

Scientific Drilling



TEXACO E & P INC.

Field: North Vacuum Abo West

Site: Lea County, NM

Well: N.V.A.W.U. #28

Wellpath: VH/HH - Job #32K0499082/083

Survey: 4/10/99-4/21/99

Sar: 1980/S & 760/E

I - 28-17-34

API #: 30-025-33926

Gyro Footage: 0'-8500'

MWD Footage: 8530'-10342'

Survey: Sec. 28, T17S, R34E

K.O.P.: 8500'

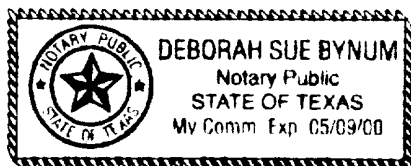
BHL: 3231/S & 453/W

E - 27-17-34

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

David Moody Company Representative

Notorized this date 25th of March, 2000.



Deborah Sue Bynum
Midland Co., TX

4-12-03
A
APR 12 2003
Received
Hobbs
NCH

Scientific Drilling SDI Survey Report

Company: Texaco E & P, Inc. Field: North Vacuum Abo West Unit Site: Lea County, New Mexico Well: NVAWU #28H Wellpath: NE UPPER LATERAL	Date: 02/01/2000 Co-ordinate(NE) Reference: SITE 0.0 above Mean Sea Level Vertical (TVD) Reference: Site (0.0E,0.0N,44.1Az) Section (VS) Reference: Minimum Curvature Survey Calculation Method:	Time: 17:06:54 Page: 1
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Survey: Combined
 16 May 1997
 Start Date: 04/07/1999

Company:
Tool: Gyro
 Engineer: Cossey

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS d/100ft	VS ft	CLsA deg	CLsD ft
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0	0.00	0.0
100.0	0.24	147.24	100.0	-0.2	0.1	0.24	0.0	147.24	0.2
200.0	0.20	175.83	200.0	-0.5	0.2	0.12	-0.2	155.55	0.6
300.0	0.21	191.02	300.0	-0.9	0.2	0.06	-0.5	166.15	0.9
400.0	0.29	164.68	400.0	-1.3	0.2	0.14	-0.8	169.20	1.3
500.0	0.13	151.07	500.0	-1.6	0.4	0.17	-0.9	167.32	1.7
600.0	0.04	174.67	600.0	-1.8	0.4	0.09	-1.0	166.47	1.8
700.0	0.15	257.63	700.0	-1.8	0.3	0.15	-1.1	170.64	1.9
800.0	0.10	211.32	800.0	-1.9	0.1	0.11	-1.3	176.15	2.0
900.0	0.10	167.54	900.0	-2.1	0.1	0.07	-1.4	177.16	2.1
1000.0	0.10	256.25	1000.0	-2.2	0.0	0.14	-1.6	179.01	2.2
1100.0	0.23	168.98	1100.0	-2.4	0.0	0.25	-1.8	180.19	2.4
1200.0	0.27	163.82	1200.0	-2.9	0.1	0.05	-2.0	178.07	2.9
1300.0	0.42	177.21	1300.0	-3.4	0.2	0.17	-2.3	177.02	3.5
1400.0	0.44	158.74	1400.0	-4.2	0.3	0.14	-2.8	175.39	4.2
1500.0	0.23	180.37	1500.0	-4.7	0.5	0.24	-3.1	174.27	4.8
1600.0	0.27	233.10	1600.0	-5.1	0.3	0.22	-3.4	176.79	5.1
1700.0	0.22	260.72	1700.0	-5.2	-0.1	0.13	-3.8	181.02	5.2
1800.0	0.30	260.54	1800.0	-5.3	-0.5	0.08	-4.2	185.81	5.3
1900.0	0.19	252.35	1900.0	-5.4	-1.0	0.12	-4.6	190.03	5.5
2000.0	0.22	250.45	2000.0	-5.5	-1.3	0.03	-4.9	193.20	5.7
2100.0	0.26	256.99	2100.0	-5.6	-1.7	0.05	-5.2	196.75	5.9
2200.0	0.24	250.21	2200.0	-5.8	-2.1	0.04	-5.6	200.16	6.1
2300.0	0.17	279.58	2300.0	-5.8	-2.5	0.12	-5.9	202.95	6.3
2400.0	0.19	257.95	2400.0	-5.8	-2.8	0.07	-6.1	205.44	6.4
2500.0	0.09	262.27	2500.0	-5.9	-3.0	0.10	-6.3	207.16	6.6
2600.0	0.19	167.12	2600.0	-6.0	-3.0	0.22	-6.5	206.80	6.8
2700.0	0.25	141.43	2700.0	-6.4	-2.9	0.11	-6.6	204.30	7.0
2800.0	0.31	98.41	2800.0	-6.6	-2.5	0.21	-6.4	200.60	7.0
2900.0	0.38	85.73	2900.0	-6.6	-1.9	0.10	-6.0	195.87	6.9
3000.0	0.36	84.14	3000.0	-6.5	-1.2	0.02	-5.5	190.66	6.7
3100.0	0.37	86.08	3100.0	-6.5	-0.6	0.02	-5.1	185.25	6.5
3200.0	0.43	82.70	3200.0	-6.4	0.1	0.06	-4.5	179.12	6.4
3300.0	0.42	92.06	3300.0	-6.4	0.8	0.07	-4.0	172.52	6.4
3400.0	0.28	104.94	3400.0	-6.5	1.4	0.16	-3.6	167.43	6.6
3500.0	0.25	158.94	3500.0	-6.7	1.8	0.24	-3.6	165.38	6.9
3600.0	0.26	169.24	3600.0	-7.1	1.9	0.05	-3.8	165.30	7.4
3700.0	0.28	172.88	3700.0	-7.6	1.9	0.03	-4.1	165.65	7.9
3800.0	0.23	171.56	3800.0	-8.1	2.0	0.05	-4.4	166.01	8.3
3900.0	0.20	271.07	3900.0	-8.2	1.9	0.33	-4.6	167.28	8.5
4000.0	0.22	275.25	4000.0	-8.2	1.5	0.03	-4.9	169.69	8.4
4100.0	0.31	281.02	4100.0	-8.2	1.0	0.09	-5.1	172.74	8.2
4200.0	0.29	276.07	4200.0	-8.1	0.5	0.03	-5.4	176.30	8.1
4300.0	0.28	274.94	4300.0	-8.0	0.0	0.01	-5.7	179.81	8.0
4400.0	0.36	261.50	4400.0	-8.1	-0.5	0.11	-6.2	183.74	8.1
4500.0	0.38	258.64	4500.0	-8.2	-1.2	0.03	-6.7	188.10	8.3
4600.0	0.28	250.95	4599.9	-8.3	-1.7	0.11	-7.2	191.68	8.5
4700.0	0.34	237.50	4699.9	-8.6	-2.2	0.09	-7.7	194.42	8.8

Scientific Drilling SDI Survey Report

Company: Texaco E & P, Inc.	Date: 02/01/2000	Time: 17:06:54	Page: 2
Field: North Vacuum Abo West Unit	Co-ordinate(NE) Reference:	Site: Lea County, New Mexico, True North	
Site: Lea County, New Mexico	Vertical (TVD) Reference:	SITE 0.0 above Mean Sea Level	
Well: NVAWU #28H	Section (VS) Reference:	Site (0.0E,0.0N,44.1Az)	
Wellpath: NE UPPER LATERAL	Survey Calculation Method:	Minimum Curvature	

Survey

MD ft	Incl deg	Azlm deg	TVD ft	N/S ft	E/W ft	DLS d/100ft	VS ft	CLsA deg	CLsD ft
4800.0	0.17	230.67	4799.9	-8.8	-2.6	0.17	-8.1	196.24	9.2
4900.0	0.20	84.83	4899.9	-8.9	-2.5	0.35	-8.1	195.75	9.2
5000.0	0.29	99.82	4999.9	-8.9	-2.1	0.11	-7.8	193.15	9.2
5100.0	0.32	68.17	5099.9	-8.9	-1.6	0.17	-7.5	190.08	9.0
5200.0	0.48	58.39	5199.9	-8.5	-1.0	0.17	-6.8	186.41	8.6
5300.0	0.62	63.23	5299.9	-8.1	-0.1	0.15	-5.9	180.84	8.1
5400.0	0.65	61.50	5399.9	-7.6	0.9	0.04	-4.8	173.48	7.6
5500.0	0.82	59.56	5499.9	-6.9	2.0	0.17	-3.6	164.04	7.2
5600.0	0.93	55.63	5599.9	-6.1	3.3	0.13	-2.1	151.83	6.9
5700.0	0.83	57.89	5699.9	-5.3	4.5	0.11	-0.6	139.12	6.9
5800.0	0.68	58.30	5799.9	-4.6	5.7	0.15	0.7	128.81	7.3
5900.0	1.02	58.84	5899.9	-3.8	6.9	0.34	2.1	118.63	7.9
6000.0	1.06	52.55	5999.9	-2.8	8.4	0.12	3.9	108.14	8.9
6100.0	1.03	50.74	6099.8	-1.6	9.9	0.04	5.7	99.39	10.0
6200.0	1.07	45.43	6199.8	-0.4	11.2	0.11	7.5	92.08	11.2
6300.0	0.98	39.51	6299.8	0.9	12.4	0.14	9.3	85.82	12.5
6400.0	1.01	43.31	6399.8	2.2	13.6	0.07	11.0	80.76	13.8
6500.0	1.10	38.20	6499.8	3.6	14.8	0.13	12.9	76.29	15.2
6600.0	1.10	40.06	6599.8	5.1	16.0	0.04	14.8	72.33	16.8
6700.0	1.00	46.15	6699.7	6.4	17.2	0.15	16.6	69.53	18.4
6800.0	1.10	49.51	6799.7	7.7	18.6	0.12	18.4	67.61	20.1
6900.0	1.14	48.98	6899.7	8.9	20.1	0.04	20.4	66.00	22.0
7000.0	1.24	51.76	6999.7	10.3	21.7	0.12	22.5	64.67	24.0
7100.0	1.29	50.96	7099.7	11.6	23.4	0.05	24.6	63.56	26.1
7200.0	1.34	52.66	7199.6	13.1	25.2	0.06	26.9	62.61	28.4
7300.0	1.26	46.66	7299.6	14.5	26.9	0.16	29.2	61.67	30.6
7400.0	1.31	41.76	7399.6	16.1	28.5	0.12	31.4	60.49	32.7
7500.0	1.24	45.18	7499.6	17.7	30.0	0.10	33.6	59.42	34.9
7600.0	1.35	44.61	7599.5	19.3	31.6	0.11	35.9	58.54	37.1
7700.0	1.05	59.31	7699.5	20.7	33.2	0.43	38.0	58.14	39.1
7800.0	1.02	60.31	7799.5	21.6	34.8	0.04	39.7	58.22	40.9
7900.0	1.00	58.91	7899.5	22.5	36.3	0.03	41.4	58.27	42.7
8000.0	0.96	75.52	7999.5	23.1	37.9	0.29	43.0	58.61	44.4
8100.0	0.93	77.80	8099.5	23.5	39.5	0.05	44.3	59.24	45.9
8200.0	0.92	83.33	8199.4	23.8	41.1	0.09	45.6	59.95	47.4
8300.0	0.75	83.18	8299.4	23.9	42.5	0.17	46.8	60.63	48.8
8400.0	0.72	77.47	8399.4	24.1	43.8	0.08	47.8	61.13	50.0
8500.0	0.87	83.77	8499.4	24.4	45.1	0.17	48.9	61.65	51.3
8530.0	5.39	37.27	8529.4	25.5	46.2	16.11	50.5	61.11	52.8
8560.0	10.20	33.70	8559.1	28.8	48.6	16.11	54.5	59.29	56.5
8570.0	13.20	34.80	8568.9	30.5	49.7	30.08	56.5	58.45	58.3
8580.0	16.20	33.30	8578.5	32.6	51.1	30.24	59.0	57.46	60.6
8590.0	19.00	31.80	8588.1	35.2	52.7	28.36	62.0	56.30	63.4
8600.0	22.20	31.90	8597.4	38.2	54.6	32.00	65.4	55.05	66.6
8610.0	25.30	32.50	8606.6	41.6	56.7	31.09	69.3	53.78	70.3
8620.0	28.00	33.90	8615.5	45.3	59.2	27.72	73.7	52.57	74.6
8630.0	30.80	35.80	8624.2	49.3	62.0	29.51	78.6	51.49	79.2
8640.0	33.40	38.30	8632.7	53.6	65.2	29.19	83.9	50.59	84.4
8650.0	36.30	40.40	8640.9	58.0	68.8	31.38	89.6	49.89	90.0
8660.0	38.90	42.50	8648.8	62.6	72.9	28.98	95.6	49.36	96.0
8670.0	41.50	44.60	8656.5	67.2	77.3	29.32	102.1	48.99	102.5
8680.0	44.50	45.50	8663.8	72.1	82.2	30.62	108.9	48.75	109.3

Scientific Drilling

SDI Survey Report

Company: Texaco E & P, Inc.
 Field: North Vacuum Abo West Unit
 Site: Lea County, New Mexico
 Well: NVAWU #28H
 Wellpath: NE UPPER LATERAL

Date: 02/01/2000 Time: 17:06:54 Page: 3
 Co-ordinate(NE) Reference: Site: Lea County, New Mexico, True North
 Vertical (TVD) Reference: SITE 0.0 above Mean Sea Level
 Section (VS) Reference: Site (0.0E,0.0N,44.1Azi)
 Survey Calculation Method: Minimum Curvature

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS d/100ft	VS ft	CLsA deg	CLsD ft
8690.0	47.90	45.00	8670.7	77.1	87.3	34.19	116.1	48.53	116.5
8700.0	51.20	44.30	8677.2	82.5	92.6	33.43	123.7	48.29	124.1
8726.0	59.30	41.30	8692.0	98.2	107.1	32.56	145.1	47.48	145.3
8757.0	67.00	40.00	8706.0	119.2	125.1	25.12	172.7	46.38	172.8
8789.0	71.60	40.50	8717.3	142.0	144.4	14.45	202.5	45.48	202.6
8821.0	75.70	39.80	8726.3	165.5	164.2	12.98	233.1	44.78	233.2
8853.0	77.10	40.50	8733.8	189.3	184.3	4.86	264.2	44.23	264.2
8884.0	78.80	42.50	8740.3	212.0	204.4	8.36	294.5	43.95	294.5
8916.0	78.80	43.70	8746.5	234.9	225.8	3.68	325.8	43.87	325.8
8948.0	79.00	43.90	8752.7	257.6	247.6	0.88	357.2	43.86	357.2
8980.0	79.70	43.70	8758.6	280.3	269.3	2.27	388.7	43.86	388.7
9011.0	80.10	43.70	8764.0	302.3	290.4	1.29	419.2	43.85	419.2
9043.0	80.20	43.20	8769.5	325.2	312.1	1.57	450.7	43.82	450.7
9075.0	81.80	43.00	8774.5	348.3	333.7	5.04	482.3	43.77	482.3
9104.0	84.30	44.10	8778.0	369.2	353.5	9.41	511.1	43.76	511.1
9139.0	88.50	45.80	8780.2	393.9	378.2	12.94	546.0	43.84	546.0
9169.0	92.00	45.70	8780.1	414.8	399.7	11.67	576.0	43.94	576.0
9200.0	93.30	46.00	8778.6	436.4	421.9	4.30	607.0	44.03	607.0
9232.0	93.60	46.00	8776.7	458.6	444.9	0.94	638.9	44.13	638.9
9264.0	96.10	46.40	8774.0	480.6	467.9	7.91	670.8	44.23	670.8
9296.0	96.90	46.50	8770.4	502.5	490.9	2.52	702.5	44.33	702.5
9327.0	96.90	46.40	8766.7	523.7	513.2	0.32	733.3	44.42	733.3
9359.0	96.80	46.70	8762.9	545.6	536.3	0.98	765.0	44.51	765.0
9390.0	96.90	46.70	8759.2	566.7	558.7	0.32	795.8	44.59	795.8
9421.0	96.60	46.40	8755.5	587.9	581.0	1.36	826.5	44.67	826.6
9453.0	96.60	46.00	8751.8	609.9	604.0	1.24	858.3	44.72	858.3
9484.0	97.70	46.40	8748.0	631.2	626.2	3.77	889.0	44.77	889.1
9516.0	98.20	46.00	8743.6	653.1	649.1	1.99	920.7	44.82	920.8
9548.0	99.90	43.70	8738.5	675.5	671.3	8.87	952.3	44.82	952.4
9579.0	99.90	43.40	8733.2	697.6	692.4	0.95	982.8	44.78	982.9
9611.0	97.80	43.90	8728.3	720.5	714.2	6.74	1014.4	44.75	1014.5
9643.0	97.80	44.10	8723.9	743.3	736.2	0.62	1046.2	44.73	1046.2
9674.0	96.30	43.50	8720.1	765.5	757.5	5.21	1076.9	44.70	1077.0
9706.0	93.40	43.70	8717.4	788.6	779.5	9.08	1108.8	44.67	1108.8
9738.0	92.00	43.70	8715.9	811.7	801.6	4.37	1140.8	44.64	1140.8
9769.0	89.60	42.80	8715.5	834.3	822.8	8.27	1171.7	44.60	1171.8
9801.0	88.30	42.50	8716.1	857.8	844.5	4.17	1203.7	44.55	1203.8
9833.0	87.60	41.80	8717.2	881.5	866.0	3.09	1235.7	44.49	1235.7
9865.0	83.90	41.60	8719.6	905.3	887.2	11.58	1267.6	44.42	1267.6
9896.0	84.10	41.40	8722.8	928.4	907.6	0.91	1298.4	44.35	1298.4
9928.0	85.30	41.60	8725.8	952.3	928.7	3.80	1330.2	44.28	1330.2
9960.0	85.30	41.30	8728.4	976.2	949.9	0.93	1362.1	44.22	1362.1
9992.0	86.00	40.90	8730.8	1000.3	970.8	2.52	1393.9	44.14	1393.9
10023.0	85.90	40.90	8733.0	1023.6	991.1	0.32	1424.8	44.07	1424.8
10055.0	85.90	42.00	8735.3	1047.5	1012.2	3.43	1456.7	44.02	1456.7
10067.0	86.00	41.80	8736.1	1056.5	1020.2	1.86	1468.6	44.00	1468.6
10119.0	85.30	43.50	8740.1	1094.6	1055.3	3.53	1520.5	43.95	1520.5
10150.0	86.00	43.70	8742.4	1117.0	1076.6	2.35	1551.4	43.95	1551.4
10182.0	84.50	45.80	8745.1	1139.6	1099.1	8.05	1583.3	43.96	1583.3
10214.0	85.50	46.00	8747.9	1161.8	1122.0	3.19	1615.1	44.00	1615.1
10246.0	84.50	45.50	8750.7	1184.1	1144.8	3.49	1647.0	44.03	1647.0
10277.0	82.00	45.50	8754.3	1205.6	1166.8	8.06	1677.8	44.06	1677.8
10301.0	82.30	45.80	8757.6	1222.2	1183.8	1.76	1701.5	44.08	1701.5

Scientific Drilling
SDI Survey Report

Company:	Texaco E & P, Inc.	Date:	02/01/2000	Time:	17:06:54	Page:	4
Field:	North Vacuum Abo West Unit	Co-ordinate(N/E) Reference:	Site: Lea County, New Mexico, True North				
Site:	Lea County, New Mexico	Vertical (TVD) Reference:	SITE 0.0 above Mean Sea Level				
Well:	NVAWU #28H	Section (VS) Reference:	Site (0.0E,0.0N,44.1Azi)				
Wellpath:	NE UPPER LATERAL	Survey Calculation Method:	Minimum Curvature				

Survey									
MD ft	Incl deg	Azin deg	TVD ft	N/S ft	E/W ft	DLS d/100ft	VS ft	ChA deg	CLd ft
10342.0	82.30	45.80	8763.1	1250.6	1212.9	0.00	1742.1	44.12	1742.1

Scientific

TEXACO E & P INC
Field: North Vacuum Abo West
Site: Lea County, NM
WELL: NVAWU #28H





**Scientific
Drilling**

TEXACO E & P INC
Field: North Vacuum Abo West
Site: Lea County, NM
Well: N.V.A.W.U. #28
Wellpath: VH/HH - Job #32K0499082/083
Survey: 4/10/99-4/21/99

