

CERTIFIED MAIL

November 14, 1984



Mr. Joe D. Ramey
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Downhole Commingling
SRC - Chamberlain #2
NE/4, Section 14, T32N, R11W
San Juan County, New Mexico
Fruitland/Pictured Cliffs

Dear Mr. Ramey:

Southland Royalty Company requests permission to downhole commingle production from the Fruitland and Pictured Cliffs formations in this dual well. The Fruitland formation cannot continuously produce enough gas to lift the oil it produces. With the additional gas from the Pictured Cliffs formation, we feel that the Fruitland oil will be produced with fewer problems.

The gas produced from each zone is similar, and the Fruitland oil produced has no adverse effect on the Pictured Cliffs formation. Bottom hole pressures are similar for the two formations and there will be no crossflow between the zones, therefore no production will be lost.

Production allocation between the two zones was determined from the decline curves and cumulative production from each zone. Proposed allocation is as follows:

Oil Production	100% Fruitland	
Gas Production	79% Pictured Cliffs	82.5%
	21% Fruitland	17.5%

Royalty ownership in both zones of the well are identical. The well is currently producing and the deliverability tests were run in August 1984 and are included. In addition, copies of gas analysis from each zone, decline curves, production plats and miscellaneous data are included with this package for your information.

A copy of this application has also been sent to the Bureau of Land Management and all offset operators.

Sincerely,

A handwritten signature in dark ink, appearing to read "Doug R. Harris".

Doug R. Harris
Petroleum Engineer

DRH/eg

P.O. DRAWER 570 (505) 325-1841 FARMINGTON, NEW MEXICO 87401

Attachments

MISCELLANEOUS DATA

CHAMBERLAIN #2

Fruitland Bottom Hole Pressure	629 psi
Pictured Cliffs Bottom Hole Pressure	754
Fruitland Oil Gravity	44°
BTU/cf at 14.73/60°/Dry (Fruitland)	1119
BTU/cf at 14.73/60°/Dry (Pictured Cliffs)	1151

32



Curibark

san juan repro Form 50-5

GAS ANALYSIS: TRANSCRIPTION OF TAPE FROM AUTOMATIC CHROMATOGRAPH

1

NAME/LOCATION:

SAMPLE DATE: 5/15/84 ✓

STREAM NO. 6

STATION NO. 9258-07

SPECIFIC GRAVITY 0.6479 ✓

BTU/CF 14.73/60F/DRY: 1150.6 ✓

COMPONENT	MOLE%	G. P. M.
CARBON DIOXIDE	0.251 ✓	0.0000
NITROGEN	0.277 ✓	0.0000
METHANE	88.920	0.0000
ETHANE	5.480	1.4650
PROPANE	3.183	0.8760
ISOBUTANE	0.592	0.1930
N-BUTANE	0.719	0.2260
ISOPENTHANE	0.228	0.0830
N-PENTHANE	0.148	0.0530
HEXANE	0.238	0.1040

TOTAL	100.036	3.0000

STATION NAME:

CHAMBERLAIN

2

LAST BTU TEST DATE

83/05/16

LAST BTU TEST RESULT:

1142

TEST RUN: 14:14 16/05/84

1

TEST TRANSCRIBED ON: 84/05/21

WELL # 9258-07/803 DUE: 5/16/84
NAME: CHAMBERLAIN 2 PC
RUN# 308 FREQ: 12 LAST BTU: 1142
DATE PULLED: 5/15/84 STREAM: 6
DATE TESTED: 5/16/84 TIME: _____

GAS ANALYSIS: TRANSCRIPTION OF TAPE FROM AUTOMATIC CHROMATOGRAPH

1

NAME/LOCATION:

SAMPLE DATE: 5/15/84 ✓

STREAM NO. 3

STATION NO. 9307-10

SPECIFIC GRAVITY 0.6352 ✓

BTU/CF 14.73/60F/DRY: 1119.3 ✓

COMPONENT	MOLE%	G. P. M.
CARBON DIOXIDE	0.524 ✓	0.0000
NITROGEN	0.523 ✓	0.0000
METHANE	91.260	0.0000
ETHANE	3.100	0.8290
PROPANE	2.618	0.7200
ISOBUTANE	0.698	0.2280
N-BUTANE	0.718	0.2260
ISOPENTHANE	0.243	0.0880
N-PENTHANE	0.161	0.0580
HEXANE	0.187	0.0820

TOTAL	100.032	2.2310

STATION NAME:

CHAMBERLAIN

2

LAST BTU TEST DATE

83/05/16

LAST BTU TEST RESULT:

1115

TEST RUN: 13:43 16/05/84

1

TEST TRANSCRIBED ON: 84/05/21

RM ID: 9307 - 10 DATE: 5 15

WELL # 9307-10/803 DUE: 5/16/84
 NAME: CHAMBERLAIN 2 FRT
 RUN# 308 FREQ: 12 LAST BTU: 1115
 DATE PULLED: 5/15/84 STREAM: 3
 DATE TESTED: 5/16/84 TIME: _____

16 MAY 84 STREAM NO. 3

MP	.002	N2	.01	.02	.03	.04	.04	.05	.05	.06+
%	.524	.523	91.26	3.10	2.618	.698	.718	.243	.161	.187
M	.000	.000	.000	.829	.720	.228	.226	.088	.058	.082
COMPRESSIBILITY	BTU		SPECIFIC GRAVITY		GALLONS PER THOUSAND FEET					
	.9975		1119.3		2.231					

4

OIL CONSERVATION DIVISION

P. O. BOX 2088

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

SANTA FE, NEW MEXICO 87501

Form C-122-A
Revised 10-1-78WELL DELIVERABILITY TEST REPORT FOR 19 84

POOL NAME Undesignated	POOL SLOPE n= .85	FORMATION Fruitland	COUNTY San Juan
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COMPANY Southland Royalty Company			WELL NAME AND NUMBER Chamberlain #2		
UNIT LETTER A	SECTION 14	TOWNSHIP 32	RANGE 12	PURCHASING PIPELINE Southern Union Gathering	
CASING O.D. - INCHES 4.5000	CASING I.D. - INCHES 4.0520	SET AT DEPTH - FEET 2935	TUBING O.D. - INCHES	TUBING I.D. - INCHES	TOP - TUBING PERF. - FEET
GAS PAY ZONE FROM 2465 TO 2596		WELL PRODUCING THRU CASING X TUBING		GAS GRAVITY .635	GRAVITY X LENGTH 1565
DATE OF FLOW TEST FROM 8-8-84 TO 8-15-84			DATE SHUT-IN PRESSURE MEASURED 8-22-84		

PRESSURE DATA - ALL PRESSURES IN PSIA

(a) Flowing Casing Pressure (DWt) 401	(b) Flowing Tubing Pressure (DWt)	(c) Flowing Meter Pressure (DWt) 397	(d) Flow Chart Static Reading 396	(e) Meter Error (Item c - Item d) +1	(f) Friction Loss (a - c) or (b - c) +4	(g) Average Meter Pressure (Integr.) 423
(h) Corrected Meter Pressure (g + e) 424	(i) Avg. Wellhead Press. $P_i = (h + f)$ 428	(j) Shut-in Casing Pressure (DWt) 529	(k) Shut-in Tubing Pressure (DWt)	(l) $P_c =$ higher value of (j) or (k) 529	(m) Del. Pressure $P_d =$ <u>80</u> % P_c 423	(n) Separator or Dehydrator Pr. (DWt) for critical flow only

FLOW RATE CORRECTION (METER ERROR)

Integrated Volume - MCF/D 21	Quotient of $\frac{\text{Item c}}{\text{Item d}}$ 1.0025	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$ 1.0013	Corrected Volume Q = 21 MCF/D
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WORKING PRESSURE CALCULATION

$(1 - e^{-a})$.108	$(P_c Q_m)^2 (1000)$ 1	$R^2 = (1 - e^{-a}) (P_c Q_m)^2 (1000)$.1039	P_i^2 183184	$P_w^2 = P_i^2 + R^2$ 183184	$P_w = \sqrt{P_w^2}$ 428
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DELIVERABILITY CALCULATION

$D = Q \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n =$ <u>21</u>	$\left[\frac{100912}{96657} \right]^n =$ <u>1.0440</u>	$=$ <u>1.0373</u>	$=$ <u>22</u> MCF/D
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REMARKS:

SUMMARY

Item b	424	Psia
P_c	529	Psia
Q	21	MCF/D
P_w	428	Psia
P_d	423	Psia
D	22	MCF/D

Company Southland Royalty CompanyBy R. E. FieldTitle District Manager

Witnessed By _____

Company _____

OIL CONSERVATION DIVISION

P. O. BOX 2088

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

SANTA FE, NEW MEXICO 87501

Form C-122-A
Revised 10-1-78WELL DELIVERABILITY TEST REPORT FOR 19 84

POOL NAME Blanco	POOL SLOPE n = .85	FORMATION Pictured Cliffs	COUNTY San Juan
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COMPANY Southland Royalty Company			WELL NAME AND NUMBER Chamberlain #2		
UNIT LETTER A	SECTION 14	TOWNSHIP 32	RANGE 12	PURCHASING PIPELINE Southern Union Gathering	
CASING O.D. - INCHES 4.5000	CASING I.D. - INCHES 4.0520	SET AT DEPTH - FEET 2935	TUBING O.D. - INCHES 1.9000	TUBING I.D. - INCHES 1.6100	TOP - TUBING PERF. - FEET 2817
GAS PAY ZONE FROM 2789 TO 2854		WELL PRODUCING THRU CASING TUBING X		GAS GRAVITY .648	GRAVITY X LENGTH 1825
DATE OF FLOW TEST FROM 8-8-84 TO 8-15-84			DATE SHUT-IN PRESSURE MEASURED 8-22-84		

PRESSURE DATA - ALL PRESSURES IN PSIA

(a) Flowing Casing Pressure (DWt)	(b) Flowing Tubing Pressure (DWt)	(c) Flowing Meter Pressure (DWt)	(d) Flow Chart Static Reading	(e) Meter Error (Item c - Item d)	(f) Friction Loss (a - c) or (b - c)	(g) Average Meter Pressure (Integr.)
	420	418	414	+4	+2	422
(h) Corrected Meter Pressure (g + e)	(i) Avg. Wellhead Press. $P_t = (h + i)$	(j) Shut-in Casing Pressure (DWt)	(k) Shut-in Tubing Pressure (DWt)	(l) $P_c =$ higher value of (j) or (k)	(m) Del. Pressure $P_d =$ <u>80</u> % P_c	(n) Separator or Dehydrator Pr. (DWt) for critical flow only
426	428		642	642	514	

FLOW RATE CORRECTION (METER ERROR)

Integrated Volume - MCF/D	Quotient of $\frac{\text{Item c}}{\text{Item d}}$	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$	Corrected Volume
136	1.0097	1.0048	Q = 137 MCF/D

WORKING PRESSURE CALCULATION

$(1 - e^{-R})$	$(F_c Q_m)^2 (1000)$	$R^2 = (1 - e^{-R}) (F_c Q_m)^2 (1000)$	P_t^2	$P_w^2 = P_t^2 + R^2$	$P_w = \sqrt{P_w^2}$
.124	5085	631	183184	183815	429

DELIVERABILITY CALCULATION

$D = Q \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n =$	137	$\left[\frac{147968}{228349} \right]^n =$	$\left(\frac{.6480}{.6916} \right)^n =$	95	MCF/D
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REMARKS:

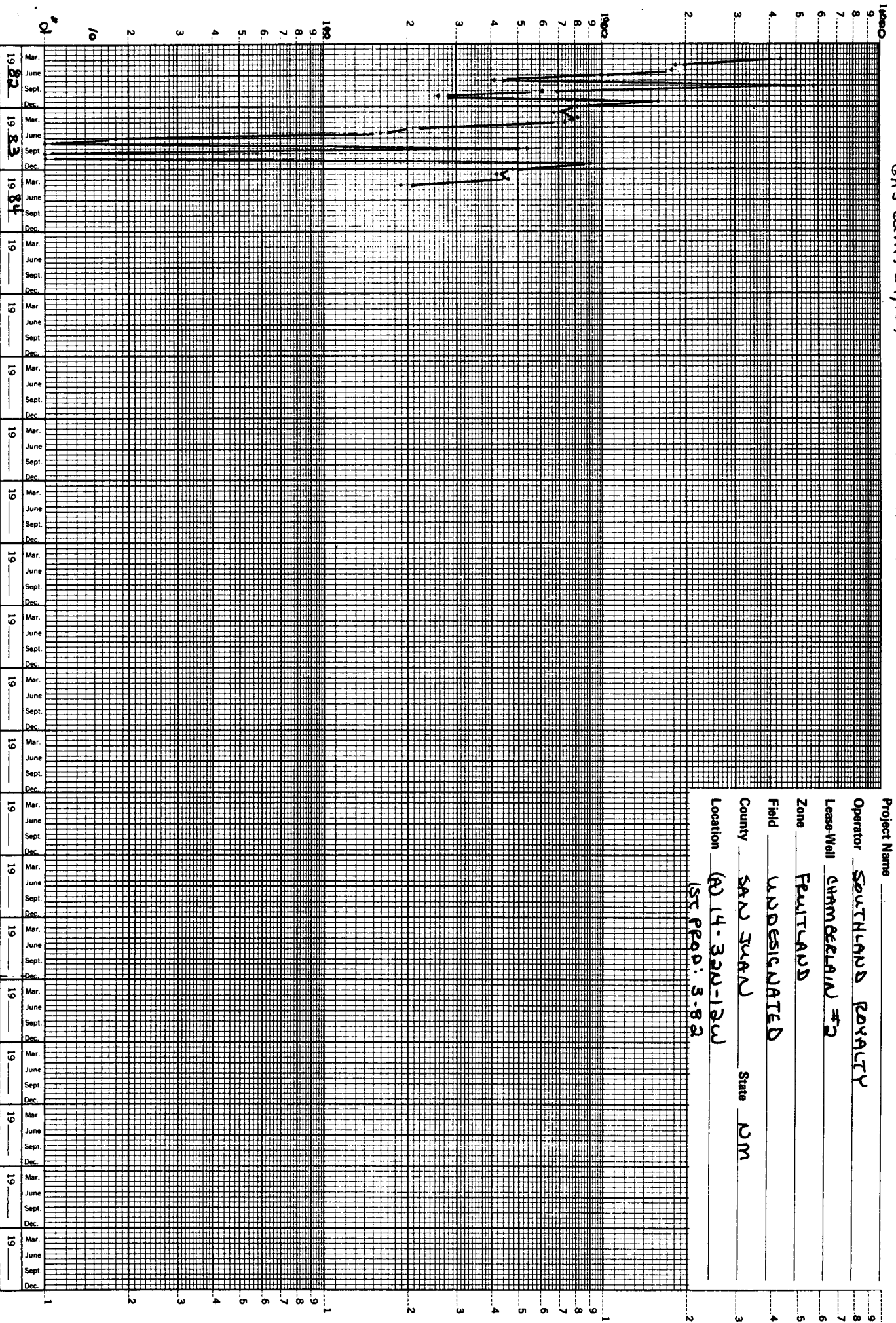
SUMMARY

Item b	426	Paia
P_c	642	Paia
Q	137	MCF/D
P_w	429	Paia
P_d	514	Paia
D	95	MCF/D

Company Southland Royalty Company
 By R. E. Filler
 Title District Manager
 Witnessed By _____
 Company _____



oil um: 278



san Juan repro Form 50-3

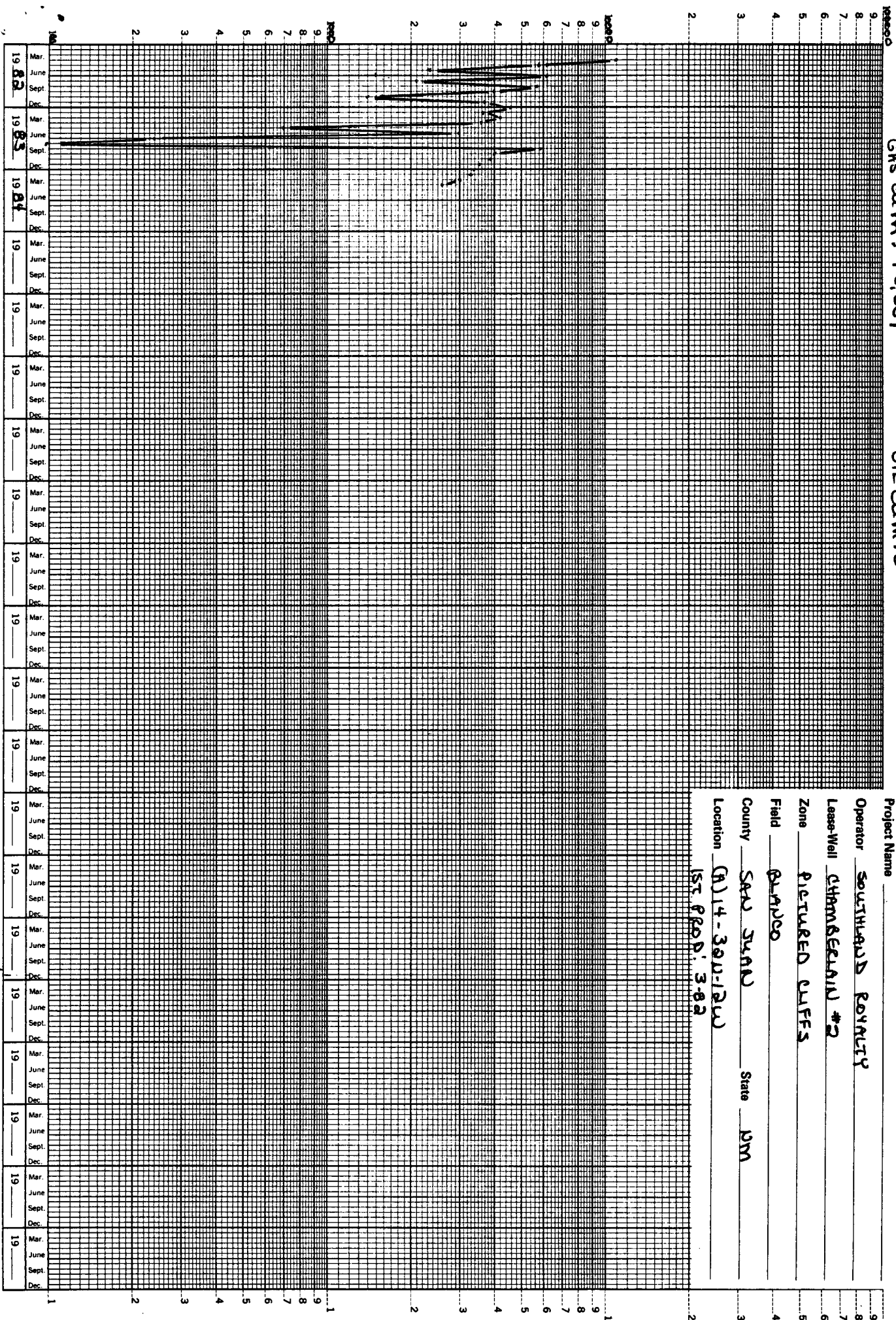


Southland Royalty Company

GAS CUM: 92,559

OIL CUM: 0

Project Name _____
Operator SOUTHLAND ROYALTY
Lease-Well ATAMBERIAN #2
Zone PETURED LUFFS
Field BLANCO
County SAN JUAN State NM
Location (A) 14-30N-12W
1ST PROD: 3-82

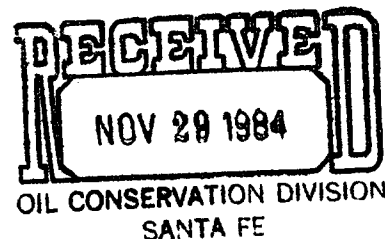




Southland Royalty Company

November 27, 1984

Mr. Dave Catanach
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501



Re: Downhole Commingling
SRC - Hillstrom #3 and Chamberlain #2
San Juan County, New Mexico
Fruitland/Pictured Cliffs

Dear Dave,

As per our telephone conversation on 11-16-84, a five day production test was run on the subject wells and is attached. If you need any more information, please feel free to contact me on this matter.

Thank you,

D. R. Harris
Area Engineer

DRH/bgw

5 Day Deliverability Test

Hillstrom #3 - Blanco Pictured Cliffs

"D" 35-32-12

11-17-84	94 MCF/D	79%
11-18-84	97 MCF/D	73%
11-19-84	131 MCF/D	72%
11-20-84	65 MCF/D	65%
11-21-84	99 MCF/D	67%
		<u>71%</u> Avg.

Hillstrom #3 - Glades Fruitland

"D" 35-32-12

11-17-84	24 MCF/D	21%
11-18-84	33 MCF/D	27%
11-19-84	52 MCF/D	28%
11-20-84	35 MCF/D	35%
11-21-84	49 MCF/D	33%
		<u>29%</u> Avg.

Chamberlain #2 - Blanco Pictured Cliffs

"A" 14-32-12

11-17-84	73 MCF/D	N/A
11-18-84	159 MCF/D	79%
11-19-84	131 MCF/D	81%
11-20-84	94 MCF/D	85%
11-21-84	104 MCF/D	85%
		<u>82.5%</u> Avg.

Chamberlain #2 - Undesignated Fruitland

"A" 14-32-12

11-17-84	0 MCF/D	N/A
11-18-84	42 MCF/D	21%
11-19-84	30 MCF/D	19%
11-20-84	17 MCF/D	15%
11-21-84	17 MCF/D	15%
		<u>17.5%</u> Avg.



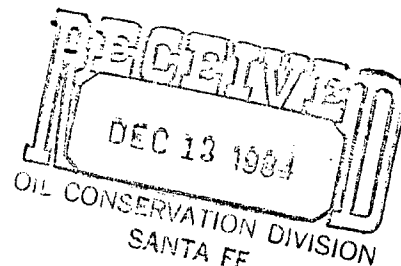
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

OIL CONSERVATION DIVISION
BOX 2088
SANTA FE, NEW MEXICO 87501

DATE Dec 1, 1984

RE: Proposed MC _____
Proposed DHC α _____
Proposed NSL _____
Proposed SWD _____
Proposed WFX _____
Proposed PMX _____



Gentlemen:

I have examined the application dated 11/14/84
for the Southland Royalty Co Chamberlain #2 A-14-32N-12W
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve Note correct range is 12 west

Yours truly,

Frank J. Perry