	12243.34	660.97	2266.08	2360.50	0.28

Directional Survey



Survey Report

MIN. CURVATURE CALCULATIONS (SPE-3362)

OPERATOR: EOG Resources
WELL: Vaca 24 Fed #1
LOCATION: Red Hills

START: 11/3/2004
FINISH:
JOB #: 2004085

PROPOSED DIRECTION: 73.89

TOTAL CORRECTION: 8.11

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/ 100
65	14207.00	92.20	72.26	12243.50	595.89	2043.45	2128.55	1.18
66	14238.00	89.43	72.68	12243.05	605.22	2073.00	2159.54	9.04
67	14270.00	89.28	73.16	12243.41	614.62	2103.59	2191.53	1.57
68	14302.00	89.82	73.08	12243.67	623.91	2134.21	2223.53	1.71
69	14334.00	90.75	75.18	12243.51	632.66	2164.99	2255.52	7.18
70	14365.00	91.28	75.13	12242.96	640.61	2194.95	2286.51	1.72
71	14395.00	89.28	73.78	12242.81	648.64	2223.85	2316.51	8.04
72	14426.00	89.33	73.76	12243.19	657.31	2253.61	2347.50	0.17
73	14456.00	89.93	73.13	12243.38	665.86	2282.37	2377.50	2.90
74	14518.00	88.55	73.26	12244.20	683.78	2341.71	2439.49	2.24
75	14549.00	86.31	73.53	12245.59	692.63	2371.39	2470.46	7.28
bit	14593.00	86.31	73.53	12248.43	705.08	2413.49	2514.36	0.00

Directional Survey