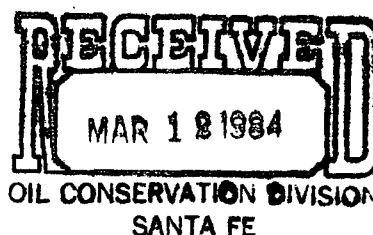




Southland Royalty Company

March 9, 1984

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



RE: Downhole Commingling
SRC - Harrison #2
Fruitland/Pictured Cliffs
SW/4, Section 31, T32N, R10W
San Juan County, New Mexico

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:	93% Pictured Cliffs 7% Fruitland

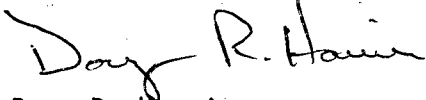
Royalty ownership in both zones of the well are identical. The well is currently unproductive and no current 24 hour productivity test can be supplied, therefore, we have included the latest deliverability test reports. In addition, copies of gas analysis from each zone, decline curves, production plats, and miscellaneous data are included with this package for your information.

Mr. Joe D. Ramey
Page Two
March 9, 1984

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

Sincerely,

SOUTHLAND ROYALTY COMPANY



Doug R. Harris
Petroleum Engineer

DRH/eg

Attachments

XC: BLM-Farmington
EPNG-Farmington
Amoco-Farmington
Mesa Petroleum-Amarillo, TX
C&E Operators, Inc.-Dallas, TX

~~has sent copy to BLM, EPNG, Amoco, Mesa, C&E, etc.~~

MISCELLANEOUS DATA

Fruitland Bottom Hole Pressure	=	596 psi
Pictured Cliffs Bottom Hole Pressure	=	582 psi
Fruitland Oil Gravity	=	43.1 deg.
BTU/CF at 14.73/60 F/Dry (Fruitland)		1126
BTU/CF at 14.73/60 F/Dry (Pictured Cliffs)		1120

NEW MEXICO OIL CONSERVATION COMMISSION
WELL DELIVERABILITY TEST REPORT FOR 19 81

Form C122-A
Revised 8-77

POOL NAME UND FRUITLAND	POOL SLOPE n = .85	FORMATION FRUITLAND	COUNTY SAN JUAN
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COMPANY SOUTHLAND ROYALTY			WELL NAME AND NUMBER HARRISON 2		
UNIT LETTER K	SECTION 31	TOWNSHIP 32N	RANGE 10W	PURCHASING PIPELINE SOUTHERN UNION GATHERING	
CASING O.D. - INCHES 5.5000	CASING I.D. - INCHES 5.0120	SET AT DEPTH - FEET 2952	TUBING O.D. - INCHES 1.6600	TUBING I.D. - INCHES 1.3800	TOP - TUBING PERF. - FEET 2479
GAS PAY ZONE FROM 2396 TO 2459		WELL PRODUCING THRU CASING TUBING X		GAS GRAVITY .652	GRAVITY X LENGTH 1616
DATE OF FLOW TEST FROM 09/09/81 TO 09/17/81			DATE SHUT-IN PRESSURE MEASURED 09/24/81		

PRESSURE DATA - ALL PRESSURES IN PSIA

(a) Flowing Casing Pressure (DWI) 474	(b) Flowing Tubing Pressure (DWI) 453	(c) Flowing Meter Pressure (DWI) 451	(d) Flow Chart Static Reading 442	(e) Meter Error (Item c - Item d) 9+	(f) Friction Loss (a-c) or (b-c) 2+	(g) Average Meter Pressure (Integr.) 442
(h) Corrected Meter Pressure (g+e) 451	(i) Avg. Wellhead Press. $P_t = (h+f)$ 453	(j) Shut-in Casing Pressure (DWI) 503	(k) Shut-in Tubing Pressure (DWI) 457	(l) P_c = higher value of (j) or (k) 503	(m) Del. Pressure $P_d = 80$ % P_c 402	(n) Separator or Dehydrator Pr. (DWI) for critical flow only ---

FLOW RATE CORRECTION (METER ERROR)

Integrated Volume - MCF/D 28	Quotient of $\frac{\text{Item c}}{\text{Item d}}$ 1.0203	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$ 1.0101	Corrected Volume Q = 28 MCF/D
--	--	---	---

WORKING PRESSURE CALCULATION

$(1 \cdot 10^{-5})$.111	$(F_c Q_m)^2 (1000)$ 475	$R^2 = (1 \cdot 10^{-5}) (F_c Q_m)^2 (1000)$ 53	P_t^2 205,209	$P_w^2 = P_t^2 + R^2$ USE PT2	$P_w = \sqrt{P_w^2}$ 453
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DELIVERABILITY CALCULATION

$D = Q \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_n^2} \right]^n =$ 28	$\left(\frac{91,405}{47,800} \right)^n =$ 1.9122	$=$ 1.7350	$=$ 49 MCF/D
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REMARKS:

SUMMARY

Item h **451** Psia
 P_c **503** Psia
 Q **28** MCF/D
 P_w **453** Psia
 P_d **402** Psia
 D **49** MCF/D

Company **SOUTHLAND ROYALTY**
 By *[Signature]*
 Title **DISTRICT PRODUCTION MANAGER**
 Witnessed By _____
 Company _____

OCT 20 1981

NEW MEXICO OIL CONSERVATION COMMISSION
WELL DELIVERABILITY TEST REPORT FOR 19 82

Form C122-A
 Revised 8-77

POOL NAME BLANCO PC	POOL SLOPE n = .35	FORMATION PICTURED CLIFFS	COUNTY SAN JUAN
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COMPANY SOUTHLAND ROYALTY		WELL NAME AND NUMBER HARRISON 2	
UNIT LETTER K	SECTION 31	TOWNSHIP 32N	RANGE 10W
PURCHASING PIPELINE SOUTHERN UNION GATHERING			
CASING O.D. - INCHES 5.5000	CASING I.D. - INCHES 5.0120	SET AT DEPTH - FEET 2952	TUBING O.D. - INCHES 1.9000
GAS PAY ZONE		WELL PRODUCING THRU	GAS GRAVITY
FROM 2766	TO 2850	CASING X	TUBING .652
DATE OF FLOW TEST 04/09/82		DATE SHUT-IN PRESSURE MEASURED 04/24/82	
GRAVITY X LENGTH 2893			

PRESSURE DATA - ALL PRESSURES IN PSIA:

(a) Flowing Casing Pressure (DWI) 00	(b) Flowing Tubing Pressure (DWI) 362	(c) Flowing Meter Pressure (DWI) 361	(d) Flow Chart Static Reading 378	(e) Meter Error (Item c - Item d) 17-	(f) Friction Loss (a-c) or (b-c) 1+	(g) Average Meter Pressure (Integr.) 370
(h) Corrected Meter Pressure (g+e) 353	(i) Avg. Wellhead Press. $P_f = (h+f)$ 354	(j) Shut-in Casing Pressure (DWI) 00	(k) Shut-in Tubing Pressure (DWI) 474	(l) $P_c =$ higher value of (i) or (k) 474	(m) Del. Pressure $P_d = 80\%$ 379	(n) Separator or Dehydrator Pr. (DWI) for critical flow only ---

FLOW RATE CORRECTION (METER ERROR)

Integrated Volume - MCF/D 217	Quotient of $\frac{\text{Item c}}{\text{Item d}}$.9550	$\sqrt{\frac{\text{Item c}}{\text{Item d}}}$.9772	Corrected Volume Q = 212 MCF/D
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WORKING PRESSURE CALCULATION:

$(1-e^{-3})$.123	$(F_c Q_m)^2 (1000)$ 12,178	$R^2 = (1-e^{-3}) (F_c Q_m)^2 (1000)$ 1,559	P_i^2 125,316	$P_w^2 = P_i^2 + R^2$ 126,875	$P_w = \sqrt{P_w^2}$ 356
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DELIVERABILITY CALCULATION

$$D = Q \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n = \frac{212}{\left(\frac{81,035}{97,801} \right)^n} = \frac{212}{.8286} = 256.1 \text{ MCF/D}$$

REMARKS:

SUMMARY

Item h **353** Psia
 P_c **474** Psia
 Q **212** MCF/D
 P_w **356** Psia
 P_d **379** Psia
 D **181** MCF/D

Company **SOUTHLAND ROYALTY**
 By **[Signature]**
 Title **DISTRICT PRODUCTION MANAGER**
 Witnessed By _____
 Company _____

JUN - 2 1982

SOUTHERN UNION GATHERING COMPANY
REPORT OF BTU TEST RESULTS

TO: SOUTHLAND ROYALTY CO 27298 (826)

REF: STLD HARRISON 2 PC
4640
NORTHWEST NEW MEXICO (70)

DATE OF THIS TEST: 7/26/82
DATE OF LAST TEST: 7/16/81
TEST FREQUENCY: 12

RESULTS: SPECIFIC GRAVITY: 0.6430
BTU/CF @ 14.73/60F/DRY: 1120.0

	MCL %	G.P.M.
CARBON DIOXIDE	1.224	0.0000
NITROGEN	0.172	0.0000
METHANE	89.020	0.0000
ETHANE	5.990	1.6010
PROPANE	2.140	0.5880
ISOBUTANE	0.341	0.1110
N-BUTANE	0.512	0.1610
ISOPENTANE	0.194	0.0710
N-PENTANE	0.130	0.0470
HEXANE +	0.293	0.1290
	-----	-----
TOTAL	100.016	2.7030

SOUTHERN UNION GATHERING COMPANY
REPORT OF BTU TEST RESULTS

27297

TO: SOUTHLAND ROYALTY CO. (826)

REF: STHLND HARRISON #2 - *Ent*
4641
NORTHWEST NEW MEXICO (70)

DATE OF THIS TEST: 6/17/82
DATE OF LAST TEST: 3/24/81
TEST FREQUENCY: 12

RESULTS: SPECIFIC GRAVITY: 0.6417
BTU/CF @ 14.73/60F/DRY: 1126.0

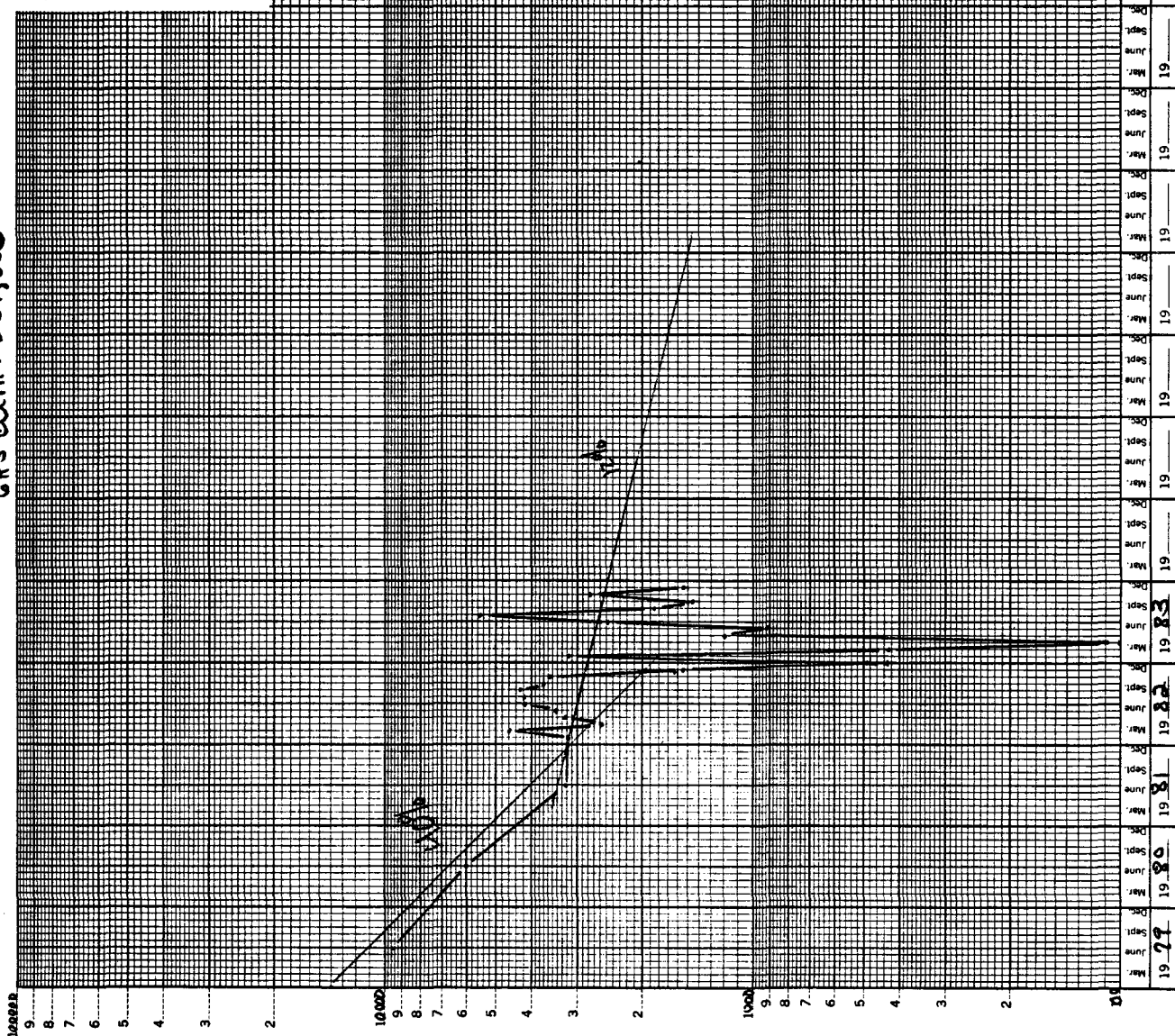
	MOL %	G.P.M.
CARBON DIOXIDE	0.908	0.0000
NITROGEN	0.167	0.0000
METHANE	89.320	0.0000
ETHANE	5.790	1.5470
PROPANE	2.281	0.6270
ISOBUTANE	0.391	0.1270
N-BUTANE	0.585	0.1840
ISOPENTANE	0.175	0.0640
N-PENTANE	0.132	0.0470
HEXANE +	0.286	0.1260
	-----	-----
TOTAL	100.035	2.7220



Southland Royalty Company

GAS CUM: 239,385

Project Name _____
Operator SOUTHLAND ROYALTY
Lease-Well HARRISON #2
Zone PICTURED CLIFFS
Field BLANCO
County SAN JUAN State NM
Location (F) 31-32N-10W
1ST REO: 6-79

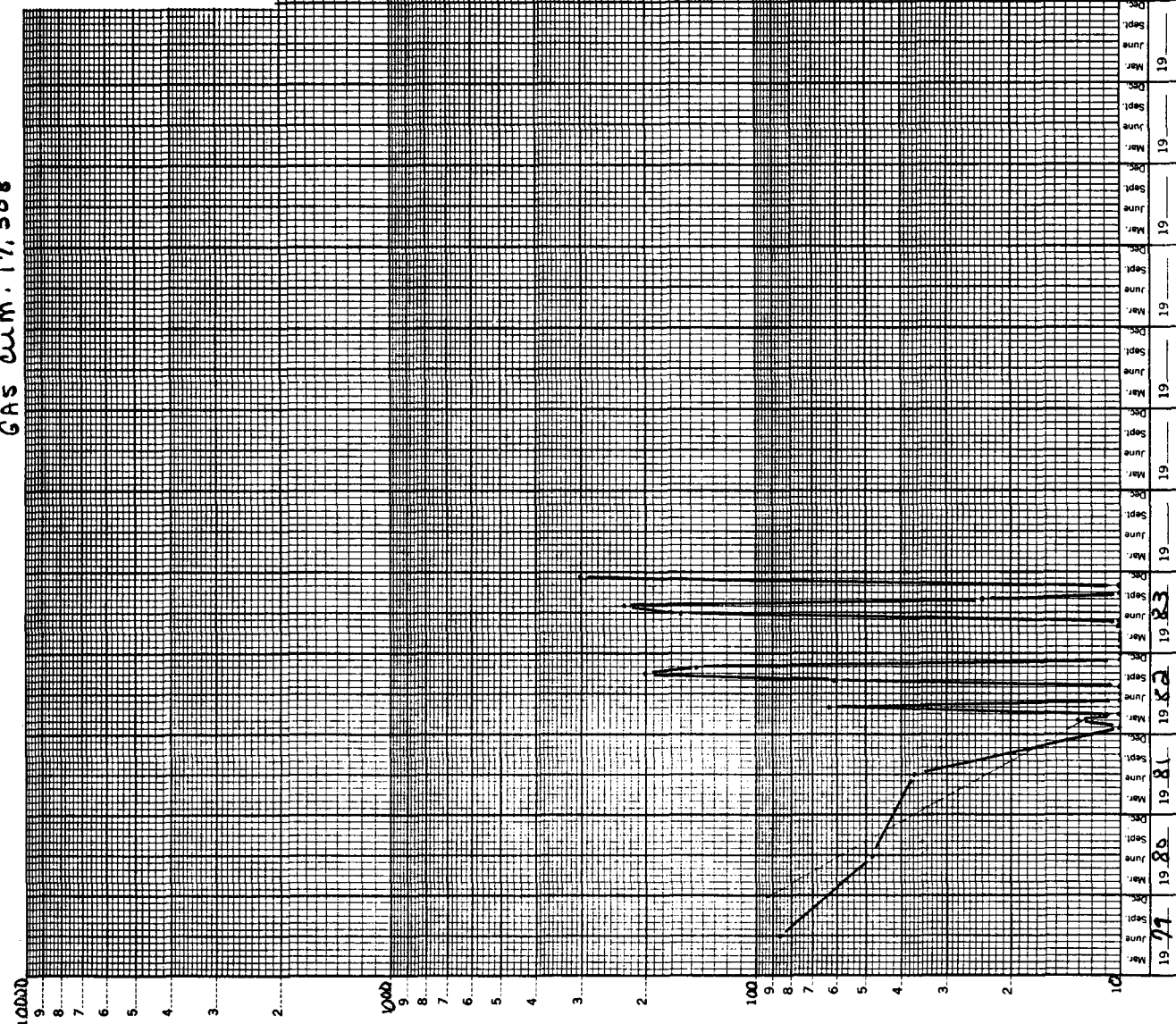




Southland Royalty Company

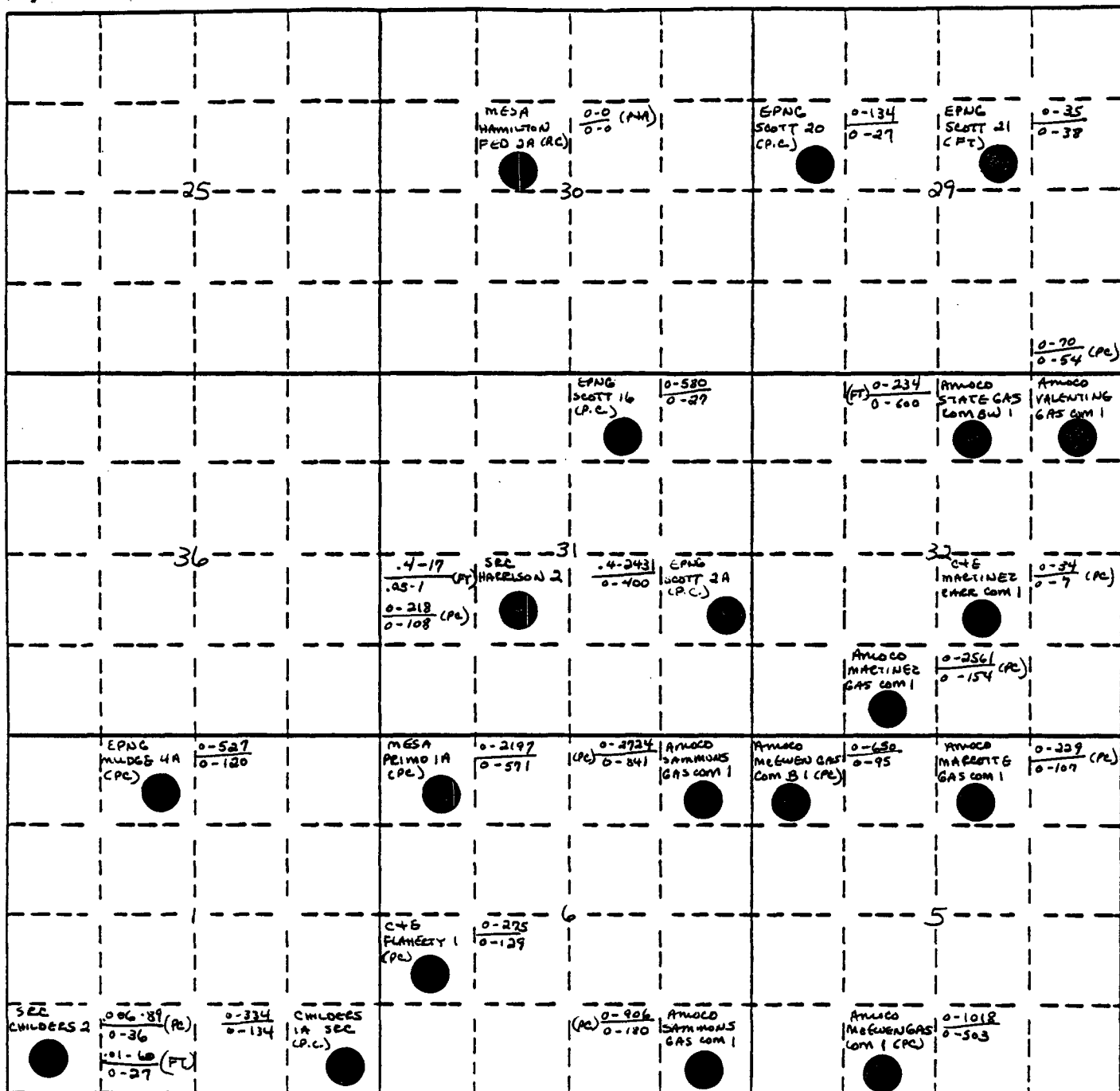
GAS CUM: 17,508

Project Name _____
Operator SOUTHLAND ROYALTY
Lease-Well HARRISON #2
Zone FRUITLAND
Field SAN JUAN UNO
County SAN JUAN State NM
Location (K) 31-32N-10W
1st PRAD: 6-79



11 W

10 W



32 N

31 N

S.R.C.

MBO - MCF

BOPD - MCFPD

SOUTHLAND ROYALTY COMPANY

AREA

HARRISON #2 (FRUIT. - P.C.)

LOCATION

(K) 31-32N-10W

TYPE OF MAP

PRODUCTION

CONTOURED

C1

BY

DATE

REVISED BY

DATE

REFERENCE

DATE

NOTES



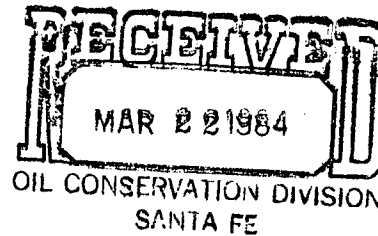
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

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

OIL CONSERVATION DIVISION
BOX 2088
SANTA FE, NEW MEXICO 87501

DATE 3-20-84

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



Gentlemen:

I have examined the application dated 3-11-84
for the Southern Royalty Harrison #2
Operator Lease and Well No. Unit, S-T-R

and my recommendations are as follows:

Approve

Yours truly,

Frank J. Chavez