

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

SEP 11 2017

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

☐ AMENDED REPORT
☒ AS DRILLED

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-24338	² Pool Code 71629	³ Pool Name Basin Fruitland Coal
⁴ Property Code 22045	⁵ Property Name SAN JUAN 32-5 UNIT NP	⁶ Well Number 101 H
⁷ OGRID No. 162928	⁸ Operator Name SOUTHLAND ROYALTY CO., LLC	⁹ Elevation 6404'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	23	32N	6W		2325'	NORTH	1010'	EAST	RIO ARriba

¹¹ Bottom Hole Location If Different From Surface

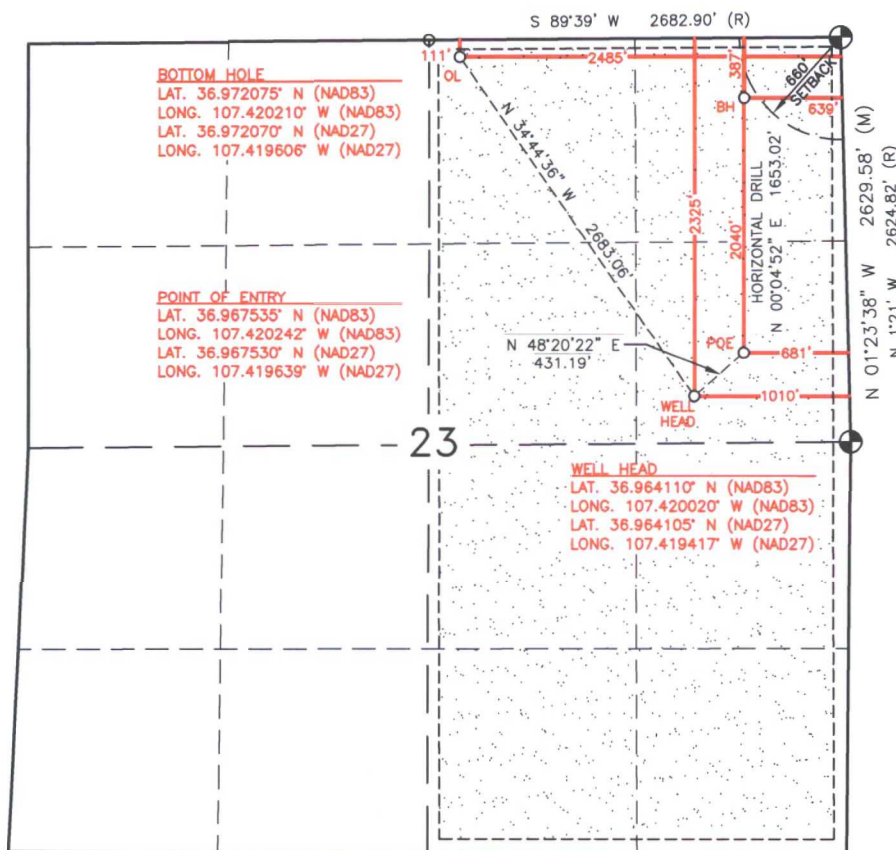
UL or lot no. BH: A OL: B	Section	Township	Range	Lot Idn	Feet from the BH: 387' OL: 111'	North/South line	Feet from the BH: 639' OL: 2485'	East/West line	County
	23	32N	6W			NORTH		EAST	RIO ARriba
¹² Dedicated Acres E/2 SEC. 23 (320 ACRES)			¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No.		

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16

FND 3" BC
BLM 1961

☐ CALC'D POSITION



17 OPERATOR CERTIFICATION

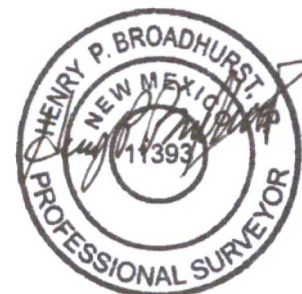
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Robbie A. Grigg
Signature Date
Robbie A. Grigg
Printed Name
rgrigg@mspartners.com
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
AUGUST 31, 2017

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number 11393

A

B

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State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

SOUTHLAND ROYALTY CO., LLC
SAN JUAN 32-5 UNIT NP #101

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

☒ AS DRILLED

WELL HEAD

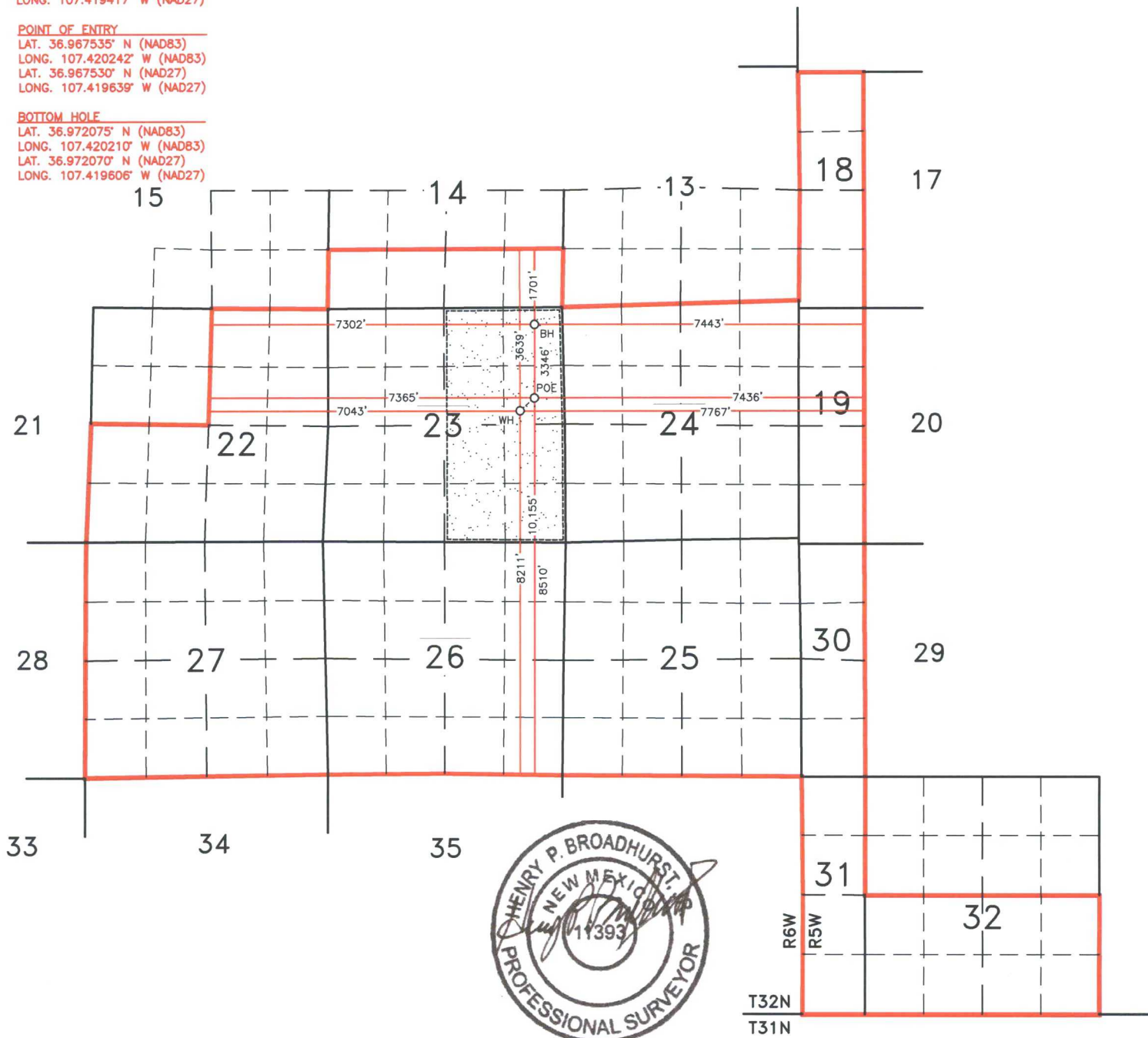
LAT. 36.964110° N (NAD83)
LONG. 107.420020° W (NAD83)
LAT. 36.964105° N (NAD27)
LONG. 107.419417° W (NAD27)

POINT OF ENTRY

LAT. 36.967535° N (NAD83)
LONG. 107.420242° W (NAD83)
LAT. 36.967530° N (NAD27)
LONG. 107.419639° W (NAD27)

BOTTOM HOLE

LAT. 36.972075° N (NAD83)
LONG. 107.420210° W (NAD83)
LAT. 36.972070° N (NAD27)
LONG. 107.419606° W (NAD27)



PENETRATED SPACING UNIT; E/2 SEC. 23 (320 ACRES),

TOTAL 4861.04 ACRES:

T32N R6W ALL SEC. 14, S/2 ¼ NE/4 SEC. 22, & ALL SEC. 23-27;
T32N R5W ALL SEC. 18, 19, 30, 31 & S/2 SEC. 32 - UNDIVIDED UNIT



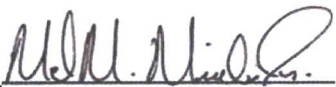
**Scientific
Drilling**

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Gyro Survey Certification

RE: _____	Southland Royalty Co.	Operator
_____	San Juan 32-5 NP 101	Well Name & No.
_____	Rio Arriba, NM	County & State
_____	OP.002303	SDI Job No.

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached Gyro survey run from a measured depth of 89 feet to a measured depth of 2665 feet is true and correct as determined from all available records.


Signature

01-Sep-17
Date

Mel Mireles Jr.
Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	Southland Royalty	Local Co-ordinate Reference:	Well San Juan 32-5 NP #101
Project:	Rio Arriba County, NM NAD 83	TVD Reference:	GL 6404' RKB 16' @ 6420.00usft (LF 4)
Site:	San Juan 32-5 Unit NP #101 Pad	MD Reference:	GL 6404' RKB 16' @ 6420.00usft (LF 4)
Well:	San Juan 32-5 NP #101	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Project	Rio Arriba County, NM NAD 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	San Juan 32-5 Unit NP #101 Pad				
Site Position:		Northing:	2,172,329.10 usft	Latitude:	36.8698993
From:	Map	Easting:	1,298,599.87 usft	Longitude:	-112.7016574
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-2.93 °

Well	San Juan 32-5 NP #101					
Well Position	+N/-S	0.00 usft	Northing:	2,172,329.10 usft	Latitude:	36.8698993
	+E/-W	0.00 usft	Easting:	1,298,599.87 usft	Longitude:	-112.7016574
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,404.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/1/2017	11.55	62.65	49,394

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	316.22	

Survey Program	Date 9/4/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
89.00	2,487.10	Survey #1 - Gyro Survey (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
89.00	0.26	28.17	89.00	0.18	0.10	0.06	0.29	0.29	0.00	
First SDI Gyro Survey										
111.43	0.19	122.48	111.43	0.20	0.15	0.04	1.49	-0.31	420.46	
138.00	0.19	18.02	138.00	0.22	0.20	0.02	1.13	0.00	-393.15	
161.82	0.08	273.66	161.82	0.26	0.20	0.05	0.94	-0.46	-438.12	
188.43	0.18	141.50	188.43	0.23	0.20	0.02	0.91	0.38	-496.66	
211.08	0.10	300.54	211.08	0.21	0.21	0.01	1.22	-0.35	702.16	
237.93	0.31	219.22	237.93	0.17	0.14	0.02	1.16	0.78	-302.87	
261.19	0.32	171.95	261.19	0.05	0.11	-0.04	1.09	0.04	-203.22	
288.11	0.30	212.31	288.11	-0.08	0.09	-0.12	0.80	-0.07	149.93	

Company: Southland Royalty
Project: Rio Arriba County, NM NAD 83
Site: San Juan 32-5 Unit NP #101 Pad
Well: San Juan 32-5 NP #101
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well San Juan 32-5 NP #101
TVD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
MD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
311.53	0.46	194.20	311.53	-0.22	0.03	-0.18	0.85	0.68	-77.33
338.34	0.35	174.14	338.34	-0.41	0.01	-0.30	0.66	-0.41	-74.82
361.08	0.25	191.96	361.08	-0.53	0.01	-0.39	0.60	-0.44	78.36
387.86	0.47	193.70	387.86	-0.69	-0.03	-0.48	0.82	0.82	6.50
411.26	0.53	160.65	411.26	-0.89	-0.02	-0.63	1.24	0.26	-141.24
437.95	0.32	171.96	437.94	-1.08	0.04	-0.80	0.84	-0.79	42.38
461.25	0.47	179.44	461.24	-1.24	0.05	-0.92	0.68	0.64	32.10
487.88	0.52	171.93	487.87	-1.47	0.06	-1.10	0.31	0.19	-28.20
513.77	0.37	174.65	513.76	-1.67	0.09	-1.26	0.58	-0.58	10.51
537.34	0.38	192.28	537.33	-1.82	0.08	-1.37	0.49	0.04	74.80
563.96	0.53	182.29	563.95	-2.03	0.05	-1.50	0.64	0.56	-37.53
587.33	0.49	164.94	587.32	-2.23	0.08	-1.66	0.68	-0.17	-74.24
610.76	0.42	176.62	610.75	-2.41	0.11	-1.82	0.49	-0.30	49.85
637.28	0.35	204.27	637.27	-2.58	0.08	-1.92	0.74	-0.26	104.26
663.98	0.49	197.07	663.97	-2.77	0.01	-2.01	0.56	0.52	-26.97
686.73	0.31	187.42	686.72	-2.92	-0.02	-2.09	0.84	-0.79	-42.42
713.33	0.22	209.89	713.32	-3.04	-0.06	-2.15	0.51	-0.34	84.47
736.63	0.13	291.71	736.62	-3.07	-0.11	-2.14	1.03	-0.39	351.16
763.13	0.26	260.09	763.12	-3.07	-0.19	-2.08	0.62	0.49	-119.32
785.95	0.31	235.92	785.94	-3.11	-0.30	-2.04	0.57	0.22	-105.92
811.47	0.20	247.26	811.46	-3.17	-0.39	-2.01	0.47	-0.43	44.44
837.57	0.14	252.69	837.56	-3.19	-0.47	-1.98	0.24	-0.23	20.80
863.59	0.30	331.83	863.58	-3.14	-0.53	-1.90	1.18	0.61	304.15
886.36	0.39	312.87	886.35	-3.04	-0.61	-1.77	0.63	0.40	-83.27
912.36	0.51	294.74	912.35	-2.93	-0.78	-1.57	0.71	0.46	-69.73
938.29	0.46	289.97	938.27	-2.84	-0.99	-1.37	0.25	-0.19	-18.40
961.06	0.43	294.15	961.04	-2.78	-1.15	-1.21	0.19	-0.13	18.36
986.31	0.38	294.85	986.29	-2.70	-1.31	-1.04	0.20	-0.20	2.77
1,012.45	0.33	315.72	1,012.43	-2.61	-1.44	-0.89	0.53	-0.19	79.84
1,038.50	0.47	325.72	1,038.48	-2.47	-1.56	-0.71	0.60	0.54	38.39
1,061.26	0.55	316.74	1,061.24	-2.31	-1.68	-0.51	0.50	0.35	-39.46
1,087.11	0.72	322.29	1,087.09	-2.10	-1.87	-0.22	0.70	0.66	21.47
1,112.96	0.69	305.63	1,112.94	-1.88	-2.09	0.09	0.80	-0.12	-64.45
1,138.98	0.73	307.75	1,138.96	-1.68	-2.35	0.41	0.18	0.15	8.15
1,161.07	0.59	309.30	1,161.04	-1.53	-2.55	0.66	0.64	-0.63	7.02
1,186.97	0.69	320.20	1,186.94	-1.32	-2.75	0.95	0.61	0.39	42.08
1,212.96	0.72	330.20	1,212.93	-1.06	-2.94	1.27	0.49	0.12	38.48
1,238.77	0.83	320.79	1,238.74	-0.77	-3.13	1.61	0.65	0.43	-36.46
1,261.47	0.85	321.25	1,261.44	-0.52	-3.34	1.94	0.09	0.09	2.03
1,287.26	0.93	319.76	1,287.22	-0.21	-3.60	2.34	0.32	0.31	-5.78
1,313.22	0.87	318.63	1,313.18	0.10	-3.86	2.75	0.24	-0.23	-4.35
1,338.89	0.81	313.46	1,338.85	0.37	-4.13	3.12	0.38	-0.23	-20.14
1,361.11	0.67	318.13	1,361.06	0.58	-4.33	3.41	0.69	-0.63	21.02

Company: Southland Royalty
Project: Rio Arriba County, NM NAD 83
Site: San Juan 32-5 Unit NP #101 Pad
Well: San Juan 32-5 NP #101
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well San Juan 32-5 NP #101
TVD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
MD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,387.05	0.66	330.11	1,387.00	0.82	-4.50	3.71	0.54	-0.04	46.18
1,412.79	0.63	334.85	1,412.74	1.08	-4.64	3.99	0.24	-0.12	18.41
1,438.54	0.89	343.76	1,438.49	1.40	-4.75	4.30	1.11	1.01	34.60
1,461.17	0.82	338.75	1,461.12	1.72	-4.86	4.60	0.45	-0.31	-22.14
1,487.09	0.92	331.62	1,487.03	2.07	-5.03	4.97	0.57	0.39	-27.51
1,513.34	0.89	327.67	1,513.28	2.43	-5.24	5.38	0.26	-0.11	-15.05
1,535.75	0.71	322.78	1,535.69	2.69	-5.41	5.69	0.86	-0.80	-21.82
1,562.13	0.58	342.33	1,562.07	2.95	-5.55	5.97	0.96	-0.49	74.11
1,588.31	0.49	337.23	1,588.25	3.18	-5.64	6.19	0.39	-0.34	-19.48
1,611.18	0.59	336.34	1,611.11	3.37	-5.72	6.39	0.44	0.44	-3.89
1,636.81	0.60	347.55	1,636.74	3.62	-5.80	6.63	0.46	0.04	43.74
1,662.62	0.69	342.27	1,662.55	3.90	-5.88	6.89	0.42	0.35	-20.46
1,688.17	0.70	331.98	1,688.10	4.19	-6.00	7.18	0.49	0.04	-40.27
1,710.30	0.61	329.08	1,710.23	4.41	-6.12	7.42	0.43	-0.41	-13.10
1,736.16	0.70	322.54	1,736.09	4.65	-6.29	7.71	0.45	0.35	-25.29
1,761.78	0.66	313.40	1,761.70	4.88	-6.49	8.01	0.45	-0.16	-35.68
1,787.37	0.51	314.09	1,787.29	5.06	-6.68	8.28	0.59	-0.59	2.70
1,813.15	0.40	292.22	1,813.07	5.17	-6.85	8.47	0.79	-0.43	-84.83
1,838.84	0.40	310.60	1,838.76	5.27	-7.00	8.64	0.50	0.00	71.55
1,861.37	0.52	311.32	1,861.29	5.38	-7.13	8.82	0.53	0.53	3.20
1,886.95	0.57	323.77	1,886.87	5.56	-7.30	9.07	0.50	0.20	48.67
1,912.07	0.66	314.40	1,911.99	5.77	-7.47	9.33	0.54	0.36	-37.30
1,937.64	0.75	298.31	1,937.56	5.95	-7.73	9.64	0.85	0.35	-62.93
1,963.39	0.77	293.82	1,963.30	6.10	-8.03	9.96	0.24	0.08	-17.44
1,985.78	0.59	297.17	1,985.69	6.21	-8.27	10.21	0.82	-0.80	14.96
2,011.50	0.64	286.94	2,011.41	6.31	-8.53	10.46	0.47	0.19	-39.77
2,037.04	0.49	292.79	2,036.95	6.40	-8.77	10.68	0.63	-0.59	22.91
2,062.66	0.46	314.37	2,062.57	6.51	-8.94	10.89	0.70	-0.12	84.23
2,087.64	0.61	309.67	2,087.55	6.67	-9.11	11.12	0.63	0.60	-18.82
2,113.26	0.69	308.03	2,113.17	6.85	-9.34	11.41	0.32	0.31	-6.40
2,138.99	0.66	295.99	2,138.89	7.01	-9.60	11.70	0.56	-0.12	-46.79
2,161.33	0.51	297.00	2,161.23	7.11	-9.80	11.91	0.67	-0.67	4.52
2,186.97	0.38	298.51	2,186.87	7.20	-9.98	12.10	0.51	-0.51	5.89
2,212.54	0.29	300.90	2,212.44	7.28	-10.11	12.25	0.36	-0.35	9.35
2,238.18	0.30	343.96	2,238.08	7.37	-10.18	12.37	0.85	0.04	167.94
2,263.56	0.40	349.71	2,263.46	7.53	-10.21	12.50	0.42	0.39	22.66
2,285.68	0.48	343.09	2,285.58	7.69	-10.26	12.65	0.43	0.36	-29.93
2,311.30	0.62	345.14	2,311.20	7.93	-10.32	12.87	0.55	0.55	8.00
2,337.33	0.62	333.10	2,337.23	8.19	-10.42	13.12	0.50	0.00	-46.25
2,363.58	0.73	333.57	2,363.48	8.46	-10.56	13.42	0.42	0.42	1.79
2,386.73	0.70	340.15	2,386.62	8.73	-10.67	13.69	0.38	-0.13	28.42
2,413.19	0.73	350.19	2,413.08	9.05	-10.76	13.98	0.49	0.11	37.94
2,435.48	0.63	353.48	2,435.37	9.31	-10.80	14.19	0.48	-0.45	14.76

SDI
Survey Report



Company:	Southland Royalty	Local Co-ordinate Reference:	Well San Juan 32-5 NP #101
Project:	Rio Arriba County, NM NAD 83	TVD Reference:	GL 6404' RKB 16' @ 6420.00usft (LF 4)
Site:	San Juan 32-5 Unit NP #101 Pad	MD Reference:	GL 6404' RKB 16' @ 6420.00usft (LF 4)
Well:	San Juan 32-5 NP #101	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,461.25	0.80	342.96	2,461.14	9.62	-10.87	14.46	0.83	0.66	-40.82
2,487.12	0.79	346.33	2,487.01	9.97	-10.96	14.78	0.18	-0.04	13.03
2,512.89	1.02	330.88	2,512.77	10.34	-11.11	15.16	1.29	0.89	-59.95
2,538.68	0.82	330.90	2,538.56	10.70	-11.32	15.56	0.78	-0.78	0.08
2,561.40	0.89	322.55	2,561.28	10.99	-11.50	15.89	0.63	0.31	-36.75
2,586.99	0.85	333.87	2,586.86	11.31	-11.71	16.27	0.69	-0.16	44.24
2,613.75	1.01	338.90	2,613.62	11.71	-11.88	16.67	0.67	0.60	18.80
2,637.84	0.99	345.38	2,637.71	12.11	-12.01	17.05	0.48	-0.08	26.90
2,665.42	1.13	355.55	2,665.28	12.61	-12.09	17.47	0.85	0.51	36.87
Last SDI Gyro Survey									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
89.00	89.00	0.18	0.10	First SDI Gyro Survey
2,665.42	2,665.28	12.61	-12.09	Last SDI Gyro Survey

Checked By: _____	Approved By: _____	Date: _____
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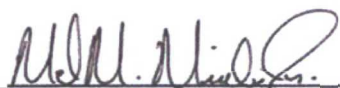
**Scientific
Drilling**

Gyro Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

RE: _____	Southland Royalty Co.	Operator
_____	San Juan 32-5 NP 101	Well Name & No.
_____	Rio Arriba, NM	County & State
_____	OP.004010	SDI Job No.

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached Gyro survey run from a measured depth of 4464 feet to a measured depth of 4946 feet is true and correct as determined from all available records.


Signature

04-Sep-17
Date

Mel Mireles Jr.
Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

SDI
Survey Report



Company:	Southland Royalty	Local Co-ordinate Reference:	Well San Juan 32-5 NP #101
Project:	Rio Arriba County, NM NAD 83	TVD Reference:	GL 6404' RKB 16' @ 6420.00usft (LF 4)
Site:	San Juan 32-5 Unit NP #101 Pad	MD Reference:	GL 6404' RKB 16' @ 6420.00usft (LF 4)
Well:	San Juan 32-5 NP #101	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Project	Rio Arriba County, NM NAD 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	San Juan 32-5 Unit NP #101 Pad				
Site Position:		Northing:	2,172,329.10 usft	Latitude:	36.8698993
From:	Map	Easting:	1,298,599.87 usft	Longitude:	-112.7016574
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-2.93 °

Well	San Juan 32-5 NP #101					
Well Position	+N/-S	0.00 usft	Northing:	2,172,329.10 usft	Latitude:	36.8698993
	+E/-W	0.00 usft	Easting:	1,298,599.87 usft	Longitude:	-112.7016574
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,404.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/1/2017	11.55	62.65	49,394

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	316.22	

Survey Program	Date	9/4/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
89.00	2,487.10	Survey #1 - Gyro Survey (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
2,577.00	4,464.00	Survey #2 - Payzone MWD Survey (OH)	MWD	MWD - Standard	
4,757.81	4,946.25	Survey #3 - Gyro Survey (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
89.00	0.26	28.17	89.00	0.18	0.10	0.06	0.29	0.29	0.00	
First SDI Gyro Survey										
111.43	0.19	122.48	111.43	0.20	0.15	0.04	1.49	-0.31	420.46	
138.00	0.19	18.02	138.00	0.22	0.20	0.02	1.13	0.00	-393.15	
161.82	0.08	273.66	161.82	0.26	0.20	0.05	0.94	-0.46	-438.12	
188.43	0.18	141.50	188.43	0.23	0.20	0.02	0.91	0.38	-496.66	
211.08	0.10	300.54	211.08	0.21	0.21	0.01	1.22	-0.35	702.16	
237.93	0.31	219.22	237.93	0.17	0.14	0.02	1.16	0.78	-302.87	

Company: Southland Royalty
Project: Rio Arriba County, NM NAD 83
Site: San Juan 32-5 Unit NP #101 Pad
Well: San Juan 32-5 NP #101
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well San Juan 32-5 NP #101
TVD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
MD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
261.19	0.32	171.95	261.19	0.05	0.11	-0.04	1.09	0.04	-203.22
288.11	0.30	212.31	288.11	-0.08	0.09	-0.12	0.80	-0.07	149.93
311.53	0.46	194.20	311.53	-0.22	0.03	-0.18	0.85	0.68	-77.33
338.34	0.35	174.14	338.34	-0.41	0.01	-0.30	0.66	-0.41	-74.82
361.08	0.25	191.96	361.08	-0.53	0.01	-0.39	0.60	-0.44	78.36
387.86	0.47	193.70	387.86	-0.69	-0.03	-0.48	0.82	0.82	6.50
411.26	0.53	160.65	411.26	-0.89	-0.02	-0.63	1.24	0.26	-141.24
437.95	0.32	171.96	437.94	-1.08	0.04	-0.80	0.84	-0.79	42.38
461.25	0.47	179.44	461.24	-1.24	0.05	-0.92	0.68	0.64	32.10
487.88	0.52	171.93	487.87	-1.47	0.06	-1.10	0.31	0.19	-28.20
513.77	0.37	174.65	513.76	-1.67	0.09	-1.26	0.58	-0.58	10.51
537.34	0.38	192.28	537.33	-1.82	0.08	-1.37	0.49	0.04	74.80
563.96	0.53	182.29	563.95	-2.03	0.05	-1.50	0.64	0.56	-37.53
587.33	0.49	164.94	587.32	-2.23	0.08	-1.66	0.68	-0.17	-74.24
610.76	0.42	176.62	610.75	-2.41	0.11	-1.82	0.49	-0.30	49.85
637.28	0.35	204.27	637.27	-2.58	0.08	-1.92	0.74	-0.26	104.26
663.98	0.49	197.07	663.97	-2.77	0.01	-2.01	0.56	0.52	-26.97
686.73	0.31	187.42	686.72	-2.92	-0.02	-2.09	0.84	-0.79	-42.42
713.33	0.22	209.89	713.32	-3.04	-0.06	-2.15	0.51	-0.34	84.47
736.63	0.13	291.71	736.62	-3.07	-0.11	-2.14	1.03	-0.39	351.16
763.13	0.26	260.09	763.12	-3.07	-0.19	-2.08	0.62	0.49	-119.32
785.95	0.31	235.92	785.94	-3.11	-0.30	-2.04	0.57	0.22	-105.92
811.47	0.20	247.26	811.46	-3.17	-0.39	-2.01	0.47	-0.43	44.44
837.57	0.14	252.69	837.56	-3.19	-0.47	-1.98	0.24	-0.23	20.80
863.59	0.30	331.83	863.58	-3.14	-0.53	-1.90	1.18	0.61	304.15
886.36	0.39	312.87	886.35	-3.04	-0.61	-1.77	0.63	0.40	-83.27
912.36	0.51	294.74	912.35	-2.93	-0.78	-1.57	0.71	0.46	-69.73
938.29	0.46	289.97	938.27	-2.84	-0.99	-1.37	0.25	-0.19	-18.40
961.06	0.43	294.15	961.04	-2.78	-1.15	-1.21	0.19	-0.13	18.36
986.31	0.38	294.85	986.29	-2.70	-1.31	-1.04	0.20	-0.20	2.77
1,012.45	0.33	315.72	1,012.43	-2.61	-1.44	-0.89	0.53	-0.19	79.84
1,038.50	0.47	325.72	1,038.48	-2.47	-1.56	-0.71	0.60	0.54	38.39
1,061.26	0.55	316.74	1,061.24	-2.31	-1.68	-0.51	0.50	0.35	-39.46
1,087.11	0.72	322.29	1,087.09	-2.10	-1.87	-0.22	0.70	0.66	21.47
1,112.96	0.69	305.63	1,112.94	-1.88	-2.09	0.09	0.80	-0.12	-64.45
1,138.98	0.73	307.75	1,138.96	-1.68	-2.35	0.41	0.18	0.15	8.15
1,161.07	0.59	309.30	1,161.04	-1.53	-2.55	0.66	0.64	-0.63	7.02
1,186.97	0.69	320.20	1,186.94	-1.32	-2.75	0.95	0.61	0.39	42.08
1,212.96	0.72	330.20	1,212.93	-1.06	-2.94	1.27	0.49	0.12	38.48
1,238.77	0.83	320.79	1,238.74	-0.77	-3.13	1.61	0.65	0.43	-36.46
1,261.47	0.85	321.25	1,261.44	-0.52	-3.34	1.94	0.09	0.09	2.03
1,287.26	0.93	319.76	1,287.22	-0.21	-3.60	2.34	0.32	0.31	-5.78
1,313.22	0.87	318.63	1,313.18	0.10	-3.86	2.75	0.24	-0.23	-4.35

Company: Southland Royalty
Project: Rio Arriba County, NM NAD 83
Site: San Juan 32-5 Unit NP #101 Pad
Well: San Juan 32-5 NP #101
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well San Juan 32-5 NP #101
TVD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
MD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,338.89	0.81	313.46	1,338.85	0.37	-4.13	3.12	0.38	-0.23	-20.14
1,361.11	0.67	318.13	1,361.06	0.58	-4.33	3.41	0.69	-0.63	21.02
1,387.05	0.66	330.11	1,387.00	0.82	-4.50	3.71	0.54	-0.04	46.18
1,412.79	0.63	334.85	1,412.74	1.08	-4.64	3.99	0.24	-0.12	18.41
1,438.54	0.89	343.76	1,438.49	1.40	-4.75	4.30	1.11	1.01	34.60
1,461.17	0.82	338.75	1,461.12	1.72	-4.86	4.60	0.45	-0.31	-22.14
1,487.09	0.92	331.62	1,487.03	2.07	-5.03	4.97	0.57	0.39	-27.51
1,513.34	0.89	327.67	1,513.28	2.43	-5.24	5.38	0.26	-0.11	-15.05
1,535.75	0.71	322.78	1,535.69	2.69	-5.41	5.69	0.86	-0.80	-21.82
1,562.13	0.58	342.33	1,562.07	2.95	-5.55	5.97	0.96	-0.49	74.11
1,588.31	0.49	337.23	1,588.25	3.18	-5.64	6.19	0.39	-0.34	-19.48
1,611.18	0.59	336.34	1,611.11	3.37	-5.72	6.39	0.44	0.44	-3.89
1,636.81	0.60	347.55	1,636.74	3.62	-5.80	6.63	0.46	0.04	43.74
1,662.62	0.69	342.27	1,662.55	3.90	-5.88	6.89	0.42	0.35	-20.46
1,688.17	0.70	331.98	1,688.10	4.19	-6.00	7.18	0.49	0.04	-40.27
1,710.30	0.61	329.08	1,710.23	4.41	-6.12	7.42	0.43	-0.41	-13.10
1,736.16	0.70	322.54	1,736.09	4.65	-6.29	7.71	0.45	0.35	-25.29
1,761.78	0.66	313.40	1,761.70	4.88	-6.49	8.01	0.45	-0.16	-35.68
1,787.37	0.51	314.09	1,787.29	5.06	-6.68	8.28	0.59	-0.59	2.70
1,813.15	0.40	292.22	1,813.07	5.17	-6.85	8.47	0.79	-0.43	-84.83
1,838.84	0.40	310.60	1,838.76	5.27	-7.00	8.64	0.50	0.00	71.55
1,861.37	0.52	311.32	1,861.29	5.38	-7.13	8.82	0.53	0.53	3.20
1,886.95	0.57	323.77	1,886.87	5.56	-7.30	9.07	0.50	0.20	48.67
1,912.07	0.66	314.40	1,911.99	5.77	-7.47	9.33	0.54	0.36	-37.30
1,937.64	0.75	298.31	1,937.56	5.95	-7.73	9.64	0.85	0.35	-62.93
1,963.39	0.77	293.82	1,963.30	6.10	-8.03	9.96	0.24	0.08	-17.44
1,985.78	0.59	297.17	1,985.69	6.21	-8.27	10.21	0.82	-0.80	14.96
2,011.50	0.64	286.94	2,011.41	6.31	-8.53	10.46	0.47	0.19	-39.77
2,037.04	0.49	292.79	2,036.95	6.40	-8.77	10.68	0.63	-0.59	22.91
2,062.66	0.46	314.37	2,062.57	6.51	-8.94	10.89	0.70	-0.12	84.23
2,087.64	0.61	309.67	2,087.55	6.67	-9.11	11.12	0.63	0.60	-18.82
2,113.26	0.69	308.03	2,113.17	6.85	-9.34	11.41	0.32	0.31	-6.40
2,138.99	0.66	295.99	2,138.89	7.01	-9.60	11.70	0.56	-0.12	-46.79
2,161.33	0.51	297.00	2,161.23	7.11	-9.80	11.91	0.67	-0.67	4.52
2,186.97	0.38	298.51	2,186.87	7.20	-9.98	12.10	0.51	-0.51	5.89
2,212.54	0.29	300.90	2,212.44	7.28	-10.11	12.25	0.36	-0.35	9.35
2,238.18	0.30	343.96	2,238.08	7.37	-10.18	12.37	0.85	0.04	167.94
2,263.56	0.40	349.71	2,263.46	7.53	-10.21	12.50	0.42	0.39	22.66
2,285.68	0.48	343.09	2,285.58	7.69	-10.26	12.65	0.43	0.36	-29.93
2,311.30	0.62	345.14	2,311.20	7.93	-10.32	12.87	0.55	0.55	8.00
2,337.33	0.62	333.10	2,337.23	8.19	-10.42	13.12	0.50	0.00	-46.25
2,363.58	0.73	333.57	2,363.48	8.46	-10.56	13.42	0.42	0.42	1.79
2,386.73	0.70	340.15	2,386.62	8.73	-10.67	13.69	0.38	-0.13	28.42
2,413.19	0.73	350.19	2,413.08	9.05	-10.76	13.98	0.49	0.11	37.94

SDI
Survey Report



Company: Southland Royalty
Project: Rio Arriba County, NM NAD 83
Site: San Juan 32-5 Unit NP #101 Pad
Well: San Juan 32-5 NP #101
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well San Juan 32-5 NP #101
TVD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
MD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,435.48	0.63	353.48	2,435.37	9.31	-10.80	14.19	0.48	-0.45	14.76
2,461.25	0.80	342.96	2,461.14	9.62	-10.87	14.46	0.83	0.66	-40.82
2,487.12	0.79	346.33	2,487.01	9.97	-10.96	14.78	0.18	-0.04	13.03
2,577.00	15.64	114.35	2,575.81	5.55	0.00	4.00	17.96	16.52	142.43
First Payzone MWD Survey									
2,603.00	21.75	107.93	2,600.43	2.61	7.79	-3.50	24.76	23.50	-24.69
2,634.00	28.78	106.00	2,628.44	-1.22	20.44	-15.02	22.83	22.68	-6.23
2,666.00	33.44	102.92	2,655.83	-5.31	36.45	-29.06	15.38	14.56	-9.63
2,697.00	35.99	102.48	2,681.31	-9.19	53.67	-43.77	8.27	8.23	-1.42
2,727.00	37.22	101.07	2,705.40	-12.84	71.18	-58.52	4.97	4.10	-4.70
2,757.00	39.68	96.59	2,728.89	-15.68	89.61	-73.32	12.38	8.20	-14.93
2,816.00	39.90	86.40	2,774.28	-16.66	127.25	-100.07	11.05	0.37	-17.27
2,848.00	42.23	76.82	2,798.43	-13.56	147.98	-112.18	20.95	7.28	-29.94
2,879.00	44.78	69.70	2,820.92	-7.39	168.38	-121.84	17.81	8.23	-22.97
2,908.00	45.79	63.46	2,841.34	0.80	187.27	-129.00	15.68	3.48	-21.52
2,939.00	45.97	55.63	2,862.94	12.07	206.42	-134.12	18.13	0.58	-25.26
2,970.00	46.63	47.37	2,884.37	26.00	223.93	-136.17	19.37	2.13	-26.65
3,000.00	49.17	41.22	2,904.50	41.94	239.44	-135.40	17.40	8.47	-20.50
3,031.00	51.90	35.42	2,924.21	60.71	254.25	-132.09	16.91	8.81	-18.71
3,062.00	54.23	30.67	2,942.84	81.48	267.74	-126.43	14.37	7.52	-15.32
3,093.00	57.22	24.87	2,960.31	104.14	279.64	-118.31	18.22	9.65	-18.71
3,125.00	61.88	20.74	2,976.53	129.56	290.31	-107.34	18.32	14.56	-12.91
3,156.00	68.03	16.70	2,989.65	156.15	299.29	-94.36	23.08	19.84	-13.03
3,187.00	74.09	13.62	2,999.71	184.44	306.94	-79.23	21.69	19.55	-9.94
3,219.00	79.80	10.28	3,006.93	214.92	313.38	-61.68	20.53	17.84	-10.44
3,249.00	81.69	7.38	3,011.76	244.17	317.92	-43.70	11.43	6.30	-9.67
3,281.00	82.79	4.83	3,016.08	275.70	321.29	-23.28	8.61	3.44	-7.97
3,354.00	90.75	2.20	3,020.19	348.38	325.75	26.11	11.48	10.90	-3.60
3,416.00	89.91	2.90	3,019.83	410.32	328.51	68.92	1.76	-1.35	1.13
3,478.00	89.52	1.41	3,020.14	472.27	330.84	112.03	2.48	-0.63	-2.40
3,539.00	89.47	359.30	3,020.68	533.26	331.22	155.81	3.46	-0.08	-3.46
3,601.00	90.75	359.03	3,020.56	595.25	330.32	201.19	2.11	2.06	-0.44
3,663.00	90.31	359.30	3,019.99	657.25	329.41	246.57	0.83	-0.71	0.44
3,724.00	89.60	359.30	3,020.04	718.24	328.67	291.12	1.16	-1.16	0.00
3,785.00	89.21	359.12	3,020.67	779.23	327.83	335.73	0.70	-0.64	-0.30
3,846.00	92.11	2.20	3,019.97	840.21	328.53	379.27	6.93	4.75	5.05
3,908.00	92.50	1.67	3,017.47	902.12	330.62	422.52	1.06	0.63	-0.85
3,969.00	90.53	358.94	3,015.86	963.09	330.94	466.32	5.52	-3.23	-4.48
4,031.00	89.25	357.10	3,015.98	1,025.05	328.80	512.53	3.62	-2.06	-2.97
4,093.00	88.99	357.19	3,016.93	1,086.97	325.71	559.37	0.44	-0.42	0.15
4,156.00	91.80	359.03	3,016.50	1,149.92	323.64	606.25	5.33	4.46	2.92
4,218.00	92.68	359.21	3,014.07	1,211.87	322.69	651.63	1.45	1.42	0.29
4,280.00	91.27	358.33	3,011.94	1,273.81	321.36	697.28	2.68	-2.27	-1.42

Company: Southland Royalty
Project: Rio Arriba County, NM NAD 83
Site: San Juan 32-5 Unit NP #101 Pad
Well: San Juan 32-5 NP #101
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well San Juan 32-5 NP #101
TVD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
MD Reference: GL 6404' RKB 16' @ 6420.00usft (LF 4)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,340.00	91.45	359.12	3,010.51	1,333.78	320.02	741.49	1.35	0.30	1.32
4,403.00	90.88	358.68	3,009.23	1,396.76	318.81	787.80	1.14	-0.90	-0.70
4,464.00	91.58	359.38	3,007.92	1,457.73	317.78	832.53	1.62	1.15	1.15
Last Payzone MWD Survey									
4,757.81	90.71	0.25	3,002.05	1,751.48	316.83	1,045.26	0.42	-0.30	0.30
First SDI Gyro Survey									
4,822.23	91.59	1.97	3,000.76	1,815.87	318.08	1,090.88	3.00	1.37	2.67
4,886.65	92.08	3.09	2,998.69	1,880.19	320.92	1,135.36	1.90	0.76	1.74
4,946.25	93.47	3.86	2,995.81	1,939.61	324.53	1,175.76	2.67	2.33	1.29
Last SDI Gyro Survey									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
89.00	89.00	0.18	0.10	First SDI Gyro Survey
2,577.00	2,575.81	5.55	0.00	First Payzone MWD Survey
4,464.00	3,007.92	1,457.73	317.78	Last Payzone MWD Survey
4,757.81	3,002.05	1,751.48	316.83	First SDI Gyro Survey
4,946.25	2,995.81	1,939.61	324.53	Last SDI Gyro Survey

Checked By: _____ Approved By: _____ Date: _____