



Scientific Drilling

Gyroscopic Survey Report
for
Williams

30039-30556

Well Location	Sec.9-T-31N-R-5-W, Rio Arriba County, New Mexico
Well Name	Rosa Unit 360A
Rig Name	HWS Rig 17
Survey Date	2008/09/06
Latitude	36.92 deg
North Reference	True North
Grid Correction	0.00 deg
Depth Reference	RKB (14')
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 300.00Azim (deg)
Definitive Survey	Computed from ROSA0813.BIN's HighSpeed: InRun
Operator	Brett Lanier

Comments

Surveyed from RKB to 3909'
Surveyed in 2 7/8" drill pipe
Surveyed RKB 14'

B.H.L.
948/N
2030/W

RCVD OCT 3 '08
OIL CONS. DIV.
DIST. 3

HOLD C104 FOR NSL



Survey Report

Well Name: Rosa Unit 360A

Survey: Computed from ROSA0813.BIN's HighSpeed InRun

Survey Date: 2008/09/06

MD ft	Inc deg	Azim deg	TVD ft	VS ft	Northing ft	Easting ft	DLS deg/100ft	Closure Distance ft	Closure Angle deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.29	69.34	100.00	-0.16	0.09	0.24	0.29	0.25	69.34
200.00	0.31	353.62	200.00	-0.16	0.45	0.44	0.37	0.63	44.57
300.00	0.07	31.41	300.00	0.00	0.77	0.44	0.26	0.89	29.90
400.00	0.72	326.50	400.00	0.56	1.35	0.13	0.69	1.36	5.67
500.00	4.93	298.28	499.85	5.41	3.91	-4.00	4.31	5.59	314.35
600.00	6.75	295.10	599.33	15.56	8.43	-13.10	1.85	15.58	302.77
700.00	8.47	295.35	698.45	28.76	14.08	-25.08	1.72	28.76	299.31
800.00	11.53	298.54	796.92	46.10	22.01	-40.52	3.11	46.11	298.51
900.00	16.15	298.35	893.99	70.01	33.40	-61.55	4.62	70.03	298.49
1000.00	18.56	300.02	989.43	99.83	47.97	-87.57	2.46	99.85	298.71
1100.00	19.74	300.75	1083.89	132.62	64.56	-115.87	1.21	132.64	299.13
1200.00	20.16	295.55	1177.90	166.69	80.63	-145.93	1.82	166.72	298.92
1300.00	20.27	295.35	1271.74	201.13	95.48	-177.12	0.13	201.22	298.33
1400.00	20.29	298.69	1365.55	235.73	111.22	-207.98	1.16	235.85	298.14
1500.00	20.07	301.00	1459.41	270.22	128.38	-237.90	0.83	270.33	298.35
1600.00	19.96	304.81	1553.37	304.39	146.96	-266.63	1.31	304.45	298.86
1700.00	19.79	300.81	1647.42	338.33	165.38	-295.18	1.37	338.35	299.26
1800.00	19.85	297.69	1741.50	372.22	181.94	-324.76	1.06	372.25	299.26
1900.00	19.99	294.88	1835.52	406.21	197.02	-355.30	0.97	406.27	299.01
2000.00	20.10	293.95	1929.46	440.31	211.18	-386.50	0.33	440.44	298.65
2100.00	20.49	294.27	2023.26	474.82	225.35	-418.16	0.41	475.02	298.32
2200.00	20.10	298.53	2117.05	509.41	240.76	-449.22	1.53	509.67	298.19
2300.00	19.87	298.82	2211.03	543.59	257.16	-479.21	0.25	543.85	298.22
2400.00	19.67	299.87	2305.13	577.41	273.73	-508.70	0.41	577.67	298.28
2500.00	19.54	299.39	2399.33	610.97	290.32	-537.86	0.21	611.22	298.36
2600.00	19.79	299.32	2493.50	644.62	306.82	-567.20	0.25	644.87	298.41
2700.00	20.46	299.71	2587.40	679.02	323.77	-597.14	0.68	679.27	298.47
2800.00	20.54	298.89	2681.06	714.04	340.91	-627.68	0.30	714.28	298.51
2900.00	20.63	298.76	2774.68	749.20	357.87	-658.48	0.10	749.45	298.52
3000.00	20.35	301.54	2868.35	784.20	375.44	-688.75	1.01	784.43	298.59
3100.00	20.84	299.05	2961.96	819.36	393.17	-719.12	1.00	819.59	298.67
3200.00	19.93	296.12	3055.70	854.15	409.31	-749.98	1.37	854.40	298.62
3300.00	20.06	295.62	3149.67	888.26	424.23	-780.75	0.22	888.56	298.52
3400.00	19.56	296.86	3243.75	922.08	439.21	-811.15	0.66	922.42	298.43
3500.00	19.08	298.51	3338.12	955.13	454.57	-840.44	0.72	955.50	298.41
3600.00	18.14	299.91	3432.89	987.04	470.14	-868.30	1.05	987.41	298.43
3700.00	17.54	303.99	3528.09	1017.64	486.32	-894.29	1.38	1017.97	298.54
3800.00	15.08	313.19	3624.07	1045.35	503.66	-916.28	3.56	1045.58	298.80



Survey Report

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Survey: Computed from ROSA0813.BIN's HighSpeed InRun

Survey Date: 2008/09/06

MD ft	Inc deg	Azim deg	TVD ft	VS ft	Northing ft	Easting ft	DLS deg/100ft	Closure Distance ft	Closure Angle deg
3900.00	14.41	312.38	3720.77	1070.18	520.96	-934.96	0.70	1070.30	299.13
3909.00	14.39	312.36	3729.49	1072.36	522.46	-936.61	0.26	1072.48	299.15

DIST. 3

ROSA UNIT #360A
BASIN FRUITLAND COAL

Surface Location:

1470' FNL and 2095' FEL
SW/4 NE/4 Sec 9 (G), T31N, R5W
Rio Arriba, NM

Bottom Hole Location:

948' FSL and 2251' FWL
NE/4 NW/4 Sec 9 (C), T31N, R5W
Rio Arriba, NM

Elevation: 6814' GR
API # 30-039-30556

Spud: 08/08/08

Completed: 09/30/08

1st Delivered: 00/00/00

Top	MD_ Depth	TVD Depth
Ojo Alamo	3012'	2898'
Kirtland	3151'	3013'
Fruitland	3544'	3383'

6 - 3/4" x 1/2" sinker bars, 72 - 3/4" Type 54, API Grade
"D" Rods, 74 - 3/4" Type 54, API Grade "D" Rods Guided
Rods 5 per Rod, 1 - 8', 6', 4', and 2', x 3/4" Type 54, Grade
"D" Pony's, 1 - 1-1/4" x 16' Polished Rod w 1-1/2" x 8'
liner

0.53", 4SPF
340 holes total

3665' - 3680' (60 SHOTS)

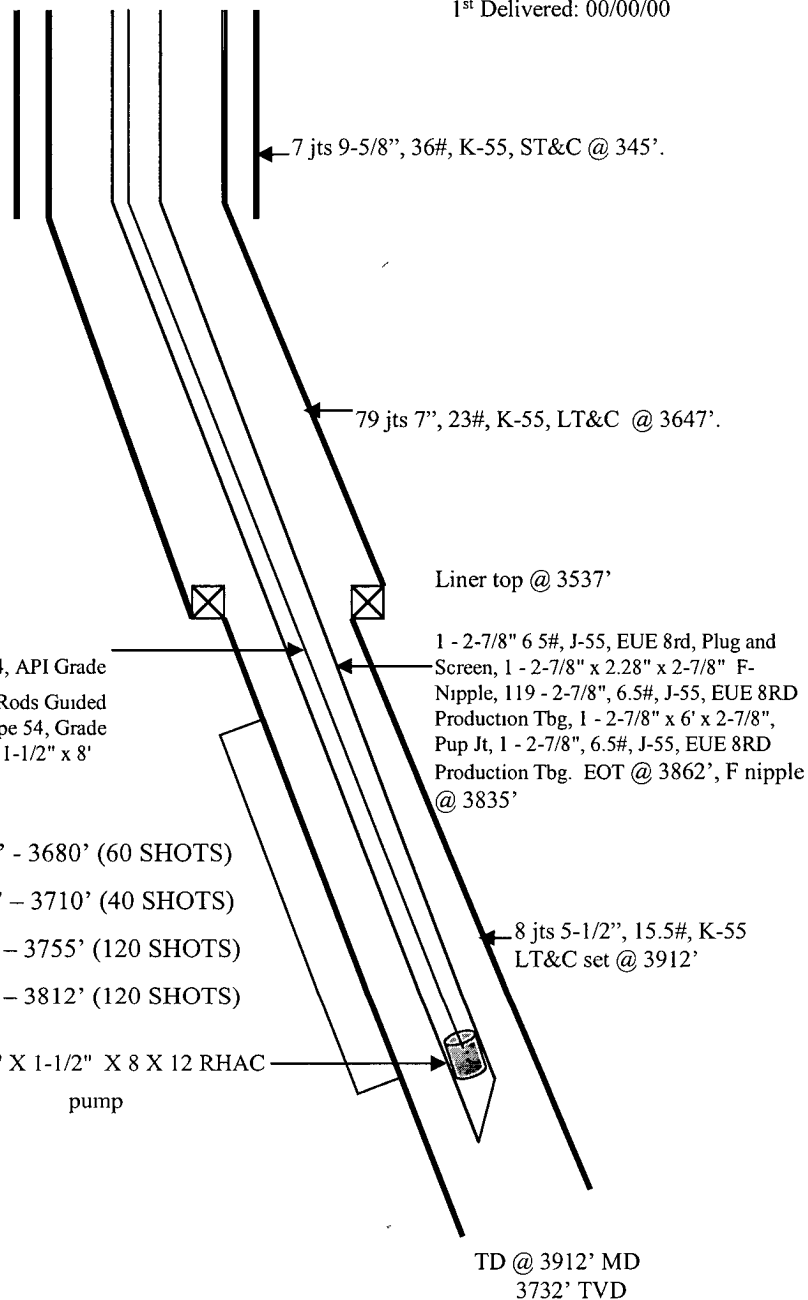
3700' - 3710' (40 SHOTS)

3725' - 3755' (120 SHOTS)

3782' - 3812' (120 SHOTS)

2-1/2" X 1-1/2" X 8 X 12 RHAC
pump

Open hole from 6-1/4" to 9-1/2"
from 3653' to 3912'



Hole Size	Casing	Cement	Volume	Top of Cmt
12-1/4"	9-5/8", 36#	150 sxs	211 cu.ft.	Surface
8-3/4"	7", 23#	525 sxs	1060 cu.ft.	Surface
6-1/4"	5-1/2", 15.5#	Did Not Cmt		