

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

MAY 11 2017

5. Lease Serial No.
NMSF079011

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.

SAN JUAN 32-5 UNIT COM 114

2. Name of Operator

SOUTHLAND ROYALTY COMPANY LLC

Contact: ROBBIE A GRIGG

Email: rgrigg@mspartners.com

9. API Well No.

30-039-29790

3a. Address

400 WEST 7TH STREET
FORT WORTH, TX 76102

3b. Phone No. (include area code)

Ph: 817-334-7842

Fx: 817-334-7889

10. Field and Pool or Exploratory Area
BASIN FRUITLAND COAL

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 24 T32N R6W Mer NMP NENW 1345FNL 225FWL
36.969424 N Lat, 107.417258 W Lon

11. County or Parish, State

RIO ARRIBA COUNTY, NM

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input checked="" type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Southland Royalty Company LLC would like to recomple San Juan 32-5 Unit Com 114 by drilling a horizontal lateral off of the existing directional mainbore as indicated on the proposed attached C-102 and directional well plan.

The existing directional well has two existing laterals in the Fruitland Coal.

4554'MD - 6741'MD & 4393'MD - 7672'MD.

A cast iron bridge plug will be set at approx. 4,500' in the mainbore isolating Lateral #1.

A composite bridge plug will be set at approx. 3451' in the mainbore isolated lateral #2 and to serve as a base for the whipstock assembly.

A window will be milled in the existing 7" casing from 3431'-3440'MD.

The lateral will be drilled to 9089'MD, 3100'TVD.

A 2.875" 6.5 ppf, J-55 pre-perforated liner will be ran and set from 3440'- 9089'.

A 2.375" production tubing string will be run to 3430'in the mainbore 7" casing.

OIL CONS. DIV DIST. 3

MAY 15 2017

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #375749 verified by the BLM Well Information System
For SOUTHLAND ROYALTY COMPANY LLC, sent to the Farmington

Name (Printed/Typed) ROBBIE A GRIGG

Title SUPVR REGULATORY REPORTING

Signature (Electronic Submission)

Date 05/10/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Troy SalyersTitle EngineerDate 5/11/17

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office FFO

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

NMOCD

DISTRICT I

1625 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-6161 Fax: (505) 393-0720

DISTRICT II

311 S. First St., Artesia, N.M. 86210
Phone: (505) 746-1283 Fax: (505) 746-9720

DISTRICT III

1000 Rio Branson Rd., Aztec, N.M. 87410
Phone: (505) 334-6176 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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-039-29790		*Pool Code		*Pool Name Basin Fruitland Coal	
*Property Code 35674		*Property Name SAN JUAN 32-5 UNIT COM			*Well Number 114
*OGRID No. 282327		*Operator Name SOUTHLAND ROYALTY CO., LLC			*Elevation 6475'

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
E	24	32N	6W		1359'	NORTH	205'	WEST	RIO ARRIBA

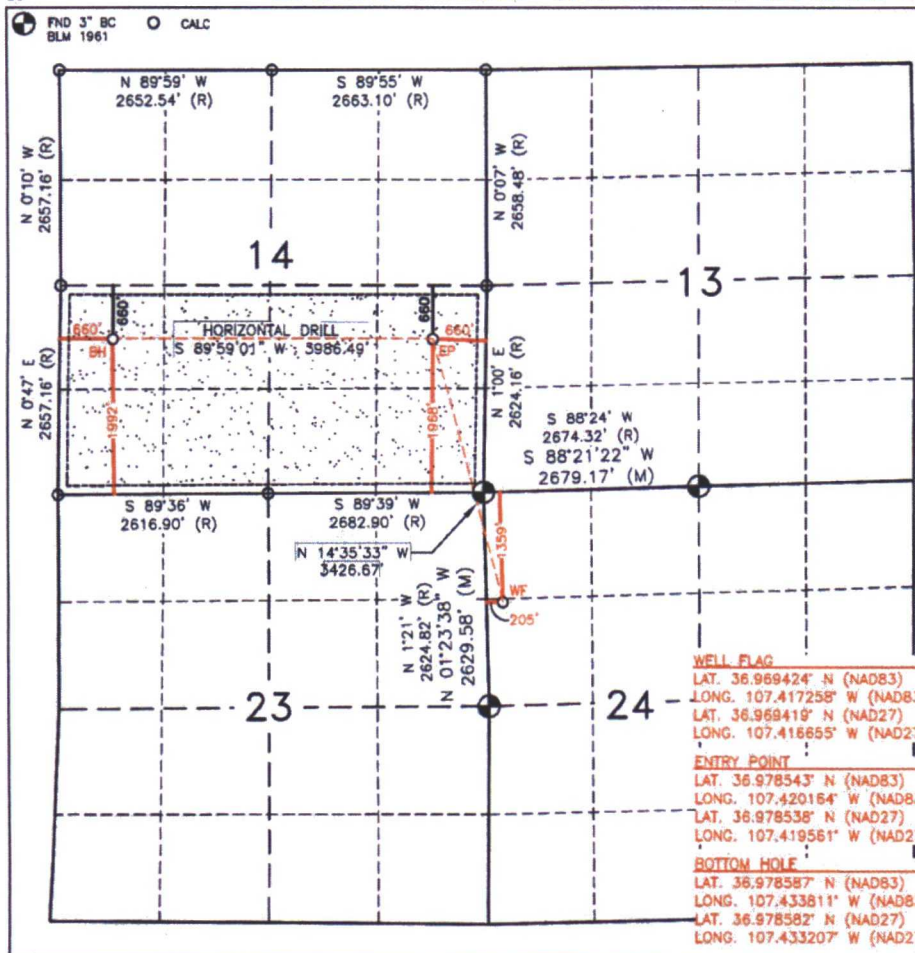
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	14	32N	6W		1992'	SOUTH	660'	WEST	SAN JUAN

*Dedicated Acres 320 ACRES - S/2		*Joint or Infill		*Consolidation Code		*Order No.	
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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



18 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.

Signature: *Robbie A. Grigg* Date: 4/20/17

Printed Name: Robbie A Grigg

E-mail Address: rgrigg@mspartners.com

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.

APRIL 14, 2017

Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number

11393

AS DRILLED

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-039-29790	Pool Code 71629	Pool Name Basin Fruitland Coal
Property Code	Property Name San Juan 32-5 Unit Com	Well Number 114
OGRID No. 162928	Operator Name Energen Resources Corporation	Elevation 6472'

10 Surface Location

UL or lot no. E	Section 24	Township 32N	Range 6W	Lot Idn	Feet from the 1345	North/South line North	Feet from the 225	East/West line West	County Rio Arriba
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11 Bottom Hole Location If Different From Surface

UL or lot no. K	Section 14	Township 32N	Range 6W	Lot Idn	Feet from the LL: 1315 UL: 1636	North/South line South	Feet from the LL: 2257 UL: 1373	East/West line West	County San Juan
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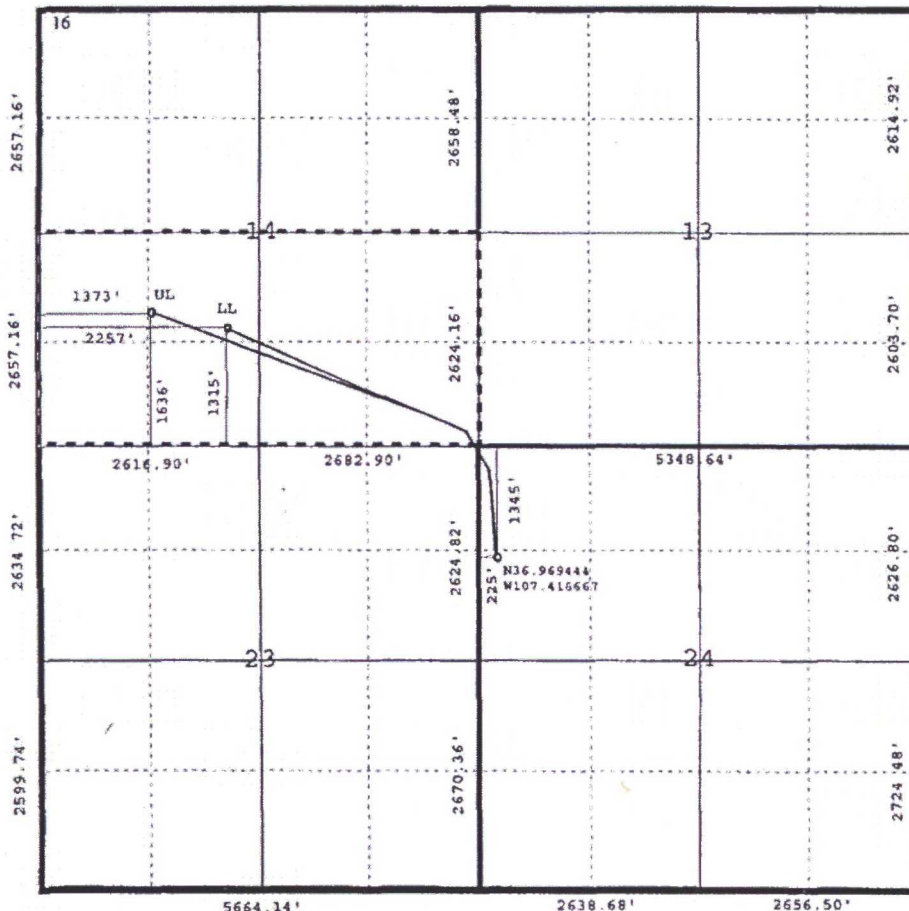
Dedicated Acres S/2	Joint or Infill	Consolidation Code	Order No.
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RCVD OCT 15 '05
OIL CONS DIV

DIST. 3

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.

2652.54' 2663.10' 5296.50'



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.

Signature: *Nathan Smith* Date: 10/11/07

Printed Name: Nathan Smith

18 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.

September 27, 2004

Date of Survey

Signature and Seal of Professional Surveyor.

Original survey conducted and recorded by Jason C. Edwards

15269

Certificate Number

**Application for Permit to Drill
Drilling Plan
REVISED: 04/18/2017**

SOUTHLAND ROYALTY COMPANY LLC

SAN JUAN 32-5 UNIT COM #114

Re-enter Existing Well

API No. 30-039-29790

Originally Drilled September 25, 2007

Existing Well Surface Location: 1345' FNL & 225' FWL

Section 24, T32N, R06W

Existing Well GL Elev = 6472'

Lat. = 36.96945° N

Long. = 107.41667° W

NAD83

Rio Arriba County, New Mexico

Existing Well Bottomhole Location (Pilot): 869' FSL & 1111' FEL

Section 6, T32N, R06W

TD – 4773'MD/3202'TVD

Existing Lower Casing Window – 4545'-53'MD

Existing Well Lower Lateral #1 - Location: 1315' FSL & 2257' FWL

Section 14, T32N, R06W

TD – 6741'MD/3143'TVD

Existing Upper Casing Window – 4384'-93'MD

Existing Well Upper Lateral #2 - Location: 1636' FSL & 1373' FWL

Section 14, T32N, R06W

TD – 7672'MD/3024'TVD

Proposed Casing Window – 3431'-40'MD

Proposed New Lateral #3 - Location: 660' FNL & 660' FWL

Section 14, T32N, R06W

TD – 9089'MD/3100'TVD

Drilling program written in compliance with onshore Oil and Gas Order No. 1
(III.D.3, effective May 2007) and Onshore Order No. 2 Dated November 18, 1988

A. Names and estimated tops of all geologic groups, formations, members or zones.

Depths referenced to GL of 6472' & RKB 15' @ 6487' - Pilot Hole		
Marker	TVD	MD
San Jose	0	0
Nacimiento	1027'	1028.06'
Ojo Alamo Ss	2397'	2925.1'
Kirtland Sh	2,507'	3,185.33'
Fruitland Fm	2,957'	4,231.74'
Top Fruitland Coal	3,082'	4,497.47'
Target Coal Base 1	3,102'	4,541.6'
Target Coal Base 2	3,162'	4,679.01'
Pictured Cliffs Ss	3,167'	4,690.45'
LAT #3 TOTAL DEPTH:	3,100'	9,653'
Original Pilot Well TD:	3,203'	4,773'

- B. Estimated depth and thickness of formations, members or zones potentially containing useable water, oil, gas or prospectively valuable deposits of other minerals that the operator expects to encounter, and the operator's plans for protecting such resources.**

Depths referenced to GL of 6472' & RKB 15' @ 6487' - Pilot Hole			
Marker	TVD	MD	
San Jose	0	0	Water - usable
Nacimiento	1027'	1028.06'	Water - usable
Ojo Alamo Ss	2397'	2925.1'	Water
Kirtland Sh	2,507'	3,185.33'	Gas & Water
Fruitland Fm	2,957'	4,231.74'	Gas & Water
Top Fruitland Coal	3,082'	4,497.47'	Gas, Water & Coal
Target Coal Base 1	3,102'	4,541.6'	Gas, Water & Coal
Target Coal Base 2	3,162'	4,679.01'	Gas, Water & Coal
Pictured Cliffs Ss	3,167'	4,690.45'	Gas, Water & Coal
LAT #3 TOTAL DEPTH:	3,100'	9,653'	Gas & Water
Original Pilot Well TD:	3,203'	4,773'	Gas & Water

Conductor: No conductor casing is necessary and none was set.

Surface Casing: Protection of shallow fresh water shall be accomplished by setting surface casing 50' below known fresh water sources and cemented to surface with 9-5/8" surface casing.

Surface casing - 9-5/8" 32.3 ppf, H-40 was set at 202' and 8 bbls of cement was circulated to surface in 2007.

Possible Aquifers: Base 150'

Production Casing: Protection for all other formations will be accomplished by setting 7" casing and cementing to surface. The 7" production casing will be fracture stimulated prior to re-entry for the lateral open hole section.

Production casing - 7" 23 ppf, J-55 was set at 4,763' MD/3203'TVD – TD is 4,773' MD in 2007 and 80 bbls of cement was circulated to the surface in 2007.

Production Liner: Will be pre-perforated, uncemented, unstimulated liners to maintain hole stability.

C. The operator's minimum specifications for blowout prevention equipment and diverter systems to be used, including size, pressure rating, configuration and the testing procedure and frequency. Blowout prevention equipment must meet the minimum standards outlined in Order 2.

BOP equipment and accessories will meet or exceed BLM requirements outlined in 43 CFR Part 3160.

The working pressure of all BOPE shall exceed the anticipated surface pressure to which it may be subjected, assuming a partially evacuated hole with a pressure gradient of 0.22 psi/ft.

Expected Maximum Bottom Hole pressure = 1287 psi, which is less than 2,000 psi working pressure. Therefore, a 2000 psi Class 2 BOPE system is required that consists of the following:

- 2 preventers with either double ram (blind and pipe) or annular preventer and blind rams.
- Kill line (2" minimum)
- 1 Kill line valve (2" minimum)
- 1 choke line valve
- 2 chokes (refer to diagram in Attachment 1)
- Upper Kelly cock valve with handle available
- Safety valve and subs to fit all drill strings in use
- Pressure gauge on choke manifold
- 2" minimum choke manifold
- Fill-up line above the uppermost preventer

See attached diagram for the proposed BOP system. Stack #1 will be nipped-up on the 7-1/16" 5,000 psi B section for the dual lateral re-entry. The BOP will be hydraulically operated.

All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 70% of rated working pressure for 10 minutes. Surface casing will be tested to 1500 psi. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested when initially installed, whenever any seal subject to test pressure is broken, following related repairs and at least once every 30 days. Annular preventers will be functionally operated at least once per week. Rams preventers will be activated each trip, not to exceed once per day.

D. The operator's proposed casing program, including size, grade, weight, type of thread and coupling, the setting depth of each string, and it's condition. The operator must include the minimum design criteria, including casing loading assumptions and corresponding safety factors for burst, collapse, and tensions (body yield and joint strength). The operator must also include the lengths and setting depth of each casing when a tapered casing string is proposed. The hole size for each wellbore section of hole drilled must be included. Special casing designs such as the use of coil tubing or expandable casing may necessitate additional information.

Casing & Hole Size	Grade	Weight	Coupling	Setting Depth (MD)	Condition
9-5/8" (12-1/4")	H-40	24 ppf	ST&C	0' - 202'	Existing casing, set in 2007
7" (8-3/4")	J-55	23 ppf	LT&C	0' - 4763'	Existing casing, set in 2007
2-7/8" (4-3/4") Lateral #3	J-55	6.5 ppf	EUE 8RD	3440'-9089'	Used or new casing – perforated liner no cement
Existing perforations Lateral #1 4-1/2" Lateral #2 4-1/2"	J-55	11.6 ppf	LT&C	6 SPF, 0.5" holes 4554'-6741' 4393'-7672'	Perforations will be Isolated with a CIBP at approximately 3451'

2-7/8" Liner - 1/2" holes, 1 hole/ft at 90-degree phasing. Leave 5' of the perforated joint blank on either end.

Production casing liners will be uncemented, unstimulated and not tested. The purpose of the existing 4-1/2" liners and proposed 2-7/8" liner is to keep the open hole from collapsing. Isolation for the 6-1/8" and 4-3/4" laterals will be maintained by the cased and cemented pilot hole with 7" casing and cement to surface.

Minimum casing design factors used:

Collapse -	1.0
Burst -	1.1
Tension -	1.4

Existing Surface Casing Design - Evacuated/Max SICP (collapse & burst), 100k overpull (tension)

	Size	Weight	Grade	Conn	Collapse	Burst	Tension (conn)	Notes
Surface	9.625	32.3	H40	STC	1,400	2,270	254,000	0' - 202'
					1.000	1.100	1.400	
Collapse	Casing Depth	MW in	MW out	Pres in	Pres out	SF		
	202	0	15.8	0	166	8.44		
Burst	202	9	0	1500	0	1.51		Casing test
Tension	202	Mud Wt	Air Wt	Bouy Wt	BW +100k			100k over pull
		9	6,525	5,628	105,628	2.40		
		BF						BF= 1- (MW)/65.5
		0.8626						

Existing Intermediate Casing Design - Evacuated/Max Mud Wt (collapse & burst), 100k overpull (tension)

Intermediate	Top Interval	Btm Interval	Size	Weight	Grade	Conn	Collapse	Burst	Tension	Notes
	0	4763	7	23	J55	LTC	3,270	4,360	313,000	
							1.000	1.100	1.400	
Collapse			Depth TVD	MW in	MW out	Pres in	Pres out	SF - 1.000		
	0	4763	3203	0	9	0	1499	2.18		
Burst			Depth TVD	MW in	MW out	Pres in	Pres out	SF - 1.1	Frac Pres	
	0	4763	3203	9	0	1499	0	2.91	0	
						1499				
Tension				Mud Wt	Air Wt	Bouy Wt	BW +100k	SF - 1.4		
	0	4763	3203	9	73,669	63,547	163,547	1.91		
				BF						BF= 1- (MW)/65.5
				0.8626						

- E. The estimated amount and type(s) of cement expected to be used in the setting of each casing string. If stage cementing will be used, provide the setting depth of the stage tool(s) and the amount and type of cement including additives, to be used for each stage. Provide the yield of each cement slurry and the expected top of cement, with excess, for each cemented string or stage.

The proposed cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. All indications of useable water shall be reported.

The surface casing shall WAS cemented back to surface. In the event cement does not circulate to surface, remedial cementing shall be done to cement the casing back to surface. If returns are lost and/or cement is not brought to surface, a cement bond log (CBL) will be required to determine the quality of the The 7" production casing strings WAS tested to .22 psi per foot of the casing string length or 1200 psi, not exceed 70% of the minimum internal yield.

The 7" production casing WAS cemented to surface. The 4-1/2" production liners were installed uncemented. The 2-7/8" production liner will be installed uncemented.

Surface Casing Single Stage Job – (0-202'MD):
EXISTING SURFACE CASING CEMENTED TO SURFACE IN 2007

Production Casing Single Stage Job – (0-4763'MD):
EXISTING PRODUCTION CASING CEMENT TO SURFACE IN 2007

- F. Type and characteristics of the proposed circulating medium or mediums proposed for the drilling of each well bore section, the quantities and types of mud and weighting material to be maintained, and the monitoring equipment to be used on the circulating system. The operator must submit the detailed information when air or gas drill is proposed.

Interval (MD)	Hole Section	Hole Size	Type	MW (ppg)	VIS (s/qt)	FL (mL/30 min)	PV (cP)	YP (lbs/100ft ²)	Max Salinity (mg/L)	pH
3440'-9089'	Lat #3	4-3/4"	Brine	9.0-10	28-34	NC	1	4	188,000	8-9.1

Sufficient weighting material will be on hand to weight mud up to 10.5 PPG, if required.

The formula for weight up with barite is listed below:

Sacks of Barite per 100 bbl of mud = $1470 \times (W2 - W1) \div (35 - W2)$

Where; W1 = current mud weight, W2 = new mud weight

Sacks = $1470 \times (10.5 - 9.0) \div (35 - 10.5) = 126 \text{ sx} \times 3 \text{ (300bbls minimum)} = 270\text{sx}$

Mud Product	Estimated Quantity on Location
Baroid 41	270 sx
Aquagel Gold Seal	250 sx
Lime	4 sx
Caustic Soda	8 sx
EZ-Mud	20 buckets

Barazan D Plus	20 sx
Pac R	20 sx
Filter-Chek	30 sx
LCM	120 sx

Pit Volume Totalizer (PVT) equipment (or equivalent) will be on each pit to monitor pit levels. A trip tank equipped with a PVT sensor will be used to monitor trip volumes. Possible lost circulation in the Fruitland Coal and Pictured Cliffs Sand. Lost circulation has been successfully mitigated with lost circulation materials.

There will not be a reserve pit for this well. A closed-loop system will be used to recover drilling fluid and dry cuttings during drilling operation. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. Frac tanks will be on location to store fresh water, produced water, drilling mud and brine.

G. The testing, logging, and coring procedures proposed, including drill stem testing procedures, equipment, and safety measures.

Testing: None planned.

Open Hole Logging: LWD gamma ray for both lateral hole sections (from casing exit to TD).

Mud Logging: Lateral hole section from 3440'-9089'. Samples taken every 30'.

Coring: None planned.

Cased Hole Logging: If A CCL – CBL will we run to check cement bond across window area and to locate casing collars to set isolation bridge plug.

H. The expected bottom-hole pressure and any anticipated abnormal pressures, temperatures, or potential hazards that the operator expects to encounter, such as lost circulation and hydrogen sulfide. A description or the operators plans for mitigating such hazards must be included.

Maximum expected BHP @ TD 9089'MD / 3100' TVD (0.45 psi/ft): 1395 psi

Maximum expected BHT @ 3100' TVD: ~140° F

The maximum anticipated bottom hole pressure will be controlled with mud weight and BOP equipment.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

I. Any other facets of the proposed operation that the operator would like the BLM to considered in reviewing the application. Examples include, but are not limited to: For directional wells, proposed directional designs, plan view, and vertical section in true vertical and measured depths: Horizontal drilling; and Coil tubing Operations.

Timing:

The operation is expected to start July 2017. A bridge plug will be set to isolate Lateral #1 in the 7" casing. Another bridge plug will be set in the 7" production casing isolating Lateral #2, a whipstock set, and the 4-3/4" sidetrack lateral hole section drilled. Upon completion of the open hole lateral, the drilling rig will move off and the completion rig will be on location approximately two to three weeks to run tubing and set artificial lift.

Directional Plans:

Lateral #3 directional plans attached.

Completion:

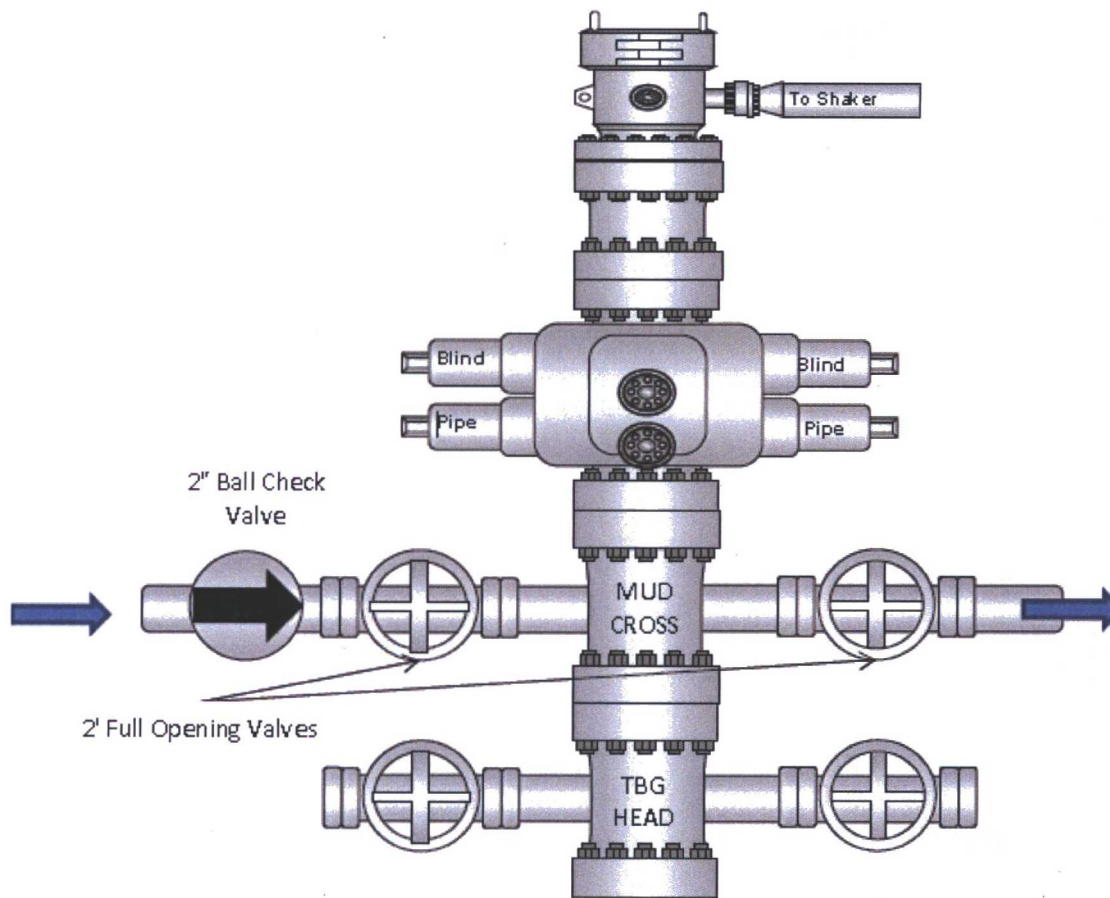
The existing directional well has two existing laterals in the Fruitland Coal. 4554'-6741' & 4393'-7672'. A composite bridge plug (CBP) will be set at approximately 4500' to isolate Lateral #1 from the rest of the wellbore. A CBP will be set at approximately 3451' to isolate both Laterals during sidetrack drilling

operations and to serve as a base for the whipstock assembly. The lateral will be cased with 2-7/8" pre-perforated uncemented tubing to maintain hole stability for natural open hole completion.

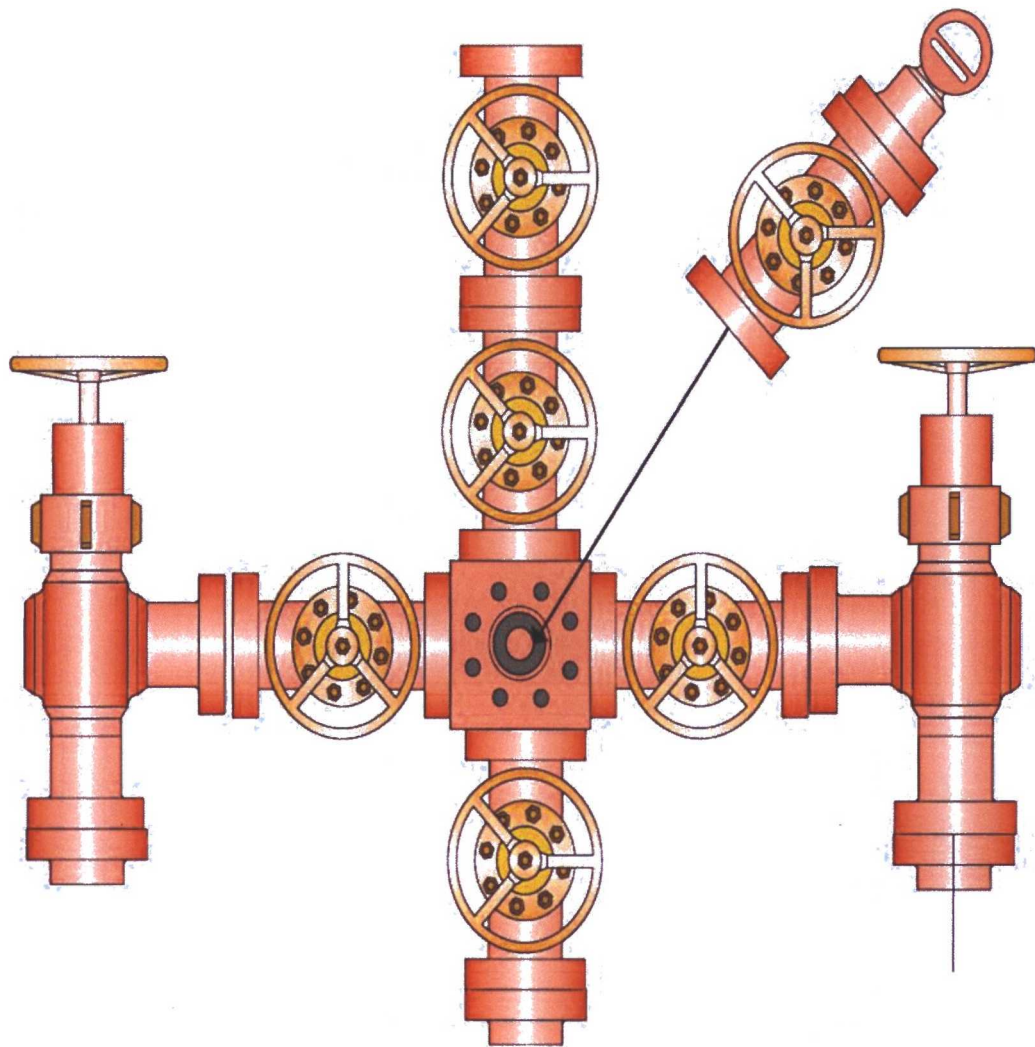
Horizontal Re-entry Procedure:

- Prepare existing well or drilling operations with a service unit.
- Pull tubing and rods.
- Run CBL and check bond across whipstock window area KOP 3440' MD.
- Run gyro survey if needed.
- Set CBP at approximately 4500', below Lateral #2 and above Lateral #1 isolating Lateral #1 from the rest of the wellbore.
- Set CBP at approximately 3451', below proposed window area to set whipstock and isolate existing Lateral #1 and #2.
- Load hole and pressure test casing.
- Move in and rig up drilling rig on completed pilot hole
- Run gyro survey, orient and set whipstock for casing exit @ +/-3440' MD
- Mill window and TOO H for curve BHA.
- Planned KOP @ 3440' MD / 2610' TVD (directional pilot well).
- Drill 4-3/4" from 3440' MD / 2610' TVD to 9089' MD / 3100' TVD at 90°, 272.5° azimuth.
- TOO H and run 2-7/8" pre-perforated liner from approximately 3440' MD to 9089' MD.
- TOO H and retrieve whipstock.
- Secure well, rig down and move off location.

NOTE: Depths and directional plans are based on estimated formation tops. Corrections for KOP and landing points will be made based on actual formation tops from logs.



Proposed Class 2 BOP Stack - STACK #1 (LATERAL RE-ENTRY)



(Minimum 2")

Proposed 2,000 psi Choke Manifold Stack

Well: SAN JUAN 32 5 COM No. 114	Plan: Rev 2	Field: Rio Arriba County, NM	Site: T32N - R06W - Sec. 24	Rig: AWD 222
Borehole: ST03 VS04.16deg	Plan Date: April 10 2017 Grid Conv: 0.25	System: US State Plane 1983 Zone: New Mexico Western Zone	KB: 6487.00ft GL: 6472.00ft	Latitude: 36.96944°N Northing / Y: 2172474.74
			Longitude: 107.41667°W Easting / X: 2844810.07	Model: IGRF2010 DIP: 63.59°
				Date: 29-Jan-17 FS: 50353
				DEC: 9.08° North Ref: True

Critical Points

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	3341.00	66.04	330.20	2569.87	1516.26	-304.85	0.00	0.00	1103.64	Tie-On, Orig Hole
2	3440.00	66.04	330.20	2610.07	1594.77	-349.81	0.00	0.00	1184.93	Build & Turn 5°/100 DLS
3	3906.08	70.00	355.00	2786.86	2003.37	-476.48	5.00	85.09	1519.17	Hold Inc
4	4351.00	70.00	355.00	2939.03	2419.86	-512.92	0.00	0.00	1783.19	KOP, Build 8°/100 DLS
5	5183.84	90.00	290.00	3100.00	3021.41	-993.73	8.00	-80.94	2518.82	LP, Hold
6	5283.84	90.00	290.00	3100.00	3055.62	-1087.70	0.00	0.00	2615.78	Turn 3°/100 DLS
7	5867.39	90.00	272.49	3100.00	3168.99	-1657.82	3.00	-90.00	3151.20	EOT, Hold to TD
8	9089.26	90.00	272.49	3100.00	3309.16	-4876.64	0.00	0.00	5893.40	PBHL/TD

Target Details

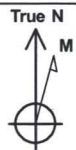
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
ST03 PBHL	3100.00	3309.16	-4876.64	2175762.53	2839919.01	36.97853°N	107.43336°W

CASING DETAILS

TVD	MD	Name	Size
202.00	202.00	9 5/8" Csg	9-5/8

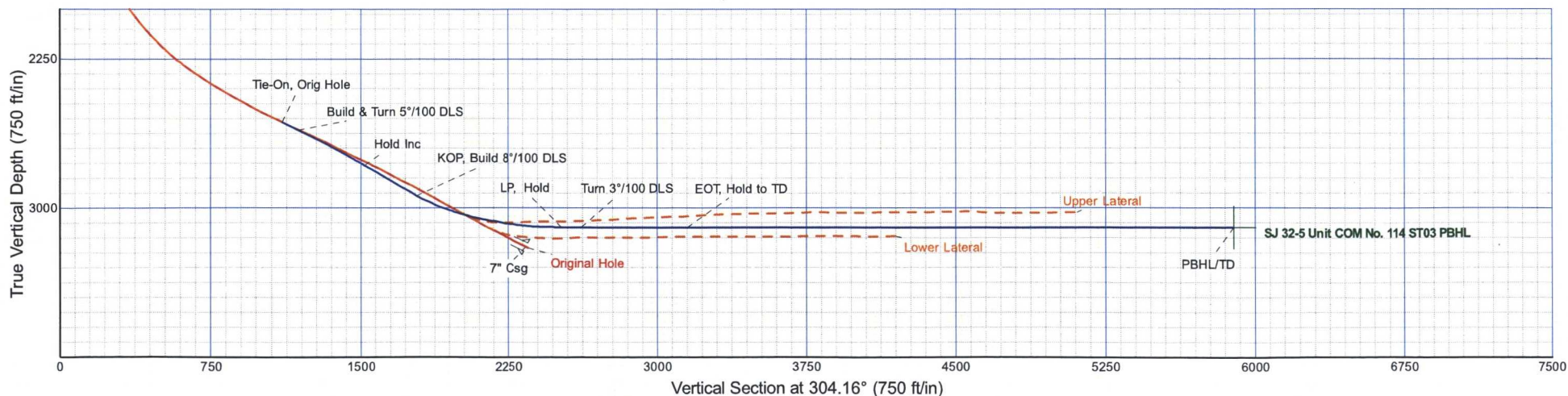
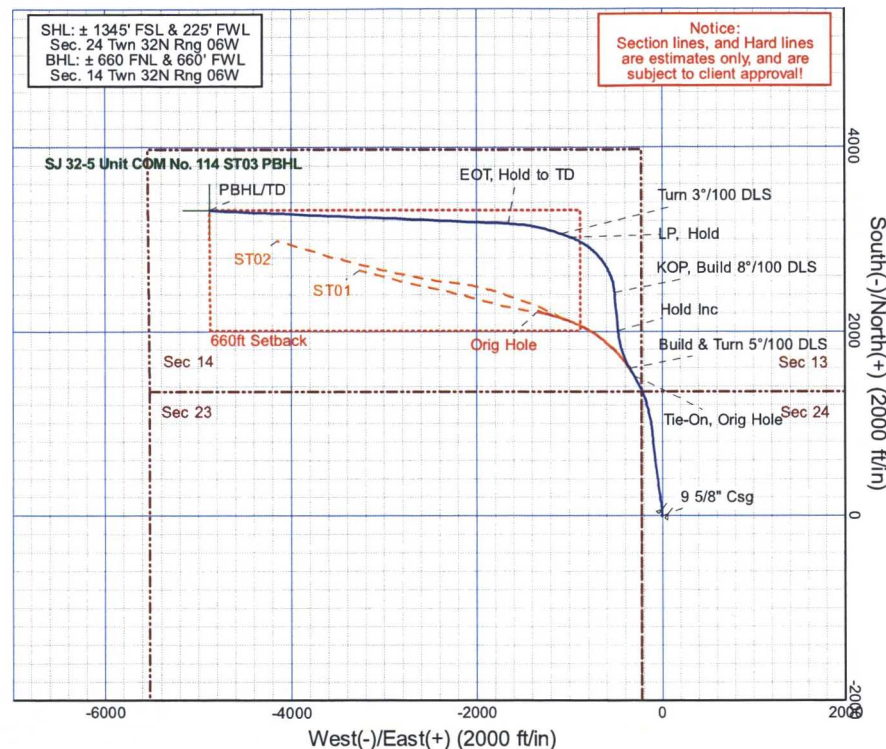
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
0.00	0.00	San Jose
1027.00	1028.06	Nacimiento
2397.00	2925.10	Ojo Alamo Ss
2507.00	3185.33	Kirtland Sh
2957.00	4231.74	Fruitland Fm
3082.00	4497.47	Top Coal
3102.00	4541.60	Target Coal Base1
3162.00	4679.01	Target Coal Base 2
3167.00	4690.45	Pictured Cliffs Ss



Azimuths to True North
Magnetic North: 9.08°

Strength: 50352.8snT
Dip Angle: 63.59°
Date: 1/29/2017
Model: IGRF2010





Southland Royalty Company

Southland Royalty Co.

Rio Arriba County, NM

T32N - R06W - Sec. 24

SAN JUAN 32 5 UNIT COM No. 114

ST03

Plan: Rev 2

Standard Planning Report - Geographic

10 April, 2017





Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SAN JUAN 32 5 UNIT COM No. 114
Company:	Southland Royalty Co.	TVD Reference:	KB @ 6487.00ft (AWD 222)
Project:	Rio Arriba County, NM	MD Reference:	KB @ 6487.00ft (AWD 222)
Site:	T32N - R06W - Sec. 24	North Reference:	True
Well:	SAN JUAN 32 5 UNIT COM No. 114	Survey Calculation Method:	Minimum Curvature
Wellbore:	ST03		
Design:	Rev 2		

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

Site	T32N - R06W - Sec. 24		
Site Position:		Northing:	2,172,474.74 usft
From:	Map	Easting:	2,844,810.07 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "
		Latitude:	36.96945°N
		Longitude:	107.41667°W
		Grid Convergence:	0.25 °

Well	SAN JUAN 32 5 UNIT COM No. 114, SWNW Sec E 24 Twn 32N Rng 06W		
Well Position	+N/-S	0.00 ft	Northing: 2,172,474.74 usft
	+E/-W	0.00 ft	Easting: 2,844,810.07 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	Latitude: 36.96945°N
			Longitude: 107.41667°W
			Ground Level: 6,472.00 ft

Wellbore	ST03				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/29/2017	9.08	63.59	50,353

Design	Rev 2				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	3,341.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	304.16	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
3,341.00	66.04	330.20	2,569.87	1,516.26	-304.85	0.00	0.00	0.00	0.00	
3,440.00	66.04	330.20	2,610.07	1,594.77	-349.81	0.00	0.00	0.00	0.00	
3,906.08	70.00	355.00	2,786.86	2,003.37	-476.48	5.00	0.85	5.32	85.09	
4,351.00	70.00	355.00	2,939.03	2,419.86	-512.92	0.00	0.00	0.00	0.00	
5,183.84	90.00	290.00	3,100.00	3,021.41	-993.73	8.00	2.40	-7.80	-80.94	
5,283.84	90.00	290.00	3,100.00	3,055.62	-1,087.70	0.00	0.00	0.00	0.00	
5,867.39	90.00	272.49	3,100.00	3,168.99	-1,657.82	3.00	0.00	-3.00	-90.00	
9,089.26	90.00	272.49	3,100.00	3,309.16	-4,876.64	0.00	0.00	0.00	0.00	SJ 32-5 Unit COM No



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SAN JUAN 32 5 UNIT COM No. 114
Company:	Southland Royalty Co.	TVD Reference:	KB @ 6487.00ft (AWD 222)
Project:	Rio Arriba County, NM	MD Reference:	KB @ 6487.00ft (AWD 222)
Site:	T32N - R06W - Sec. 24	North Reference:	True
Well:	SAN JUAN 32 5 UNIT COM No. 114	Survey Calculation Method:	Minimum Curvature
Wellbore:	ST03		
Design:	Rev 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,341.00	66.04	330.20	2,569.87	1,516.26	-304.85	2,173,989.65	2,844,498.59	36.97361°N	107.41772°W
Tie-On, Orig Hole									
3,400.00	66.04	330.20	2,593.83	1,563.05	-331.64	2,174,036.32	2,844,471.60	36.97374°N	107.41781°W
3,440.00	66.04	330.20	2,610.07	1,594.77	-349.81	2,174,067.96	2,844,453.29	36.97383°N	107.41787°W
Build & Turn 5°/100 DLS									
3,500.00	66.33	333.46	2,634.30	1,643.15	-375.72	2,174,116.23	2,844,427.17	36.97396°N	107.41796°W
3,600.00	66.97	338.87	2,673.96	1,727.09	-412.79	2,174,200.00	2,844,389.73	36.97419°N	107.41808°W
3,700.00	67.78	344.21	2,712.46	1,814.61	-441.99	2,174,287.39	2,844,360.15	36.97443°N	107.41818°W
3,800.00	68.77	349.49	2,749.49	1,905.03	-463.11	2,174,377.72	2,844,338.64	36.97468°N	107.41826°W
3,900.00	69.93	354.69	2,784.77	1,997.68	-475.97	2,174,470.31	2,844,325.37	36.97493°N	107.41830°W
3,906.08	70.00	355.00	2,786.86	2,003.37	-476.48	2,174,476.00	2,844,324.83	36.97495°N	107.41830°W
Hold Inc									
4,000.00	70.00	355.00	2,818.98	2,091.29	-484.17	2,174,563.88	2,844,316.76	36.97519°N	107.41833°W
4,100.00	70.00	355.00	2,853.18	2,184.90	-492.36	2,174,657.46	2,844,308.16	36.97545°N	107.41836°W
4,200.00	70.00	355.00	2,887.38	2,278.51	-500.55	2,174,751.03	2,844,299.56	36.97570°N	107.41839°W
4,300.00	70.00	355.00	2,921.59	2,372.12	-508.74	2,174,844.61	2,844,290.96	36.97596°N	107.41841°W
4,351.00	70.00	355.00	2,939.03	2,419.86	-512.92	2,174,892.33	2,844,286.57	36.97609°N	107.41843°W
KOP, Build 8°/100 DLS									
4,400.00	70.66	350.90	2,955.53	2,465.64	-518.59	2,174,938.08	2,844,280.71	36.97622°N	107.41845°W
4,500.00	72.30	342.64	2,987.34	2,557.84	-540.30	2,175,030.19	2,844,258.60	36.97647°N	107.41852°W
4,600.00	74.27	334.55	3,016.15	2,646.90	-575.25	2,175,119.10	2,844,223.26	36.97672°N	107.41864°W
4,700.00	76.53	326.62	3,041.40	2,731.10	-622.76	2,175,203.08	2,844,175.38	36.97695°N	107.41880°W
4,800.00	79.03	318.85	3,062.59	2,808.79	-681.91	2,175,280.51	2,844,115.89	36.97716°N	107.41901°W
4,900.00	81.73	311.21	3,079.32	2,878.47	-751.54	2,175,349.88	2,844,045.95	36.97735°N	107.41924°W
5,000.00	84.57	303.68	3,091.26	2,938.77	-830.31	2,175,409.84	2,843,966.92	36.97752°N	107.41951°W
5,100.00	87.51	296.23	3,098.17	2,988.53	-916.68	2,175,459.23	2,843,880.33	36.97765°N	107.41981°W
5,183.84	90.00	290.00	3,100.00	3,021.41	-993.73	2,175,491.77	2,843,803.14	36.97774°N	107.42007°W
LP, Hold									
5,200.00	90.00	290.00	3,100.00	3,026.94	-1,008.92	2,175,497.23	2,843,787.93	36.97776°N	107.42013°W
5,283.84	90.00	290.00	3,100.00	3,055.62	-1,087.70	2,175,525.56	2,843,709.02	36.97784°N	107.42040°W
Turn 3°/100 DLS									
5,300.00	90.00	289.52	3,100.00	3,061.08	-1,102.91	2,175,530.96	2,843,693.79	36.97785°N	107.42045°W
5,400.00	90.00	286.52	3,100.00	3,092.00	-1,198.00	2,175,561.47	2,843,598.57	36.97794°N	107.42077°W
5,500.00	90.00	283.52	3,100.00	3,117.91	-1,294.57	2,175,586.95	2,843,501.88	36.97801°N	107.42110°W
5,600.00	90.00	280.52	3,100.00	3,138.72	-1,392.37	2,175,607.33	2,843,403.99	36.97807°N	107.42144°W
5,700.00	90.00	277.52	3,100.00	3,154.39	-1,491.12	2,175,622.57	2,843,305.17	36.97811°N	107.42178°W
5,800.00	90.00	274.52	3,100.00	3,164.87	-1,590.56	2,175,632.61	2,843,205.69	36.97814°N	107.42212°W
5,867.39	90.00	272.49	3,100.00	3,168.99	-1,657.82	2,175,636.44	2,843,138.41	36.97815°N	107.42235°W
EOT, Hold to TD									
5,900.00	90.00	272.49	3,100.00	3,170.41	-1,690.40	2,175,637.71	2,843,105.82	36.97815°N	107.42246°W
6,000.00	90.00	272.49	3,100.00	3,174.76	-1,790.31	2,175,641.63	2,843,005.90	36.97817°N	107.42280°W
6,100.00	90.00	272.49	3,100.00	3,179.11	-1,890.21	2,175,645.54	2,842,905.98	36.97818°N	107.42314°W
6,200.00	90.00	272.49	3,100.00	3,183.46	-1,990.12	2,175,649.45	2,842,806.06	36.97819°N	107.42348°W
6,300.00	90.00	272.49	3,100.00	3,187.81	-2,090.02	2,175,653.37	2,842,706.13	36.97820°N	107.42383°W
6,400.00	90.00	272.49	3,100.00	3,192.16	-2,189.93	2,175,657.28	2,842,606.21	36.97821°N	107.42417°W
6,500.00	90.00	272.49	3,100.00	3,196.51	-2,289.83	2,175,661.20	2,842,506.29	36.97822°N	107.42451°W
6,600.00	90.00	272.49	3,100.00	3,200.86	-2,389.74	2,175,665.11	2,842,406.36	36.97824°N	107.42485°W
6,700.00	90.00	272.49	3,100.00	3,205.21	-2,489.64	2,175,669.02	2,842,306.44	36.97825°N	107.42519°W
6,800.00	90.00	272.49	3,100.00	3,209.56	-2,589.55	2,175,672.94	2,842,206.52	36.97826°N	107.42554°W
6,900.00	90.00	272.49	3,100.00	3,213.91	-2,689.45	2,175,676.85	2,842,106.59	36.97827°N	107.42588°W
7,000.00	90.00	272.49	3,100.00	3,218.26	-2,789.36	2,175,680.76	2,842,006.67	36.97828°N	107.42622°W
7,100.00	90.00	272.49	3,100.00	3,222.61	-2,889.26	2,175,684.68	2,841,906.75	36.97830°N	107.42656°W
7,200.00	90.00	272.49	3,100.00	3,226.96	-2,989.17	2,175,688.59	2,841,806.82	36.97831°N	107.42690°W
7,300.00	90.00	272.49	3,100.00	3,231.31	-3,089.08	2,175,692.51	2,841,706.90	36.97832°N	107.42725°W



Database: EDM 5000.1 Single User Db
Company: Southland Royalty Co.
Project: Rio Arriba County, NM
Site: T32N - R06W - Sec. 24
Well: SAN JUAN 32 5 UNIT COM No. 114
Wellbore: ST03
Design: Rev 2

Local Co-ordinate Reference: Well SAN JUAN 32 5 UNIT COM No. 114
TVD Reference: KB @ 6487.00ft (AWD 222)
MD Reference: KB @ 6487.00ft (AWD 222)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,400.00	90.00	272.49	3,100.00	3,235.67	-3,188.98	2,175,696.42	2,841,606.98	36.97833°N	107.42759°W
7,500.00	90.00	272.49	3,100.00	3,240.02	-3,288.89	2,175,700.33	2,841,507.05	36.97834°N	107.42793°W
7,600.00	90.00	272.49	3,100.00	3,244.37	-3,388.79	2,175,704.25	2,841,407.13	36.97836°N	107.42827°W
7,700.00	90.00	272.49	3,100.00	3,248.72	-3,488.70	2,175,708.16	2,841,307.21	36.97837°N	107.42862°W
7,800.00	90.00	272.49	3,100.00	3,253.07	-3,588.60	2,175,712.07	2,841,207.28	36.97838°N	107.42896°W
7,900.00	90.00	272.49	3,100.00	3,257.42	-3,688.51	2,175,715.99	2,841,107.36	36.97839°N	107.42930°W
8,000.00	90.00	272.49	3,100.00	3,261.77	-3,788.41	2,175,719.90	2,841,007.44	36.97840°N	107.42964°W
8,100.00	90.00	272.49	3,100.00	3,266.12	-3,888.32	2,175,723.81	2,840,907.51	36.97842°N	107.42998°W
8,200.00	90.00	272.49	3,100.00	3,270.47	-3,988.22	2,175,727.73	2,840,807.59	36.97843°N	107.43033°W
8,300.00	90.00	272.49	3,100.00	3,274.82	-4,088.13	2,175,731.64	2,840,707.67	36.97844°N	107.43067°W
8,400.00	90.00	272.49	3,100.00	3,279.17	-4,188.03	2,175,735.56	2,840,607.75	36.97845°N	107.43101°W
8,500.00	90.00	272.49	3,100.00	3,283.52	-4,287.94	2,175,739.47	2,840,507.82	36.97846°N	107.43135°W
8,600.00	90.00	272.49	3,100.00	3,287.87	-4,387.84	2,175,743.38	2,840,407.90	36.97848°N	107.43169°W
8,700.00	90.00	272.49	3,100.00	3,292.22	-4,487.75	2,175,747.30	2,840,307.98	36.97849°N	107.43204°W
8,800.00	90.00	272.49	3,100.00	3,296.58	-4,587.65	2,175,751.21	2,840,208.05	36.97850°N	107.43238°W
8,900.00	90.00	272.49	3,100.00	3,300.93	-4,687.56	2,175,755.12	2,840,108.13	36.97851°N	107.43272°W
9,000.00	90.00	272.49	3,100.00	3,305.28	-4,787.47	2,175,759.04	2,840,008.21	36.97852°N	107.43306°W
9,087.36	90.00	272.49	3,100.00	3,309.08	-4,874.74	2,175,762.46	2,839,920.91	36.97853°N	107.43336°W
PBHL/TD									
9,089.26	90.00	272.49	3,100.00	3,309.16	-4,876.64	2,175,762.53	2,839,919.02	36.97853°N	107.43337°W
SJ 32-5 Unit COM No. 114 ST03 PBHL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SJ 32-5 Unit COM No. 1 - plan hits target center - Point	0.00	0.00	3,100.00	3,309.16	-4,876.64	2,175,762.53	2,839,919.02	36.97853°N	107.43337°W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
202.00	202.00	9 5/8" Csg	9-5/8	12-1/4

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,341.00	2,569.87	1,516.26	-304.85	Tie-On, Orig Hole
3,440.00	2,610.07	1,594.77	-349.81	Build & Turn 5°/100 DLS
3,906.08	2,786.86	2,003.37	-476.48	Hold Inc
4,351.00	2,939.03	2,419.86	-512.92	KOP, Build 8°/100 DLS
5,183.84	3,100.00	3,021.41	-993.73	LP, Hold
5,283.84	3,100.00	3,055.62	-1,087.70	Turn 3°/100 DLS
5,867.39	3,100.00	3,168.99	-1,657.82	EOT, Hold to TD
9,087.36	3,100.00	3,309.08	-4,874.74	PBHL/TD



Southland Royalty Company

Southland Royalty Co.

Rio Arriba County, NM

T32N - R06W - Sec. 24

SAN JUAN 32 5 UNIT COM No. 114

ST03

Rev 2

Anticollision Summary Report

10 April, 2017





Anticollision Summary Report



Company:	Southland Royalty Co.	Local Co-ordinate Reference:	Well SAN JUAN 32 5 UNIT COM No. 114
Project:	Rio Arriba County, NM	TVD Reference:	KB @ 6487.00ft (AWD 222)
Reference Site:	T32N - R06W - Sec. 24	MD Reference:	KB @ 6487.00ft (AWD 222)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	SAN JUAN 32 5 UNIT COM No. 114	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.79 sigma
Reference Wellbore	ST03	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 2	Offset TVD Reference:	Offset Datum

Reference	Rev 2
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD + Stations Interval 100.00ft
Depth Range:	3,341.00 to 9,089.26ft
Results Limited by:	Maximum center-center distance of 164.04 ft
Warning Levels Evaluated at:	2.79 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Combined Covariances
Casing Method:	Added to Error Values

Survey Tool Program		Date	4/10/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
325.00	3,341.00	Survey #1 (Original Hole)	MWD-STD	MWD-STD	
3,341.00	9,089.26	Rev 2 (ST03)			

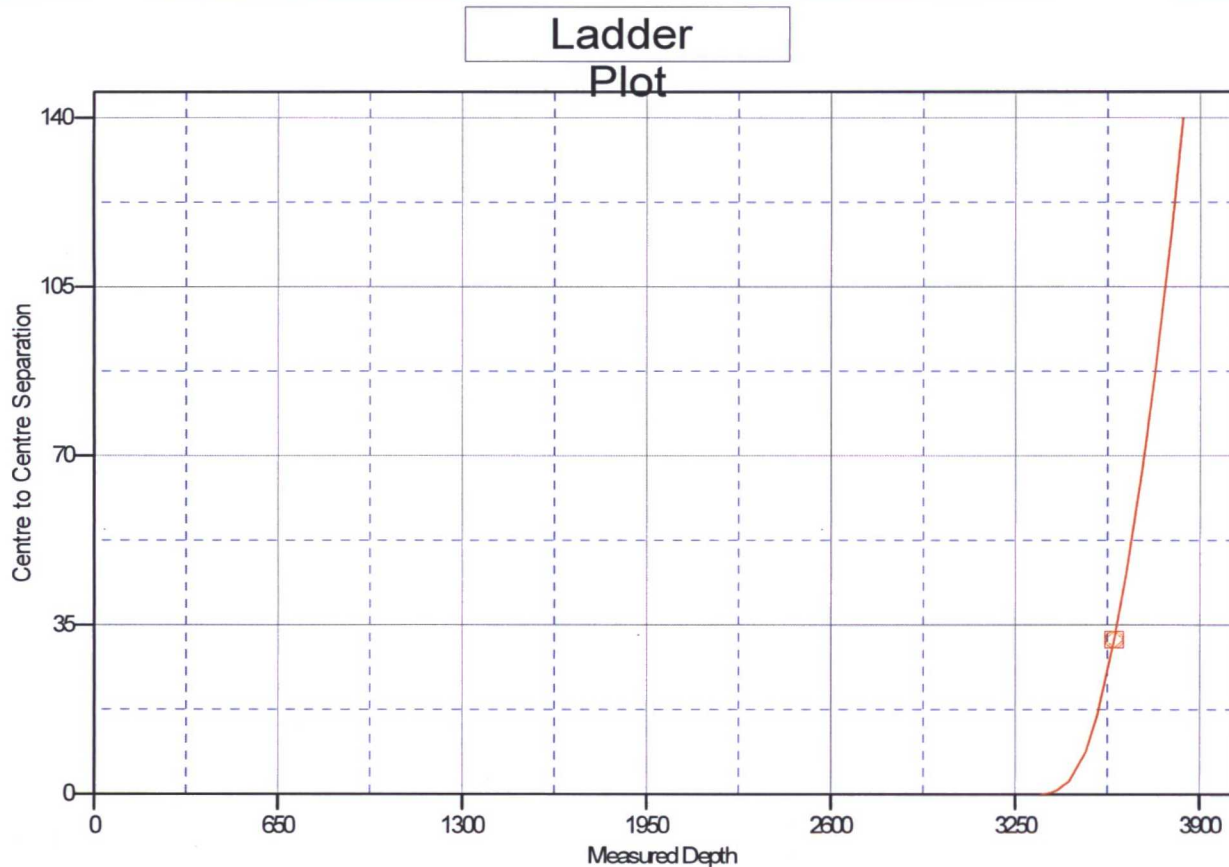
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
T32N - R06W - Sec. 24						
SAN JUAN 32 5 UNIT COM No. 114 - Original Hole - Ori	3,341.00	3,341.00	0.00	-0.80	0.000	Fail Major, CC, SF
SAN JUAN 32 5 UNIT COM No. 114 - Original Hole - Ori	3,400.00	3,399.98	0.85	-2.14	0.283	Fail Major, ES
SAN JUAN 32 5 UNIT COM No. 114 - ST01 - Lower Late	3,341.00	3,341.00	0.00	-0.91	0.000	Fail Major, CC, SF
SAN JUAN 32 5 UNIT COM No. 114 - ST01 - Lower Late	3,400.00	3,399.98	0.85	-2.25	0.273	Fail Major, ES
SAN JUAN 32 5 UNIT COM No. 114 - ST02 - Upper Late	3,341.00	3,341.00	0.00	-0.91	0.000	Fail Major, CC, SF
SAN JUAN 32 5 UNIT COM No. 114 - ST02 - Upper Late	3,400.00	3,399.98	0.85	-2.25	0.273	Fail Major, ES



Company:	Southland Royalty Co.	Local Co-ordinate Reference:	Well SAN JUAN 32 5 UNIT COM No. 114
Project:	Rio Arriba County, NM	TVD Reference:	KB @ 6487.00ft (AWD 222)
Reference Site:	T32N - R06W - Sec. 24	MD Reference:	KB @ 6487.00ft (AWD 222)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	SAN JUAN 32 5 UNIT COM No. 114	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.79 sigma
Reference Wellbore	ST03	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 6487.00ft (AWD 222)
 Offset Depths are relative to Offset Datum
 Central Meridian is 107.83334°W

Coordinates are relative to: SAN JUAN 32 5 UNIT COM No. 114
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.25°



LEGEND

COM No. 114, Original Hole, Original Hole V0 SAN JUAN 32 5 UNIT COM No. 114, ST01, Lower Lateral V0 SAN JUAN 32 5 UNIT COM No. 114 S



Company:	Southland Royalty Co.	Local Co-ordinate Reference:	Well SAN JUAN 32 5 UNIT COM No. 114
Project:	Rio Arriba County, NM	TVD Reference:	KB @ 6487.00ft (AWD 222)
Reference Site:	T32N - R06W - Sec. 24	MD Reference:	KB @ 6487.00ft (AWD 222)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	SAN JUAN 32 5 UNIT COM No. 114	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.79 sigma
Reference Wellbore	ST03	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 6487.00ft (AWD 222)

Offset Depths are relative to Offset Datum

Central Meridian is 107.83334°W

Coordinates are relative to: SAN JUAN 32 5 UNIT COM No. 114

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.25°

