



Scientific Drilling

Survey Report



30-045-32718

Final

Company: BP Date: 12/20/2005 Time: 11:00:33 Page: 1
 Field: SAN JUAN, New Mexico Co-ordinate(NE) Reference: Well: Nye LS #1M, Grid North
 Site: SEC 23-T31N-R11W Vertical (TVD) Reference: NEW SITE 5849.0
 Well: Nye LS #1M Section (VS) Reference: Well (0.00N,0.00E,107.12Azi)
 Wellpath: OH Survey Calculation Method: Minimum Curvature Db: Sybase

Field: SAN JUAN, New Mexico
 SAN JUAN COUNTY, NEW MEXICO
 USA
 Map System: US State Plane Coordinate System 1983
 Geo Datum: GRS 1980
 Sys Datum: Mean Sea Level

Map Zone: New Mexico, Western Zone
 Coordinate System: Well Centre
 Geomagnetic Model: bggm2005

Site: SEC 23-T31N-R11W

SAN JUAN NEW MEXICO

Site Position: Northing: 2141831.18 ft Latitude: 36 53 9.313 N
 From: Geographic Easting: 2684636.53 ft Longitude: 107 57 53.451 W
 Position Uncertainty: 0.00 ft North Reference: Grid
 Ground Level: 5787.00 ft Grid Convergence: -0.08 deg

Well: Nye LS #1M

Slot Name:

Well Position: +N/-S -566.57 ft Northing: 2141264.66 ft Latitude: 36 53 3.742 N
 +E/-W 2344.14 ft Easting: 2686980.47 ft Longitude: 107 57 24.588 W
 Position Uncertainty: 0.00 ft

Wellpath: OH

Drilled From:

Surface

Current Datum: NEW SITE Height 5849.00 ft Tie-on Depth: 0.00 ft
 Magnetic Data: 11/30/2005 Above System Datum: Mean Sea Level
 Field Strength: 51411 nT Declination: 10.71 deg
 Vertical Section: Depth From (TVD) +N/-S +E/-W Mag Dip Angle: 63.71 deg
 ft ft ft Direction deg

0.00 0.00 0.00 107.12

Survey Program for Definitive Wellpath

Date: 12/20/2005 Validated: No
 Actual From To Survey
 ft ft

Version: 3
 Toolcode

Tool Name

Surface 2205/5 1815/E
 BHL 1977/5 879/E

461.00 4090.00 MWD Survey (461.00-4090.00) MWD ISCWSA MWD - Standard
 4516.00 7161.00 Projected Survey (4516.00-7161) UNKNOWN Unknown survey

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
405.00	2.60	183.15	404.86	-9.18	-0.50	2.22	0.64	0.64	0.00	9 5/8"
461.00	2.96	183.15	460.79	-11.89	-0.65	2.87	0.64	0.64	0.00	MWD ISCWSA
522.00	3.01	214.92	521.72	-14.77	-1.66	2.76	2.68	0.08	52.08	MWD ISCWSA
583.00	2.17	197.63	582.65	-17.19	-2.92	2.26	1.87	-1.38	-28.34	MWD ISCWSA
644.00	8.10	176.84	643.39	-22.58	-3.04	3.75	10.03	9.72	-34.08	MWD ISCWSA
706.00	11.03	188.88	704.52	-32.81	-3.71	6.11	5.70	4.73	19.42	MWD ISCWSA
766.00	12.17	185.26	763.30	-44.78	-5.18	8.23	2.25	1.90	-6.03	MWD ISCWSA
828.00	14.03	177.51	823.69	-58.80	-5.45	12.10	4.12	3.00	-12.50	MWD ISCWSA
890.00	15.30	164.98	883.68	-74.21	-3.00	18.97	5.50	2.05	-20.21	MWD ISCWSA
954.00	15.42	148.90	945.42	-89.66	3.58	29.82	6.64	0.19	-25.12	MWD ISCWSA
1016.00	14.92	135.06	1005.28	-102.37	13.48	43.02	5.88	-0.81	-22.32	MWD ISCWSA
1079.00	15.28	122.43	1066.12	-112.56	26.22	58.20	5.24	0.57	-20.05	MWD ISCWSA
1142.00	15.44	106.64	1126.90	-119.42	41.27	74.60	6.62	0.25	-25.06	MWD ISCWSA
1205.00	15.01	94.42	1187.70	-122.45	57.44	90.94	5.13	-0.68	-19.40	MWD ISCWSA
1268.00	15.18	92.16	1248.53	-123.39	73.82	106.87	0.97	0.27	-3.59	MWD ISCWSA
1331.00	14.88	99.88	1309.38	-125.09	90.03	122.87	3.21	-0.48	12.25	MWD ISCWSA
1332.67	14.88	100.02	1311.00	-125.16	90.46	123.29	2.08	0.10	8.07	OJO ALAMO
1363.72	14.93	102.51	1341.00	-126.72	98.28	131.23	2.08	0.14	8.05	KIRTLAND
1399.00	15.01	105.33	1375.08	-128.92	107.13	140.33	2.08	0.24	7.98	MWD ISCWSA
1463.00	14.96	105.72	1436.91	-133.35	123.07	156.87	0.18	-0.08	0.61	MWD ISCWSA
1528.00	16.85	103.54	1499.42	-137.83	140.31	174.66	3.05	2.91	-3.35	MWD ISCWSA



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Field: SAN JUAN, New Mexico	Co-ordinate(NE) Reference:	Well: Nye LS #1M, Grid North	
Site: SEC 23-T31N-R11W	Vertical (TVD) Reference:	NEW SITE 5849.0	
Well: Nye LS #1M	Section (VS) Reference:	Well (0.00N,0.00E,107.12Azi)	
Wellpath: OH	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
1592.00	17.09	102.89	1560.63	-142.09	158.49	193.30	0.48	0.37	-1.02	MWD ISCWSA
1656.00	17.18	104.26	1621.79	-146.52	176.82	212.12	0.65	0.14	2.14	MWD ISCWSA
1721.00	16.89	103.25	1683.94	-151.05	195.32	231.13	0.64	-0.45	-1.55	MWD ISCWSA
1784.00	16.89	103.30	1744.22	-155.25	213.13	249.39	0.02	0.00	0.08	MWD ISCWSA
1848.00	16.43	104.24	1805.53	-159.62	230.95	267.70	0.83	-0.72	1.47	MWD ISCWSA
1911.00	18.56	102.87	1865.62	-164.04	249.36	286.60	3.44	3.38	-2.17	MWD ISCWSA
1935.65	18.40	102.23	1889.00	-165.74	256.99	294.39	1.05	-0.66	-2.58	FRUITLAND
1974.00	18.15	101.22	1925.41	-168.19	268.76	306.36	1.05	-0.65	-2.64	MWD ISCWSA
2039.00	17.61	99.94	1987.27	-171.85	288.38	326.19	1.03	-0.83	-1.97	MWD ISCWSA
2102.00	17.84	100.77	2047.28	-175.30	307.25	345.24	0.54	0.37	1.32	MWD ISCWSA
2166.00	17.92	103.28	2108.19	-179.40	326.46	364.80	1.21	0.12	3.92	MWD ISCWSA
2188.89	17.44	104.33	2130.00	-181.05	333.21	371.74	2.53	-2.12	4.58	Fruitland coal-1M
2230.00	16.58	106.36	2169.31	-184.23	344.81	383.76	2.53	-2.08	4.94	MWD ISCWSA
2293.00	16.05	105.04	2229.78	-189.02	361.84	401.45	1.03	-0.84	-2.10	MWD ISCWSA
2357.00	15.79	102.24	2291.32	-193.16	378.89	418.97	1.27	-0.41	-4.37	MWD ISCWSA
2421.00	16.47	102.79	2352.80	-197.02	396.25	436.69	1.09	1.06	0.86	MWD ISCWSA
2485.00	16.55	102.66	2414.16	-201.02	413.99	454.83	0.14	0.12	-0.20	MWD ISCWSA
2545.26	16.07	102.17	2472.00	-204.66	430.52	471.69	0.83	-0.80	-0.81	PICTURED CLIFFS
2549.00	16.04	102.14	2475.59	-204.88	431.53	472.72	0.83	-0.80	-0.84	MWD ISCWSA
2613.00	15.88	102.87	2537.13	-208.69	448.71	490.26	0.40	-0.25	1.14	MWD ISCWSA
2677.00	16.11	103.97	2598.65	-212.78	465.86	507.86	0.59	0.36	1.72	MWD ISCWSA
2741.00	15.25	99.03	2660.27	-216.25	482.79	525.06	2.48	-1.34	-7.72	MWD ISCWSA
2758.34	15.10	98.96	2677.00	-216.96	487.28	529.55	0.87	-0.86	-0.38	LEWIS
2807.00	14.68	98.77	2724.03	-218.89	499.63	541.93	0.87	-0.86	-0.40	MWD ISCWSA
2870.00	14.59	106.30	2784.99	-222.33	515.14	557.76	3.02	-0.14	11.95	MWD ISCWSA
2934.00	13.73	107.95	2847.05	-226.93	530.10	573.42	1.48	-1.34	2.58	MWD ISCWSA
2998.00	13.36	104.15	2909.27	-231.08	544.50	588.40	1.51	-0.58	-5.94	MWD ISCWSA
3061.00	13.25	105.28	2970.58	-234.77	558.52	602.88	0.45	-0.17	1.79	MWD ISCWSA
3125.00	14.93	110.12	3032.65	-239.53	573.34	618.45	3.20	2.62	7.56	MWD ISCWSA
3189.00	17.05	107.55	3094.17	-245.20	590.03	636.06	3.49	3.31	-4.02	MWD ISCWSA
3252.00	16.61	98.80	3154.48	-249.36	607.73	654.21	4.08	-0.70	-13.89	MWD ISCWSA
3316.00	15.21	97.63	3216.03	-251.88	625.10	671.54	2.24	-2.19	-1.83	MWD ISCWSA
3380.00	13.70	101.12	3278.00	-254.45	640.85	687.36	2.72	-2.36	5.45	MWD ISCWSA
3444.00	13.73	103.35	3340.18	-257.67	655.68	702.48	0.83	0.05	3.48	MWD ISCWSA
3507.00	13.89	105.50	3401.36	-261.42	670.24	717.50	0.85	0.25	3.41	MWD ISCWSA
3570.00	13.52	102.66	3462.57	-265.05	684.71	732.40	1.22	-0.59	-4.51	MWD ISCWSA
3633.00	15.96	99.25	3523.49	-268.06	700.45	748.32	4.11	3.87	-5.41	MWD ISCWSA
3698.00	16.66	99.83	3585.87	-271.09	718.45	766.42	1.11	1.08	0.89	MWD ISCWSA
3761.00	14.55	105.35	3646.55	-274.72	734.99	783.29	4.09	-3.35	8.76	MWD ISCWSA
3825.00	14.65	106.36	3708.48	-279.13	750.50	799.42	0.43	0.16	1.58	MWD ISCWSA
3888.00	16.81	97.06	3769.13	-282.50	767.19	816.36	5.26	3.43	-14.76	MWD ISCWSA
3950.00	17.18	88.00	3828.43	-283.28	785.24	833.84	4.31	0.60	-14.61	MWD ISCWSA
4014.00	15.08	89.77	3889.91	-282.91	803.02	850.72	3.37	-3.28	2.77	MWD ISCWSA
4046.00	13.95	92.11	3920.89	-283.04	811.04	858.42	3.98	-3.53	7.31	MWD ISCWSA
4090.00	13.95	92.11	3963.59	-283.43	821.64	868.66	0.00	0.00	0.00	MWD ISCWSA
4109.99	13.75	92.11	3983.00	-283.61	826.42	873.29	1.00	-1.00	0.00	Cliffhouse
4437.33	10.48	92.11	4303.00	-286.14	895.08	939.65	1.00	-1.00	0.00	MENELEE
4516.00	9.70	92.11	4380.46	-286.64	908.85	952.96	1.00	-1.00	0.00	7"
4538.85	9.01	92.11	4403.00	-286.78	912.57	956.55	3.00	-3.00	0.00	7" CSG PT.
4839.00	0.00	0.00	4701.92	-287.65	936.11	979.31	3.00	-3.00	0.00	UNKNOWN
4883.08	0.00	0.00	4746.00	-287.65	936.11	979.31	0.00	0.00	0.00	POINT LOOKOUT
5240.08	0.00	0.00	5103.00	-287.65	936.11	979.31	0.00	0.00	0.00	MANCOS
6879.08	0.00	0.00	6742.00	-287.65	936.11	979.31	0.00	0.00	0.00	GREENHORN

Scientific Drilling

Survey Report

Company: BP Field: SAN JUAN, New Mexico Site: SEC 23-T31N-R11W Well: Nye LS #1M Wellpath: OH	Date: 12/20/2005 Co-ordinate(NE) Reference: Well: Nye LS #1M, Grid North Vertical (TVD) Reference: NEW SITE 5849.0 Section (VS) Reference: Well (0.00N,0.00E,107.12Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
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Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
6937.08	0.00	0.00	6800.00	-287.65	936.11	979.31	0.00	0.00	0.00	GRANEROS
6991.08	0.00	0.00	6854.00	-287.65	936.11	979.31	0.00	0.00	0.00	TWO WELLS
7081.08	0.00	0.00	6944.00	-287.65	936.11	979.31	0.00	0.00	0.00	PAGUATE
7119.08	0.00	0.00	6982.00	-287.65	936.11	979.31	0.00	0.00	0.00	CUBERO
7158.08	0.00	0.00	7021.00	-287.65	936.11	979.31	0.00	0.00	0.00	L. CUBERO
7161.00	0.00	0.00	7023.92	-287.65	936.11	979.31	0.00	0.00	0.00	projected to TD

Targets

Name	Description Dip. Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude → Deg Min Sec			← Longitude → Deg Min Sec		
Fruitland coal-1M		2130.00	-111.81	382.98	2141152.86	2687363.42	36	53	2.641 N	107	57	19.872 W
Cliffhouse		3983.00	-256.60	833.06	2141008.08	2687813.46	36	53	1.215 N	107	57	14.330 W
7" CSG PT.		4403.00	-284.40	923.62	2140980.28	2687904.02	36	53	0.942 N	107	57	13.215 W
PBHL -1M		7104.00	-294.00	954.50	2140970.69	2687934.89	36	53	0.847 N	107	57	12.835 W
-Circle (Radius: 100)												

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
405.00	404.86	9.625	12.250	9 5/8"
4516.00	4380.46	7.000	8.500	7"

Formations

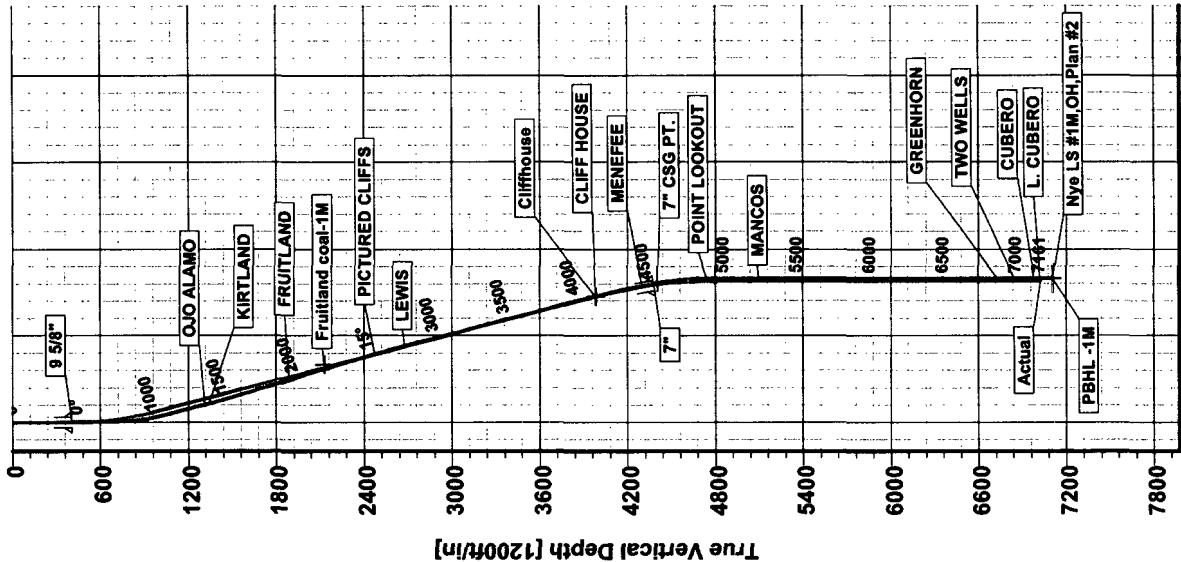
MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
1332.67	1311.00	OJO ALAMO		0.00	0.00
1363.72	1341.00	KIRTLAND		0.00	0.00
1935.65	1889.00	FRUITLAND		0.00	0.00
2188.89	2130.00	FRUITLAND COAL		0.00	0.00
2545.26	2472.00	PICTURED CLIFFS		0.00	0.00
2758.34	2677.00	LEWIS		0.00	0.00
4109.99	3983.00	CLIFF HOUSE		0.00	0.00
4437.33	4303.00	MENEFEE		0.00	0.00
4883.08	4746.00	POINT LOOKOUT		0.00	0.00
5240.08	5103.00	MANCOS		0.00	0.00
6879.08	6742.00	GREENHORN		0.00	0.00
6937.08	6800.00	GRANEROS		0.00	0.00
6991.08	6854.00	TWO WELLS		0.00	0.00
7081.08	6944.00	PAGUATE		0.00	0.00
7119.08	6982.00	CUBERO		0.00	0.00
7158.08	7021.00	L. CUBERO		0.00	0.00
	0.00	ENCINAL CYN		0.00	0.00

Annotation

MD ft	TVD ft	
4516.00	4380.46	projected survey
7161.00	7023.92	projected to TD



COMPARISON PLOT



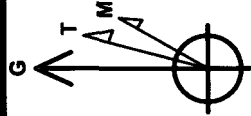
Field: SAN JUAN, New Mexico
Site: SEC 23-T31N-R11W
Well: Nye LS #1M
Wellpath: Actual

PLANNED

ACTUAL

LEGEND

- Nye LS #1M OH Plan #2
- Atlantic LS #4M (OH)
- Actual



Azimuths to Grid North
True North: 0.07°
Magnetic North: 10.78°
Magnetic Field
Strength: 5141 nT
Dip Angle: 63.71°
Date: 11/30/2005
Model: bggm2005

FORMATION TOP DETAILS

No.	TVDPath	MDPath	Formation
1	1311.00	1332.67	OJO ALAMO
2	1341.00	1363.72	KIRTLAND
3	1889.00	1935.65	FRUITLAND
4	2130.00	2188.89	FRUITLAND COAL
5	2472.00	2545.26	PICTURED CLIFFS
6	2677.00	2758.34	LEWIS
7	3983.00	4109.99	CLIFF HOUSE
8	4303.00	4437.33	MENEFEE
9	4746.00	4883.08	POINT LOOKOUT
10	5103.00	5240.08	MANCOS
11	6742.00	6879.08	GREENHORN
12	6800.00	6937.08	GRANEROS
13	6854.00	6991.08	TWO WELLS
14	6944.00	7081.08	PAGUATE
15	6982.00	7119.08	CUBERO
16	7021.00	7158.08	L. CUBERO

SURVEY PROGRAM

Date: 12/20/2005 Validated: No Version: 3

Depth Fm	Depth To	Survey/Plan	Tool
461.00	4090.00	MWD Survey	MWD ISCWSA
4516.00	7161.00	Projected Survey	UNKNOWN

SITE DETAILS

SEC 23-T31N-R11W
SAN JUAN NEW MEXICO

Site Centre Latitude: 36°53'09.313N
Longitude: 107°57'53.451W

Ground Level: 5787.00
Positional Uncertainty: 0.00
Convergence: -0.08

FIELD DETAILS

SAN JUAN, New Mexico
SAN JUAN COUNTY, NEW MEXICO
USA

Geodetic System: US State Plane Coordinate System 1983
Ellipsoid: GRS 1980
Zone: New Mexico, Western Zone
Magnetic Model: bggm2005

