



Weatherford[®]

RCVD AUG 29 '07

OIL CONS. DIV.

DIST. 3

Drilling Services

30-039-29506

Final Survey Report



Surface: 2460/W 2330/E
origin Latent: 2373/S 2306/W Md 3710 Tvd 3275
Latent Bit: 1857/S 1810/W Md 4425 Tvd 3285

WILLIAMS PRODUCTION COMPANY

ROSA UNIT #389

RIO ARRIBA COUNTY, NEW MEXICO

WELL FILE: **4012153**

August 06, 2007

Weatherford International, Ltd.

8-31-07
File as drilled
C-102



ROSA UNIT No. 389
SWNE 07-31N-04W
2460' FNL & 2330' FEL
Rio Arriba County, NM
PLAN VS. ACTUAL

SECTION DETAILS										
Sec	MD	Inc	Azi	IVD	+N/-S	+E/-W	DLeg	T Face	VSec	Target
1	0 00	0 00	222 78	0 00	0 00	0 00	0 00	0 00	0 00	
2	2795 83	0 00	222 78	2795 83	0 00	0 00	0 00	0 00	0 00	
3	3529 16	88 00	222 78	3273 00	-378 21	-312 97	12 00	-137 22	460 80	
4	3610 19	88 00	222 78	3275 83	-397 65	-367 97	0 00	0 00	541 78	
5	3676 86	90 00	222 78	3277 00	-446 57	-413 24	3 00	0 00	608 43	
6	3706 86	90 00	222 78	3277 00	-468 59	-433 61	0 00	0 00	638 43	
7	3806 86	88 00	222 78	3278 74	-541 97	-501 52	2 00	180 00	738 41	
8	3907 66	88 00	222 78	3282 26	-615 91	-569 94	0 00	0 00	839 15	
9	4007 66	90 00	222 78	3284 00	-689 29	-637 84	2 00	0 00	939 13	
10	6003 61	90 00	222 78	3284 00	-2154 21	-1993 51	0 00	86 20	2935 10	PBHL

WELL DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
ROSA UNIT No. 389	0 00	0 00	2152567 05	657459 34	36°54'52 000N	107°17'41 000W

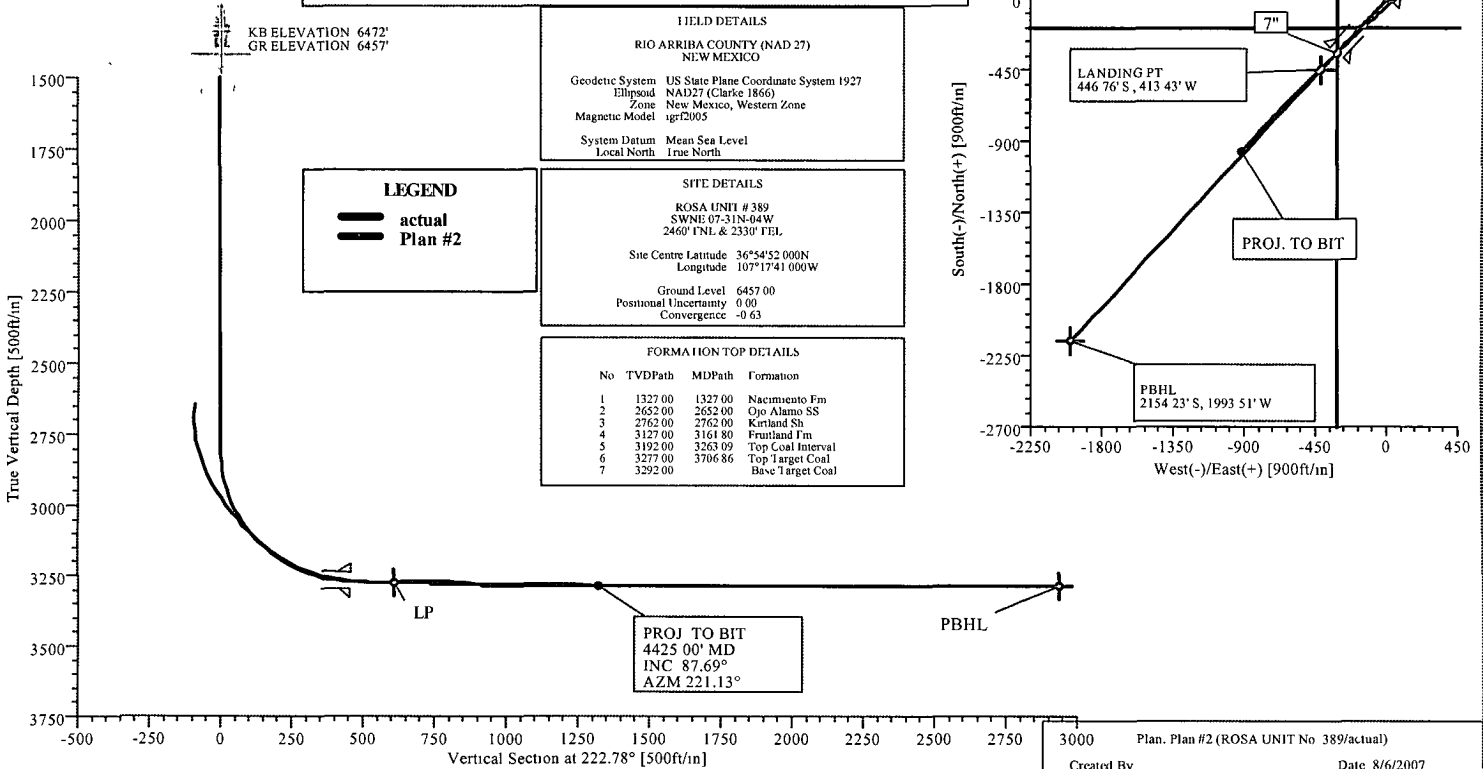
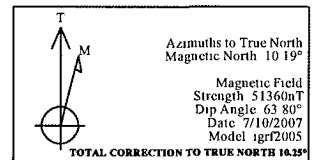
TARGET DETAILS					
Name	TVID	+N/-S	+E/-W	Northing	Easting
LP	3277 00	-446 76	-413 43	2152117 96	657048 44
PBHL	3284 00	-2154 23	-1993 51	2150401 59	655478 02

FIELD DETAILS
RIO ARriba COUNTY (NAD 27)
NEW MEXICO
Geodetic System: US State Plane Coordinate System 1927
Ellipsoid: NAD27 (Clarke 1866)
Zone: New Mexico, Western Zone
Magnetic Model: mgrf2005
System Datum: Mean Sea Level
Local North: True North

LEGEND
— actual
— Plan #2

SITE DETAILS
ROSA UNIT # 389
SWNE 07-31N-04W
2460' FNL & 2330' FEL
Site Centre Latitude: 36°54'52 000N
Longitude: 107°17'41 000W
Ground Level: 6457 00
Positional Uncertainty: 0 00
Convergence: -0 63

FORMATION TOP DETAILS			
No	TVDPath	MDPath	Formation
1	1327 00	1327 00	Nacimiento Fm
2	2652 00	2652 00	Ojo Alamo SS
3	2762 00	2762 00	Kirtland Sh
4	3127 00	3161 80	Fruitland Fm
5	3192 00	3263 09	Top Coal Interval
6	3277 00	3706 86	Top Target Coal
7	3292 00		Base Target Coal



Created By Date 8/6/2007



Weatherford Drilling Services

Survey Report



Company: WILLIAMS PRODUCTION	Date: 8/6/2007	Time: 08:23:45	Page: 1
Field: RIO ARRIBA COUNTY (NAD 27)	Co-ordinate(NE) Reference:	Site: ROSA UNIT # 389, True North	
Site: ROSA UNIT # 389	Vertical (TVD) Reference:	SITE 6472.0	
Well: ROSA UNIT No. 389	Section (VS) Reference:	Well (0.00N,0.00E,222.78Azi)	
Wellpath: actual	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: RIO ARRIBA COUNTY (NAD 27)
NEW MEXICO

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

Map Zone: New Mexico, Western Zone
Coordinate System: Site Centre
Geomagnetic Model: igr2005

Site: ROSA UNIT # 389
SWNE 07-31N-04W
2460' FNL & 2330' FEL

Site Position:	Northing: 2152567.05 ft	Latitude: 36 54 52.000 N
From: Geographic	Easting: 657459.34 ft	Longitude: 107 17 41.000 W
Position Uncertainty: 0.00 ft		North Reference: True
Ground Level: 6457.00 ft		Grid Convergence: -0.63 deg

Well: ROSA UNIT No 389

Slot Name:

Well Position:	+N/-S 0.00 ft	Northing: 2152567.05 ft	Latitude: 36 54 52.000 N
	+E/-W 0.00 ft	Easting: 657459.34 ft	Longitude: 107 17 41.000 W
Position Uncertainty: 0.00 ft			

Wellpath: actual

Current Datum: SITE
Magnetic Data: 7/10/2007
Field Strength: 51360 nT
Vertical Section: Depth From (TVD)
ft

Height 6472.00 ft

Drilled From: Surface
Tie-on Depth: 0.00 ft
Above System Datum: Mean Sea Level
Declination: 10.19 deg
Mag Dip Angle: 63.80 deg
+E/-W ft
Direction deg

0.00	0.00	0.00	222 78
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Survey: MWD Surveys

Start Date: 7/23/2007

Company: Weatherford Drilling Services
Tool:

Engineer:
Tied-to: User Defined

Survey: MWD Surveys

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
2648.00	4.06	62.00	2647.96	45 31	85.21	-91.13	0.00	0.00	0.00	Tie In Survey
2680.00	2.44	90.63	2679.91	45 83	86.89	-92.66	7.02	-5.06	89.47	
2711.00	2.56	184.13	2710.89	45.14	87.50	-92.56	11.75	0.39	301.61	
2742.00	6.06	211.00	2741.80	43.04	86.61	-90.42	12.74	11.29	86.68	
2773.00	10.63	221.50	2772.47	39 50	83 87	-85.95	15.48	14.74	33.87	
2805.00	15.31	226 88	2803.64	34.40	78 83	-78 78	15.09	14.62	16.81	
2837.00	19.31	226.00	2834.19	27.83	71.94	-69 28	12.53	12.50	-2.75	
2868.00	22.69	223.50	2863.12	19 93	64 13	-58.18	11.28	10.90	-8 06	
2900.00	26.19	223 63	2892.25	10.34	55.01	-44.95	10 94	10.94	0.41	
2932.00	29.13	225.13	2920.59	-0.27	44.61	-30 10	9.44	9.19	4.69	
2964.00	31.88	227.00	2948.16	-11.53	32.91	-13.89	9 09	8.59	5.84	
2995.00	34 38	227.63	2974.12	-23.01	20 45	3.00	8.14	8.06	2.03	
3025.00	36.19	227.38	2998.61	-34.72	7.68	20.27	6 05	6.03	-0.83	
3057.00	38.44	226.88	3024.06	-47.92	-6.54	39.61	7 09	7.03	-1.56	
3089.00	40.50	226 88	3048.76	-61.82	-21.38	59.90	6.44	6.44	0.00	
3119.00	42.81	228.13	3071.17	-75.29	-36.09	79 77	8.18	7.70	4.17	
3151.00	45 13	227.38	3094.20	-90.22	-52.53	101.90	7.43	7.25	-2.34	
3183.00	47.25	226.13	3116.35	-106 05	-69.35	124.93	7.20	6.62	-3.91	
3214.00	49.69	225.75	3136.90	-122.18	-86.02	148.10	7.92	7.87	-1.23	
3245.00	52 25	225.75	3156.42	-138.99	-103.27	172.15	8.26	8.26	0.00	
3276.00	55.13	226.50	3174.78	-156.30	-121.28	197.09	9.49	9.29	2.42	
3308.00	57.81	226.88	3192.45	-174 59	-140.69	223.70	8.43	8 37	1.19	
3339.00	60.69	226.88	3208.30	-192.80	-160.13	250.27	9.29	9 29	0.00	
3370.00	64.44	226.25	3222.58	-211 71	-180 11	277.72	12.23	12.10	-2.03	



Weatherford Drilling Services

Survey Report

**Weatherford**

Company: WILLIAMS PRODUCTION
Field: RIO ARRIBA COUNTY (NAD 27)
Site: ROSA UNIT # 389
Well: ROSA UNIT No 389
Wellpath: actual

Date: 8/6/2007 Time: 08:23:45 Page: 2
Co-ordinate(N/E) Reference: Site. ROSA UNIT # 389, True North
Vertical (TVD) Reference: SITE 6472.0
Section (VS) Reference: Well (0.00N,0.00E,222.78Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: MWD Surveys

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
3402.00	68.38	226.25	3235.38	-231.99	-201.28	306.98	12.31	12.31	0.00	
3434.00	72.50	226.75	3246.10	-252.74	-223.15	337.07	12.96	12.87	1.56	
3464.00	75.88	226.50	3254.27	-272.56	-244.13	365.86	11.30	11.27	-0.83	
3496.00	78.81	226.25	3261.28	-294.10	-266.73	397.02	9.19	9.16	-0.78	
3528.00	82.00	225.50	3266.61	-316.07	-289.38	428.52	10.23	9.97	-2.34	
3560.00	85.50	225.63	3270.09	-338.33	-312.09	460.29	10.94	10.94	0.41	
3646.00	88.44	225.25	3274.64	-398.58	-373.27	546.07	3.45	3.42	-0.44	
3677.00	90.56	226.38	3274.91	-420.19	-395.50	577.02	7.75	6.84	3.65	
3707.00	92.31	226.00	3274.16	-440.95	-417.14	606.96	5.97	5.83	-1.27	
3740.00	93.25	225.63	3272.56	-463.92	-440.77	639.87	3.06	2.85	-1.12	
3772.00	91.75	225.00	3271.16	-486.40	-463.50	671.81	5.08	-4.69	-1.97	
3804.00	90.31	224.75	3270.59	-509.07	-486.08	703.78	4.57	-4.50	-0.78	
3836.00	88.31	224.88	3270.97	-531.77	-508.63	735.76	6.26	-6.25	0.41	
3868.00	86.94	225.50	3272.30	-554.30	-531.31	767.70	4.70	-4.28	1.94	
3900.00	89.06	224.88	3273.42	-576.84	-554.00	799.65	6.90	6.62	-1.94	
3932.00	87.31	224.50	3274.43	-599.58	-576.49	831.61	5.60	-5.47	-1.19	
3964.00	85.25	224.63	3276.51	-622.33	-598.90	863.53	6.45	-6.44	0.41	
3996.00	86.00	224.50	3278.95	-645.06	-621.29	895.42	2.38	2.34	-0.41	
4027.00	87.00	223.50	3280.84	-667.32	-642.78	926.36	4.56	3.23	-3.23	
4060.00	87.19	222.75	3282.51	-691.37	-665.31	959.31	2.34	0.58	-2.27	
4092.00	88.94	222.50	3283.59	-714.90	-686.97	991.29	5.52	5.47	-0.78	
4124.00	91.38	222.50	3283.50	-738.49	-708.58	1023.29	7.62	7.62	0.00	
4156.00	92.69	222.75	3282.37	-762.02	-730.24	1055.27	4.17	4.09	0.78	
4188.00	90.50	222.88	3281.48	-785.49	-751.98	1087.25	6.86	-6.84	0.41	
4220.00	89.31	222.25	3281.53	-809.06	-773.62	1119.25	4.21	-3.72	-1.97	
4251.00	90.19	222.13	3281.66	-832.02	-794.44	1150.25	2.86	2.84	-0.39	
4283.00	90.69	221.50	3281.42	-855.87	-815.78	1182.25	2.51	1.56	-1.97	
4315.00	89.38	221.38	3281.40	-879.86	-836.95	1214.24	4.11	-4.09	-0.37	
4347.00	87.69	221.13	3282.22	-903.91	-858.05	1246.21	5.34	-5.28	-0.78	Last MWD Survey
4425.00	87.69	221.13	3285.36	-962.61	-909.31	1324.12	0.00	0.00	0.00	Proj. to Bit

Annotation

MD ft	TVD ft	
2648.00	2647.96	Tie In Survey
4347.00	3282.22	Last MWD Survey
4425.00	3285.36	Proj. to Bit