



Directional Plus Survey Report

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DEC 28 2002

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Company: Petroleum Development Corp.
Field: Weld County
Site: NWSW Sec 3-5N-64W6
Well: Millage #13-3D
Wellpath: DD

Date: 12/10/2002 Time: 10:34:07
Co-ordinate(NE) Reference: Well: Millage #13-3D, True North
Vertical (TVD) Reference: KBE 4623.0
Section (VS) Reference: Well (0.00N,0.00E,202.83Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Field: Weld County

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: Colorado, Northern Zone
Coordinate System: Well Centre
Geomagnetic Model: igrf2000



Site: NWSW Sec 3-5N-64W6

Site Position: Northing: 121932.49 m Latitude: 40 25 39.300 N
From: Geographic Easting: 690849.64 m Longitude: 104 32 33.000 W
Position Uncertainty: 0.00 ft North Reference: True
Ground Level: 0.00 ft Grid Convergence: 0.62 deg

Well: Millage #13-3D

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 121932.49 m Latitude: 40 25 39.300 N
+E/-W 0.00 ft Easting: 690849.64 m Longitude: 104 32 33.000 W
Position Uncertainty: 0.00 ft

Wellpath: DD

Job# 020397

Current Datum: KBE

Height 4623.00 ft

Magnetic Data: 9/26/2002

Field Strength: 54236 nT

Vertical Section: Depth From (TVD)
ft

+N/-S
ft

Drilled From: Surface

Tie-on Depth: 0.00 ft

Above System Datum: Mean Sea Level

Declination: 10.03 deg

Mag Dip Angle: 67.47 deg

+E/-W Direction
ft deg

0.00

0.00

0.00

202.83

Survey: Survey #1

Start Date: 9/30/2002

Company: Directional Plus

Engineer: Evise Mok

Tool:

Tied-to: From Surface

Survey

Stn	MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Tool/Comment
1	0.00	0.00	202.83	0.00	0.00	0.00	0.00	0.00	
2	473.57	3.00	358.90	473.35	12.39	-0.24	-11.33	0.63	
3	523.57	2.51	343.11	523.30	14.75	-0.58	-13.37	1.80	KOP= 524'
4	565.96	2.30	325.60	565.65	16.34	-1.33	-14.54	1.80	
5	629.37	2.50	281.60	629.01	17.67	-3.41	-14.96	2.85	
6	755.98	7.50	240.40	755.13	14.14	-13.30	-7.87	4.62	
7	851.11	8.20	228.00	849.37	6.53	-23.74	3.19	1.92	
8	914.44	9.70	217.30	911.93	-0.73	-30.33	12.44	3.53	
9	977.28	11.10	211.10	973.74	-10.13	-36.67	23.56	2.85	
10	1037.71	14.30	209.90	1032.69	-21.58	-43.39	36.72	5.31	
11	1100.49	15.50	207.60	1093.35	-35.74	-51.15	52.78	2.13	
12	1163.73	18.40	206.50	1153.84	-52.16	-59.52	71.16	4.61	
13	1227.30	20.50	197.60	1213.79	-71.76	-67.36	92.27	5.70	
14	1290.73	21.40	195.40	1273.03	-93.50	-73.79	114.80	1.88	
15	1354.26	22.50	195.50	1331.95	-116.39	-80.12	138.35	1.73	
16	1417.24	22.80	191.30	1390.08	-139.97	-85.73	162.27	2.61	
17	1478.72	21.60	189.20	1447.00	-162.82	-89.88	184.94	2.34	
18	1541.83	20.20	191.10	1505.96	-184.98	-93.83	206.90	2.46	
19	1604.46	18.70	193.20	1565.01	-205.37	-98.20	227.38	2.64	
20	1667.56	16.50	197.00	1625.16	-223.79	-103.14	246.27	3.93	
21	1729.69	15.30	196.60	1684.91	-240.08	-108.06	263.20	1.94	
22	1791.62	14.30	194.20	1744.79	-255.33	-112.27	278.89	1.89	
23	1855.48	12.30	196.30	1806.93	-269.50	-116.11	293.44	3.22	
24	1918.20	10.60	200.80	1868.40	-281.31	-120.04	305.85	3.06	

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Wellpath: DD

Date: 12/10/2002 **Time:** 10:34:07 **Page:** 2
Co-ordinate(NE) Reference: Well: Millage #13-3D, True North
Vertical (TVD) Reference: KBE 4623.0
Section (VS) Reference: Well (0.00N,0.00E,202.83Azi)
Survey Calculation Method: Minimum Curvature **Db:** Sybase

Survey

Stn	MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Tool/Comment
25	1978.89	8.60	205.50	1928.24	-290.63	-123.97	315.96	3.54	
26	2041.17	7.90	201.70	1989.87	-298.81	-127.56	324.89	1.42	
27	2103.77	6.30	199.70	2051.99	-306.04	-130.31	332.62	2.59	
28	2166.92	5.70	201.70	2114.80	-312.21	-132.64	339.22	1.01	
29	2230.03	5.20	202.70	2177.62	-317.76	-134.90	345.21	0.81	
30	2293.25	4.60	203.50	2240.61	-322.73	-137.01	350.61	0.96	
31	2355.46	3.50	187.20	2302.67	-326.90	-138.25	354.93	2.54	
32	2418.76	1.90	188.90	2365.89	-329.86	-138.65	357.81	2.53	
33	2481.28	0.50	182.30	2428.40	-331.15	-138.82	359.07	2.25	
34	2543.59	0.80	149.00	2490.70	-331.80	-138.61	359.58	0.76	
35	3580.00	1.25	59.00	3527.00	-332.18	-125.19	354.73	0.14	
36	4580.00	0.50	266.00	4526.93	-326.86	-120.20	347.89	0.17	
37	5565.00	0.75	62.00	5511.91	-324.14	-118.79	344.84	0.12	
38	6471.00	0.75	152.00	6417.86	-326.59	-110.77	343.98	0.12	
39	6648.15	0.67	152.75	6595.00	-328.53	-109.75	345.38	0.05	Tgt Entry Point
40	7005.00	0.50	155.00	6951.83	-331.79	-108.15	347.76	0.05	Last Survey @ 7005'
41	7047.00	0.50	155.00	6993.83	-332.12	-107.99	348.00	0.00	Ext. TD= 7047'

Annotation

MD ft	TVD ft	
523.57	523.30	KOP= 524'
6648.15	6595.00	Tgt Entry Point
7005.00	6951.83	Last Survey @ 7005'
7047.00	6993.83	Ext. TD= 7047'

Casing Points

MD	TVD	Diameter	Hole Size	Name

Petroleum Development Corp.



Directional Plus

A Division of Cathedral Energy Services Ltd.

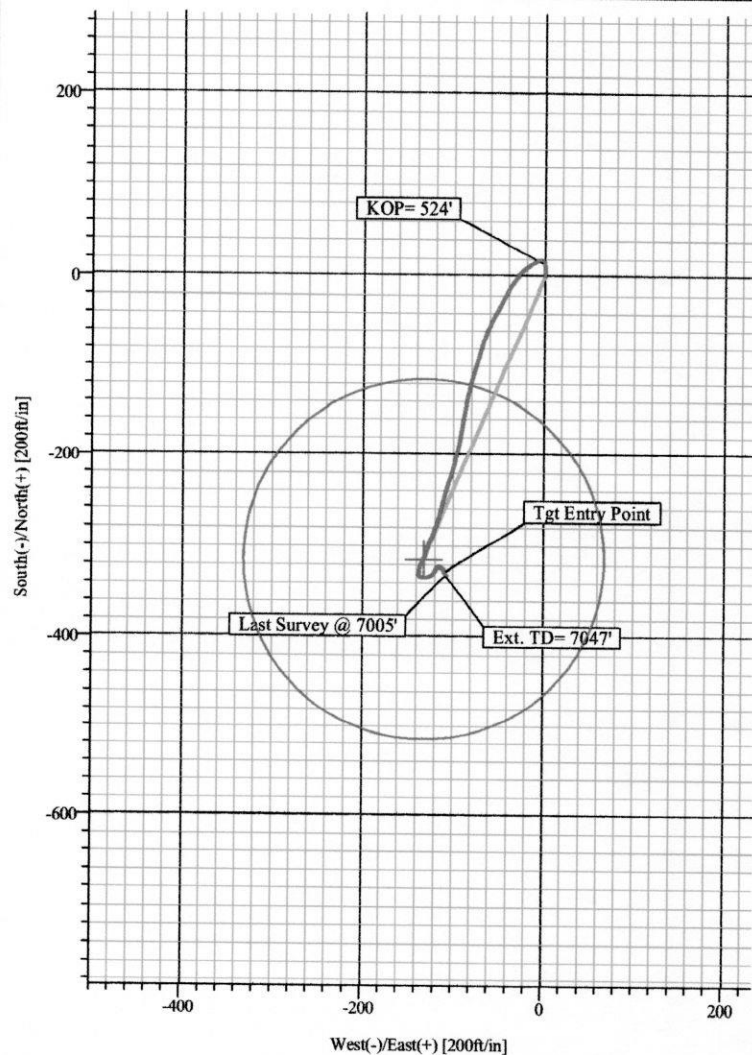
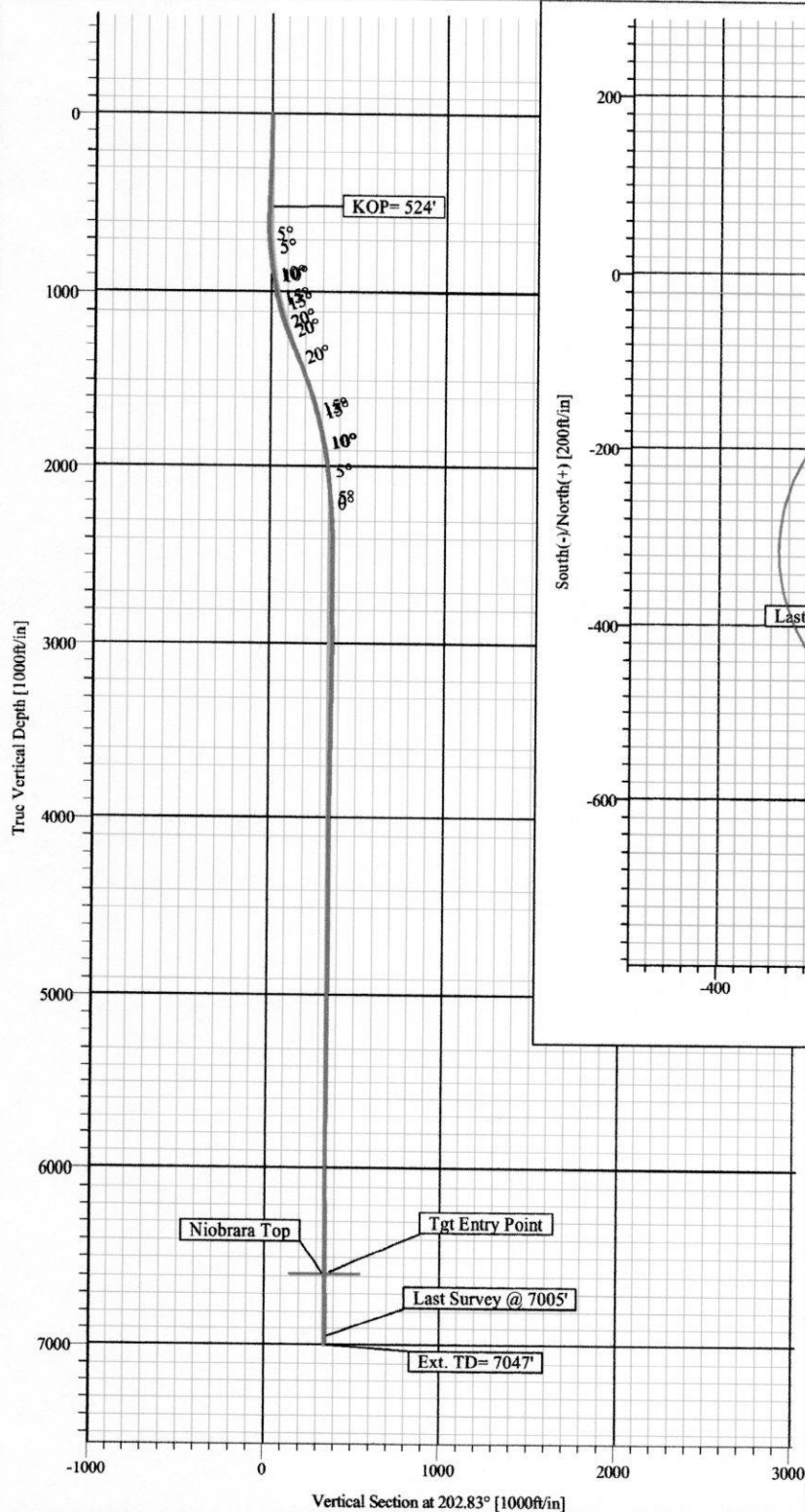
Field: Weld County

Site: NWSW Sec 3-5N-64W6

Well: Millage #13-3D

Wellpath: DD

Survey: Survey #1



Azimuths to True North
Magnetic North: 10.03°

Magnetic Field
Strength: 54236nT
Dip Angle: 67.47°
Date: 9/26/2002
Model: igrf2000

WELLPATH DETAILS

DD
Job# 020397

Rig:	Fort #2		
Ref. Datum:	KBE	4623.00ft	
V.Section Angle	Origin +N/-S	Origin +E/-W	Starting From TVD
202.83°	0.00	0.00	0.00