

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT **OCD-ARTESIA**FORM APPROVED
OMB NO. 1004-0137
Expires March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well ☐ Oil Well ☒ Gas Well ☐ Dry ☐ Other										5. Lease Serial No MMM 108950	
b. Type of Completion: ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff Resvr., Other										6. If Indian, Allottee or Tribe Name	
2. Name of Operator BOG Resources Inc.										7. Unit or CA Agreement Name and No.	
3. Address P.O. Box 2267 Midland, Texas 79702										8. Lease Name and Well No. Rio Grande 23 Fed 1H	
3a. Phone No. (include area code) 432 686 3689										9. API Well No. 30-015-34296 S1	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface 660' FSL & 760' FEL, U/L P At top prod interval reported below At total depth 2241' FNL & 754' FEL, U/L H										10. Field and Pool, or Exploratory Cottonwood Creek; Wolfcamp	
11. Sec., T., R., M., or Block and Survey or Area Sec 23, T16S, R24E										12. County or Parish Eddy	
13. State NM										17. Elevations (DF, RKB, RT, GL)* 3623' GR	
14. Date Spudded 9/11/05			15. Date T.D. Reached 10/15/05			16. Date Completed ☐ D & A ☒ Ready to Prod. 12/07/05					
18. Total Depth: MD 7065 TVD 4715			19. Plug Back T.D.: MD 6997 TVD			20. Depth Bridge Plug Set: MD TVD					
21. Type Electric & Other Mechanical Logs Run (Submit copy of each)										22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run ☒ No ☐ Yes (Submit report) Directional Survey? ☐ No ☒ Yes (Submit copy)	
23. Casing and Liner Record (Report all strings set in well)											
Hole Size	Size/Grade	Wt.(#ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol (BBL)	Cement Top*	Amount Pulled		
12 1/4	8 5/8	32		1019		1005 Prem +		Surface			
7 7/8	5 1/2	17		7020		1225 C		Surface			
24. Tubing Record											
Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)			
2 3/8	4309										
25. Producing Intervals						26. Perforation Record					
Formation		Top	Bottom	Perforated Interval		Size	No. Holes	Perf. Status			
A) Wolfcamp		4550		6474-6942		0.48"	48	Producing			
B)				5775-6240		0.48"	48	"			
C)				5075-5540		0.48"	48	"			
D)											
27. Acid, Fracture, Treatment, Cement Squeeze, Etc.											
Depth Interval		Amount and Type of Material									
6474-6942		Frac-125 bbls 15% HCL, 6514 bbls FW, 10000# 100 mesh, 51830# 30/70, 36490# 20/40									
5775-6240		Frac-119 bbls 15% HCL, 6133 bbls FW, 9360# 100 mesh, 51830# 30/70, 44620# 20/40									
5075-5540		Frac-149 bbls 15% HCL, 5984 bbls FW, 12337# 100 mesh, 56677# 30/70, 38565# 20/40									
28. Production - Interval A											
Date First Produced 12/07/05	Test Date 12/19/05	Hours Tested 24	Test Production →	Oil BBL 0	Gas MCF 1979	Water BBL 53	Oil Gravity	Gas Gravity	Production Method Flowing		
Choke Size Open	Tbg. Press. Flwg SI 310	Csg. Press. 700	24 Hr. →	Oil BBL	Gas MCF	Water BBL	Gas: Oil Ratio	Well Status PGW	DEC 27 2005		
28a Production-Interval B											
Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity	Gas Gravity	Production Method ALEXIS C. SWOBODA PETROLEUM ENGINEER		
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. →	Oil BBL	Gas MCF	Water BBL	Gas: Oil Ratio	Well Status			

(See instructions and spaces for additional data on page 2)

**McVAY DRILLING COMPANY**

Post Office Box 924
Hobbs, New Mexico 88241
(505) 397-3311
FAX: 39-DRILL

Well Name and Number: Rio Grande "23" Fed 1H

Location: Sec 23, T16S, R24E, Eddy County, NM

Operator: EOG

Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

Degrees @ Depth		Degrees @ Depth		Degrees @ Depth	
1 ¼	472	42	4596	90 ½	6543
1 ¼	986	48	4678	89 ¾	6990
½	1472	61	4755		
½	1970	68	4919		
¼	2479	85	5185		
¼	2987	87 ¼	5396		
½	4000	89 ½	5429		
2	4510	87 ¼	5936		
1 ½	4248	91	5810		
2	4280	89 ¼	6317		

Drilling Contractor: McVay Drilling Company

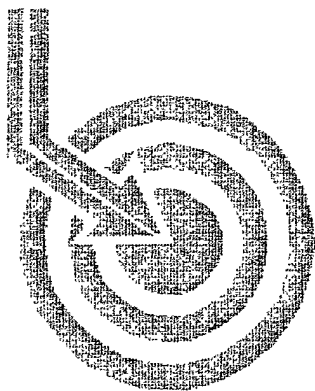
By: _____

Subscribed and sworn to before me this 18th day of October, 2005

Notary Public

My Commission Expires: 8-16-09

Lea County, New Mexico



Scientific Drilling

E.O.G.

Field: Cottonwood Creek
Site: Eddy County, NM
Well: Rio Grande 23 Fed #1H
Wellpath: VH - Job #32K0905685
Survey: 09/20/05

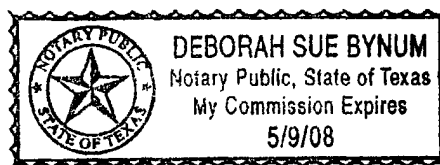
This survey is correct to the best of my knowledge
and is supported by actual field data.

.....*Deborah Sue Bynum*.....Company Representative

Notorized this date 16th of October, 2005.

Deborah Sue Bynum
Notary Signature

County of Midland
State of Texas





Scientific Drilling International

Survey Report

Company: E.O.G. **Date:** 10/16/2005 **Time:** 17:20:10 **Page:** 1
Field: Cottonwood Creek **Co-ordinate(NE) Reference:** Site: Eddy County, NM, Grid North
Site: Eddy County, NM **Vertical (TVD) Reference:** SITE 0.0
Well: Rio Grande 23 Fed #1H **Section (VS) Reference:** Well (0.00N,0.00E,0.16Azi)
Wellpath: VH - Job #32K0905685 **Survey Calculation Method:** Minimum Curvature **Db:** Sybase

Survey: 09/20/05 **Start Date:** 9/20/2005
Company: Scientific Drilling Internatio **Engineer:** Carter w/P&M
Tool: Keeper;Keeper Surface Readout Gyro **Tied-to:** From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.54	270.23	100.00	0.00	0.00	-0.47	0.54	0.47	270.23
200.00	0.62	265.85	199.99	-0.04	-0.04	-1.48	0.09	1.48	268.63
300.00	0.05	280.82	299.99	-0.07	-0.07	-2.06	0.57	2.07	268.16
400.00	0.99	97.00	399.99	-0.17	-0.16	-1.25	1.04	1.26	262.55
500.00	1.17	99.42	499.97	-0.43	-0.44	0.61	0.19	0.75	125.34
600.00	1.10	111.70	599.95	-0.95	-0.96	2.51	0.25	2.69	110.86
700.00	1.49	127.91	699.92	-2.10	-2.11	4.43	0.53	4.91	115.48
800.00	1.39	128.00	799.89	-3.64	-3.66	6.41	0.10	7.38	119.70
900.00	1.35	133.40	899.86	-5.19	-5.21	8.22	0.14	9.74	122.37
1000.00	1.28	134.08	999.84	-6.77	-6.80	9.88	0.07	12.00	124.53
1100.00	1.14	141.32	1099.82	-8.32	-8.35	11.31	0.21	14.06	126.46
1200.00	1.03	137.64	1199.80	-9.76	-9.79	12.53	0.13	15.91	128.00
1300.00	0.86	144.41	1299.78	-11.03	-11.07	13.58	0.20	17.52	129.19
1400.00	0.76	151.34	1399.77	-12.22	-12.26	14.33	0.14	18.86	130.55
1500.00	0.77	154.85	1499.76	-13.41	-13.45	14.94	0.05	20.10	132.01
1600.00	0.77	165.11	1599.76	-14.67	-14.71	15.39	0.14	21.29	133.70
1700.00	0.63	148.90	1699.75	-15.78	-15.83	15.85	0.24	22.40	134.96
1800.00	0.50	183.20	1799.74	-16.69	-16.73	16.11	0.36	23.23	136.09
1900.00	0.30	183.69	1899.74	-17.39	-17.43	16.07	0.20	23.71	137.33
2000.00	0.13	158.32	1999.74	-17.75	-17.80	16.09	0.19	24.00	137.88
2100.00	0.22	135.96	2099.74	-18.00	-18.04	16.27	0.11	24.29	137.96
2200.00	0.20	138.26	2199.74	-18.26	-18.31	16.52	0.02	24.66	137.94
2300.00	0.23	146.23	2299.74	-18.56	-18.61	16.75	0.04	25.03	138.01
2400.00	0.40	168.93	2399.74	-19.07	-19.12	16.92	0.21	25.53	138.48
2500.00	0.46	173.27	2499.73	-19.81	-19.86	17.04	0.07	26.17	139.37
2600.00	0.37	181.81	2599.73	-20.53	-20.58	17.08	0.11	26.74	140.32
2700.00	0.31	162.69	2699.73	-21.11	-21.16	17.15	0.13	27.23	140.98
2800.00	0.34	148.79	2799.73	-21.62	-21.67	17.38	0.08	27.78	141.27
2900.00	0.11	187.32	2899.73	-21.97	-22.02	17.52	0.26	28.14	141.49
3000.00	0.17	201.29	2999.73	-22.21	-22.25	17.46	0.07	28.28	141.89
3100.00	0.23	204.67	3099.73	-22.53	-22.58	17.32	0.06	28.45	142.51
3200.00	0.46	212.61	3199.72	-23.05	-23.10	17.02	0.23	28.69	143.62
3300.00	0.41	196.17	3299.72	-23.73	-23.78	16.70	0.13	29.06	144.91
3400.00	0.37	166.55	3399.72	-24.39	-24.44	16.68	0.20	29.58	145.69
3500.00	0.49	169.38	3499.72	-25.12	-25.17	16.83	0.12	30.28	146.23
3600.00	0.49	153.59	3599.71	-25.92	-25.97	17.10	0.13	31.10	146.64
3700.00	0.61	145.51	3699.71	-26.75	-26.79	17.59	0.14	32.05	146.71
3800.00	0.82	141.87	3799.70	-27.74	-27.80	18.34	0.21	33.30	146.59
3900.00	1.14	142.97	3899.69	-29.10	-29.15	19.38	0.32	35.00	146.39
4000.00	1.40	140.45	3999.66	-30.83	-30.89	20.75	0.27	37.21	146.10
4100.00	1.46	138.77	4099.63	-32.73	-32.79	22.37	0.07	39.69	145.70
4200.00	1.77	130.25	4199.59	-34.68	-34.75	24.39	0.39	42.45	144.93
4300.00	1.83	131.87	4299.54	-36.73	-36.81	26.76	0.08	45.51	143.99
4400.00	1.84	131.22	4399.49	-38.85	-38.93	29.15	0.02	48.64	143.17
4500.00	1.89	130.58	4499.44	-40.97	-41.06	31.61	0.05	51.82	142.41
4600.00	1.90	133.45	4599.38	-43.18	-43.28	34.07	0.10	55.08	141.79
4700.00	1.87	134.86	4699.33	-45.46	-45.57	36.43	0.06	58.34	141.36
4800.00	1.78	134.61	4799.28	-47.70	-47.81	38.69	0.09	61.50	141.02



Scientific
Drilling

Scientific Drilling International

Survey Report

Company: E.O.G.	Date: 10/16/2005	Time: 17:20:10	Page: 2
Field: Cottonwood Creek	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: Rio Grande 23 Fed #1H	Section (VS) Reference:	Well (0.00N,0.00E,0.16Azi)	
Wellpath: VH - Job #32K0905685	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.00	1.59	131.71	4899.23	-49.71	-49.82	40.83	0.21	64.42	140.66
5000.00	1.57	125.57	4999.20	-51.42	-51.54	42.98	0.17	67.11	140.17
5010.00	1.26	133.24	5009.19	-51.58	-51.70	43.17	3.63	67.35	140.13



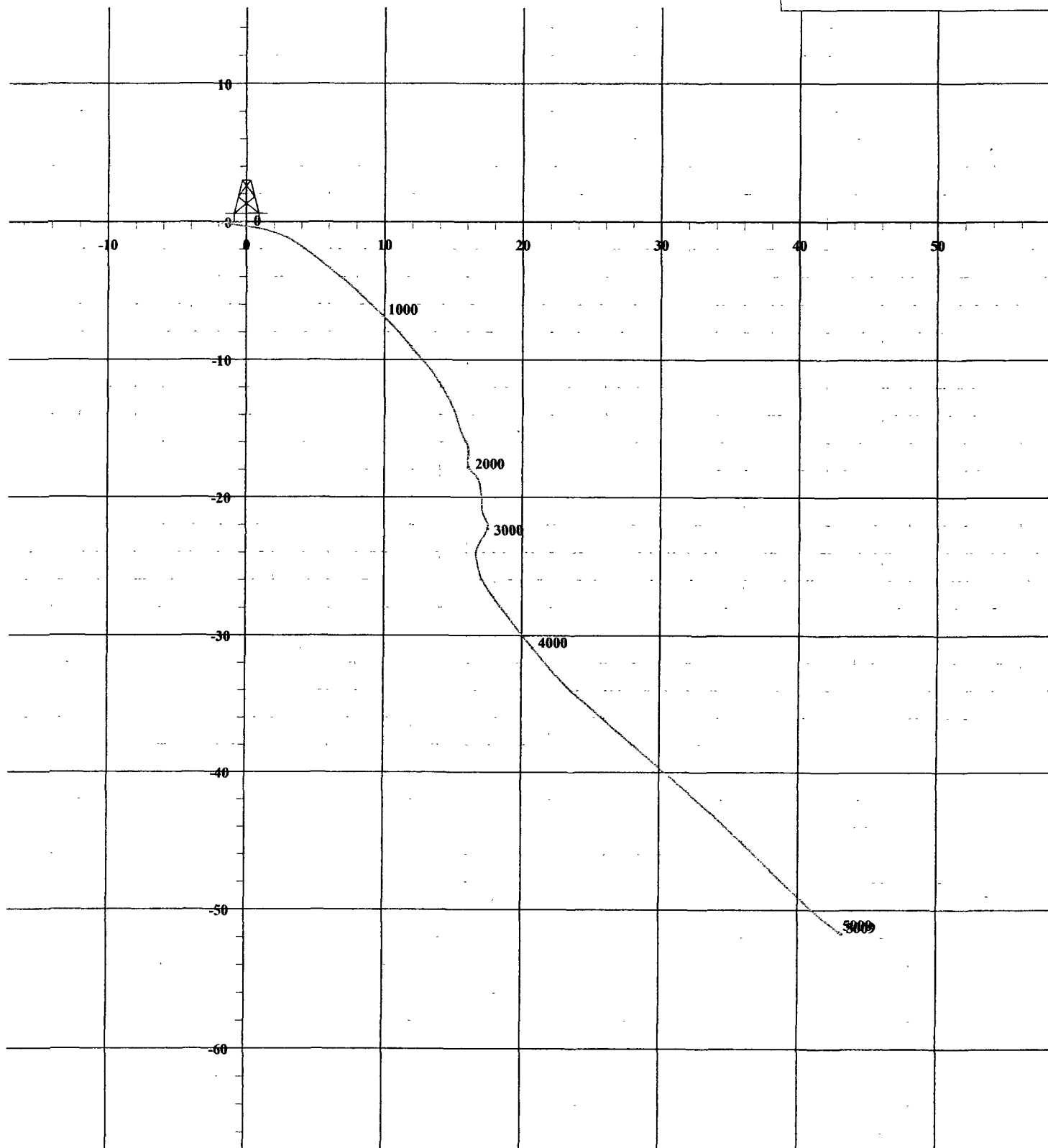
Scientific
Drilling

Field: Cottonwood Creek
Site: Eddy County, NM
Well: Rio Grande 23 Fed #1H
Wellpath: VH - Job #32K0905685
Survey: 09/20/05



Azimuths to Grid North
True North: 0.00°
Magnetic North: 0.00°
Magnetic Field
Strength: 0.01
Dip Angle: 0.00
Date: 10/16/2005
Model: gpr2000

South(-)/North(+) [10ft/in]



West(-)/East(+) [10ft/in]

PathFinder

Survey Report

Company: EOG Resources	Date: 10/25/2005	Time: 16:12:04	Page: 1
Field: Thames Field	Co-ordinate(NE) Reference:	Site: Rio Grande 23 Federal #1	
Site: Rio Grande 23 Federal #1	Vertical (TVD) Reference:	SITE 0.0	
Well: Sec. 23 T16-S R24-E	Section (VS) Reference:	Well (0.00N,0.00E,0.16Azi)	
Wellpath: Original Hole	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: Thames Field Eddy, Co NM USA	Map System: US State Plane Coordinate System 1927	Map Zone: New Mexico, Eastern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Site Centre	
Sys Datum: Mean Sea Level	Geomagnetic Model: igrf2005	

Site: Rio Grande 23 Federal #1

Section 23, T16-S, R24-E

Site Position:	Northing: 692274.00 ft	Latitude: 32 54 10.611 N
From: Map	Easting: 432662.00 ft	Longitude: 104 33 9.840 W
Position Uncertainty: 0.00 ft		North Reference: Grid
Ground Level: 3623.00 ft		Grid Convergence: -0.12 deg

Well: Sec. 23 T16-S R24-E	Slot Name:
Well Position: +N-S 0.00 ft	Latitude: 32 54 10.611 N
+E-W 0.00 ft	Longitude: 104 33 9.840 W
Position Uncertainty: 0.00 ft	

Wellpath: Original Hole	Drilled From: Surface
Current Datum: SITE	Tie-on Depth: 0.00 ft
Magnetic Data: 9/21/2005	Above System Datum: Mean Sea Level
Field Strength: 49524 nT	Declination: 8.76 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 60.78 deg
ft	+E-W
	ft
	Direction
	deg
0.00	0.00
0.00	0.16

Survey: PathFinder MWD Surveys	Start Date: 9/26/2005
Company: PathFinder Energy Services	Engineer: Ron McIntyre
Tool:	Tied-to: From: Definitive Path

Survey: PathFinder 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
4200.00	1.77	130.25	4199.59	-34.75	24.39	-34.68	0.00	0.00	0.00	Tie-In to SDI Gyro Begin PathFinder MWD Survey
4248.00	1.58	105.17	4247.57	-35.40	25.59	-35.33	1.56	-0.40	-52.25	
4280.00	2.02	41.98	4279.56	-35.09	26.40	-35.02	6.01	1.37	-197.47	
4312.00	4.84	11.13	4311.50	-33.35	27.03	-33.27	10.23	8.81	-96.41	
4344.00	8.71	1.73	4343.27	-29.60	27.37	-29.52	12.54	12.09	-29.37	
4375.00	12.31	359.00	4373.75	-23.95	27.38	-23.87	11.72	11.61	-8.81	Tie-In for ST1
4407.00	16.27	359.53	4404.75	-16.05	27.29	-15.98	12.38	12.37	1.66	
4439.00	20.14	359.70	4435.14	-6.06	27.22	-5.98	12.09	12.09	0.53	
4470.00	24.36	359.70	4463.83	5.68	27.16	5.75	13.61	13.61	0.00	
4502.00	28.75	359.44	4492.44	19.98	27.05	20.06	13.72	13.72	-0.81	
4533.00	33.41	359.18	4518.99	35.98	26.85	36.05	15.04	15.03	-0.84	
4565.00	37.81	359.00	4545.00	54.60	26.56	54.68	13.75	13.75	-0.56	
4596.00	41.86	358.91	4568.80	74.45	26.19	74.53	13.07	13.06	-0.29	
4628.00	45.90	359.18	4591.86	96.63	25.83	96.70	12.64	12.62	0.84	
4660.00	50.21	359.09	4613.24	120.42	25.47	120.49	13.47	13.47	-0.28	
4692.00	54.52	358.65	4632.78	145.75	24.96	145.82	13.51	13.47	-1.37	
4723.00	57.86	357.51	4650.02	171.49	24.10	171.55	11.20	10.77	-3.68	
4755.00	61.03	356.89	4666.29	199.01	22.75	199.07	10.05	9.91	-1.94	
4787.00	64.46	357.44	4680.94	227.42	21.34	227.47	10.83	10.72	1.72	
4819.00	68.24	358.23	4693.78	256.70	20.24	256.76	12.03	11.81	2.47	
4851.00	72.02	358.30	4704.65	286.78	19.33	286.83	11.81	11.81	0.22	
4883.00	75.97	358.74	4713.47	317.52	18.53	317.57	12.41	12.34	1.37	

PathFinder Survey Report

Company: EOG Resources	Date: 10/25/2005	Time: 16:12:04	Page: 2
Field: Thames Field	Co-ordinate(NE) Reference:	Site: Rio Grande 23 Federal #1	
Site: Rio Grande 23 Federal #1	Vertical (TVD) Reference:	SITE 0.0	
Well: Sec. 23 T16-S R24-E	Section (VS) Reference:	Well (0.00N,0.00E,0.16Azi)	
Wellpath: Orginal Hole	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Annotation

MD ft	TVD ft	
4200.00	4199.59	Tie-In to SDI Gyro
4248.00	4247.57	Begin PathFinder MWD Surveys
4692.00	4632.78	Tie-In for ST1

PathFinder

Survey Report

Company: EOG Resources	Date: 10/25/2005	Time: 16:14:03	Page: 1
Field: Thames Field	Co-ordinate(NE) Reference: Site: Rio Grande 23 Federal #1		
Site: Rio Grande 23 Federal #1	Vertical (TVD) Reference: SITE 0.0		
Well: Sec. 23 T16-S R24-E	Section (VS) Reference: Well (0.00N,0.00E,0.16Azi)		
Wellpath: Original Hole	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Field: Thames Field Eddy, Co. NM USA	Map System: US State Plane Coordinate System 1927	Map Zone: New Mexico, Eastern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Site Centre	
Sys Datum: Mean Sea Level	Geomagnetic Model: igrf2005	

Site: Rio Grande 23 Federal #1

Section 23, T16-S, R24-E

Site Position:	Northing: 692274.00 ft	Latitude: 32 54 10.611 N
From: Map	Easting: 432662.00 ft	Longitude: 104 33 9.840 W
Position Uncertainty: 0.00 ft		North Reference: Grid
Ground Level: 3623.00 ft		Grid Convergence: -0.12 deg

Well: Sec. 23 T16-S R24-E

Slot Name:

Well Position: +N/-S 0.00 ft	Northing: 692274.00 ft	Latitude: 32 54 10.611 N
+E/-W 0.00 ft	Easting: 432662.00 ft	Longitude: 104 33 9.840 W
Position Uncertainty: 0.00 ft		

Wellpath: Original Hole

Current Datum: SITE	Height 0.00 ft	Drilled From: Surface	
Magnetic Data: 9/21/2005		Tie-on Depth: 0.00 ft	
Field Strength: 49524 nT		Above System Datum: Mean Sea Level	
Vertical Section: Depth From (TVD)		Declination: 8.76 deg	
ft	+N/-S ft	Mag Dip Angle: 60.78 deg	
		+E/-W ft	Direction deg
0.00	0.00	0.00	0.16

Survey: PathFinder ST Surveys

Start Date: 9/29/2005

Company: PathFinder Energy Services
Tool:

Engineer: Ron McIntyre
Tied-to: From: Definitive Path

Survey: PathFinder ST 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
4200.00	1.77	130.25	4199.59	-34.75	24.39	-34.68	0.00	0.00	0.00	Tie-In to SDI Gyro
4248.00	1.58	105.17	4247.57	-35.40	25.59	-35.33	1.56	-0.40	-52.25	Begin PathFinder MWD Survey
4692.00	54.52	358.65	4632.78	145.75	24.96	145.82	12.38	11.92	-23.99	Tie-In for ST1
4718.00	53.29	353.29	4648.10	166.69	23.50	166.76	17.31	-4.73	-20.62	
4761.00	59.53	349.24	4671.89	202.06	18.01	202.11	16.49	14.51	-9.42	
4793.00	65.16	350.50	4686.73	229.95	13.04	229.99	17.94	17.59	3.94	
4825.00	70.08	351.88	4698.91	259.19	8.52	259.21	15.88	15.37	4.31	
4856.00	75.18	352.67	4708.17	288.49	4.54	288.51	16.63	16.45	2.55	
4888.00	78.70	354.87	4715.40	319.48	1.16	319.48	12.88	11.00	6.87	
4920.00	81.87	357.95	4720.80	350.95	-0.81	350.94	13.72	9.91	9.62	
4952.00	84.42	0.41	4724.62	382.71	-1.26	382.70	11.03	7.97	7.69	
4984.00	86.53	0.41	4727.14	414.61	-1.03	414.60	6.59	6.59	0.00	
5015.00	86.97	0.58	4728.90	445.56	-0.76	445.55	1.52	1.42	0.55	
5047.00	88.81	0.14	4730.08	477.53	-0.56	477.53	5.91	5.75	-1.37	
5079.00	90.66	0.41	4730.22	509.53	-0.41	509.53	5.84	5.78	0.84	
5111.00	92.59	1.81	4729.32	541.51	0.21	541.51	7.45	6.03	4.37	
5143.00	92.77	2.08	4727.82	573.46	1.30	573.46	1.01	0.56	0.84	
5174.00	92.07	1.64	4726.51	604.41	2.30	604.42	2.67	-2.26	-1.42	
5206.00	92.33	1.20	4725.28	636.38	3.09	636.38	1.60	0.81	-1.37	
5238.00	91.19	1.11	4724.30	668.36	3.74	668.36	3.57	-3.56	-0.28	
5270.00	91.01	0.58	4723.69	700.35	4.21	700.36	1.75	-0.56	-1.66	
5302.00	91.19	0.85	4723.07	732.34	4.61	732.35	1.01	0.56	0.84	
5334.00	90.84	0.41	4722.51	764.33	4.96	764.34	1.76	-1.09	-1.37	
5365.00	89.60	359.35	4722.39	795.33	4.90	795.34	5.26	-4.00	-3.42	

PathFinder

Survey Report

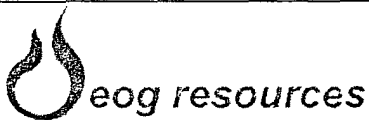
Company: EOG Resources	Date: 10/25/2005	Time: 16:14:03	Page: 2
Field: Thames Field	Co-ordinate(NE) Reference:	Site: Rio Grande 23 Federal #1	
Site: Rio Grande 23 Federal #1	Vertical (TVD) Reference:	SITE 0.0	
Well: Sec. 23 T16-S R24-E	Section (VS) Reference:	Well (0.00N,0.00E,0.16Azi)	
Wellpath: Original Hole	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: PathFinder ST 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
5397.00	88.99	358.39	4722.78	827.32	4.26	827.33	3.55	-1.91	-3.00	
5429.00	89.69	359.09	4723.15	859.31	3.56	859.32	3.09	2.19	2.19	
5492.00	90.31	359.26	4723.15	922.30	2.65	922.31	1.02	0.98	0.27	
5556.00	92.51	359.09	4721.57	986.27	1.73	986.27	3.45	3.44	-0.27	
5619.00	92.68	359.35	4718.72	1049.20	0.88	1049.20	0.49	0.27	0.41	
5683.00	92.95	359.00	4715.58	1113.12	-0.04	1113.11	0.69	0.42	-0.55	
5747.00	91.28	357.86	4713.22	1177.05	-1.80	1177.04	3.16	-2.61	-1.78	
5810.00	91.01	358.74	4711.96	1240.01	-3.67	1239.99	1.46	-0.43	1.40	
5873.00	91.98	359.61	4710.31	1302.98	-4.57	1302.96	2.07	1.54	1.38	
5936.00	87.23	358.91	4710.75	1365.95	-5.39	1365.93	7.62	-7.54	-1.11	
5999.00	88.55	359.35	4713.07	1428.90	-6.34	1428.88	2.21	2.10	0.70	
6063.00	88.72	359.35	4714.59	1492.88	-7.07	1492.85	0.27	0.27	0.00	
6126.00	89.25	0.49	4715.71	1555.87	-7.15	1555.84	2.00	0.84	1.81	
6190.00	89.25	0.85	4716.55	1619.86	-6.41	1619.83	0.56	0.00	0.56	
6253.00	90.13	1.46	4716.89	1682.84	-5.14	1682.82	1.70	1.40	0.97	
6317.00	89.25	0.76	4717.23	1746.83	-3.90	1746.81	1.76	-1.37	-1.09	
6381.00	89.52	1.11	4717.92	1810.82	-2.85	1810.80	0.69	0.42	0.55	
6443.00	90.75	1.55	4717.77	1872.80	-1.41	1872.79	2.11	1.98	0.71	
6506.00	90.48	1.46	4717.10	1935.77	0.24	1935.77	0.45	-0.43	-0.14	
6570.00	91.28	2.25	4716.11	1999.73	2.31	1999.73	1.76	1.25	1.23	
6633.00	90.22	1.50	4715.29	2062.69	4.37	2062.69	2.06	-1.68	-1.19	
6697.00	89.08	0.53	4715.68	2126.68	5.51	2126.68	2.34	-1.78	-1.52	
6759.00	89.34	359.56	4716.54	2188.67	5.56	2188.68	1.62	0.42	-1.56	
6823.00	89.43	359.74	4717.22	2252.67	5.16	2252.67	0.31	0.14	0.28	
6886.00	90.66	359.92	4717.17	2315.66	4.98	2315.67	1.97	1.95	0.29	
6950.00	91.71	0.62	4715.85	2379.65	5.28	2379.65	1.97	1.64	1.09	

Annotation

MD ft	TVD ft	
4200.00	4199.59	Tie-In to SDI Gyro
4248.00	4247.57	Begin PathFinder MWD Surveys
4692.00	4632.78	Tie-In for ST1



Rio Grande "23" Federal #1H Section 23, T16-S, R 24-E, N.M.P.M. Eddy County, New Mexico Final Plot

COMPANY DETAILS

LOG Resources
4000 N. Big Spring Ste. 500
Midland, TX 79705

Calculation Method Minimum Curvature
Error System Systematic Ellipse
Scan Method Closest Approach 3D
Error Surface Elliptical Cone
Warning Method Error Ratio

PATHFINDER
ENERGY SERVICES

1 FIG. 2ND

Proposed Subtrack Plan
Rio Grande 23 Federal #1, Sec. 23 T16-S, R24-E, Original Hole
Pathfinder ST Surveys

WELLPATH DETAILS

Original Hole
Rig Ref Datum McVay #4 SITE 0.000
V Section Angle Origin +N-S Origin +E-W Starting From TVD
0.16° 0.00 0.00 0.00

SITE DETAILS

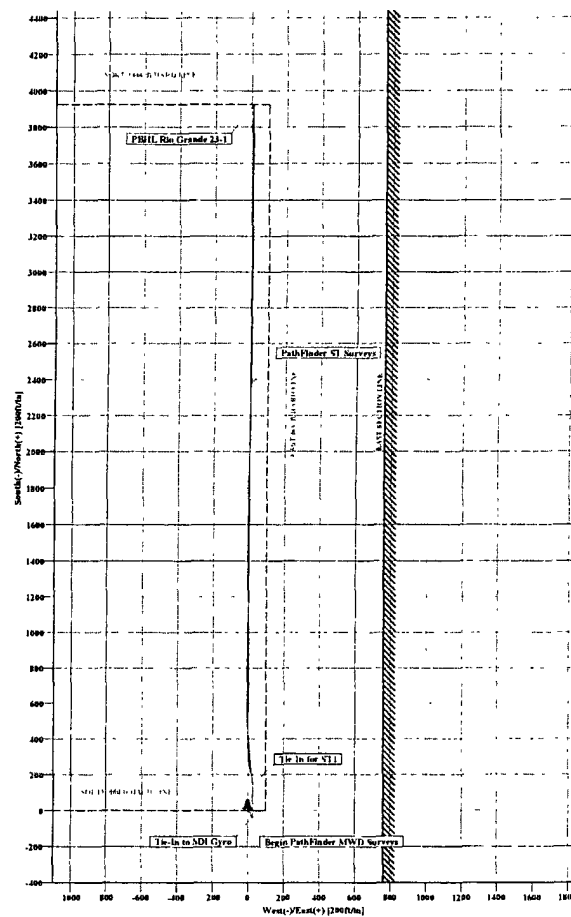
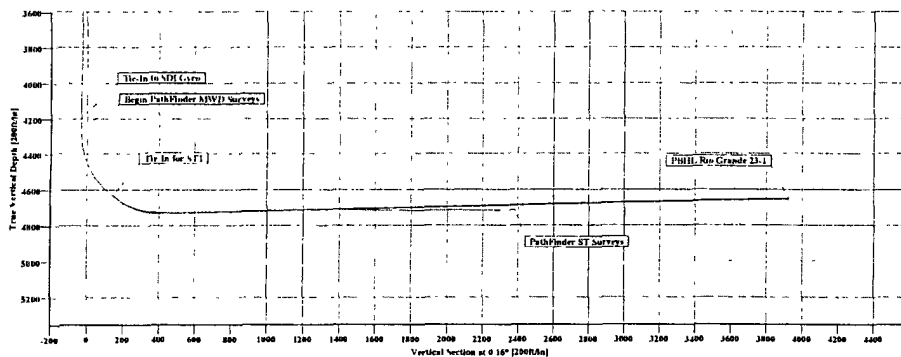
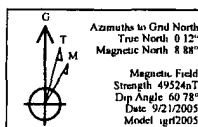
Rio Grande 23 Federal #1
Section 23 T16-S, R24-E
Site Centre Northing 692274.00
Easting 432662.00
Ground Level 3623.00
Positional Uncertainty 0.00
Convergence -0.12

ANNOTATIONS

No	TVD	MD	Annotation
1	4199.59	4200.00	Tie-In to SDI Gym
2	4247.57	4248.00	Begin Pathfinder MWD Surveys
3	4632.78	4692.00	Tie-In for ST1
4	4717.17	6886.00	Tie-In for ST2

WELL DETAILS

Name	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slor
Sec. 23 T16-S, R24-E	0.00	0.00	692274.00	432662.00	32°54'10.611N	104°31'09.840W	N/A



Survey: Pathfinder ST Surveys, Rio Grande 23 Federal #1, Sec. 23 T16-S, R24-E, Original Hole
Created By: Ray Wadsworth Date: 09/21/2005