

LOS MEDANOS (MORROW) AREA

6/28/82

K. E. BUCY

A study of the subject field area was recently undertaken to determine the proper participating area(s) for JRU Nos. 4 and 7. Open hole logs, pressure data, and production information were incorporated in the analysis.

#### LOG ANALYSIS

Based on Gamma Ray-Porosity logs, the top of the Morrow interval occurs at 13,278' (- 9,959') in JRU No. 4 and 13,453' (-10,115') in JRU No. 7. JRU No. 4 is perforated in 4 discreet intervals: 13865-879', 13886-896', 14073-088', and 14110-114'. Well No. 7 is completed in 7 separate sands: 14062-074', 14086-088', 14094-099', 14168-178', 14234-244', 14470-480', and 14522-526'. Of the many sand lenses, only two appear at the same stratigraphic position in these wells. They are the intervals 13886/14062 and 14073/14234 in JRU No. 4/JRU No. 7, respectively. Due to the lenticular nature of the Morrow sands, the appearance of sands at similar stratigraphic positions does not preclude the possibility that they are separated at some point between the wells. In fact, one would expect an occasional correlation due simply to the random deposition of the sands. A truer test of continuity lies in a comparison of pressure data.

#### PRESSURE DATA

The original BHP on JRU No. 4 was 6129 psig @ 13,990' (measured by Amerada bombs during 4 point test on 9/9/73). Seven additional data points have been taken during the well's life. All of this information has been tabulated and plotted as BHP/Z vs cumulative production. Note that the data is scattered as a result of the inaccurate

calculation of BHP by taking 24-hour surface shut in pressures. Due to the low permeability in the Morrow, 24 hours is not sufficient shut in time to allow the reservoir pressure to stabilize. In addition, the calculations assume a continuous gas phase in the tubing, thus neglecting the higher potential BHP which would result from some liquid accumulation. Regardless, the plot does indicate a general trend, and when coupled with decline curve analysis, yields a reasonable estimate of reserves. A plot of BHP/Z vs cumulative production for JRU No. 7 shows a similar scatter of data for the same reasons. Again, a reasonable reserve figure is estimated by combination with decline curve calculations.

While the data scatter masks any interpretation of interference caused by drainage, the initial pressure information on JRU No. 7 indicates that it was completed in zones that were at virgin reservoir pressure. This in itself is strong evidence against drainage by Well No. 4. JRU No. 7 was completed in July, 1975, two years subsequent to the completion of JRU No. 4. The measured BHP @ 13,870' was 6311 psig, 182 psi higher than the original BHP in No. 4. In the interim, JRU No. 4 had produced 2.99 BCF of gas from the Morrow. If the wells were producing from a common source of supply, it would have been anticipated that JRU No. 7 would have experienced substantial pressure drawdown.

#### PRODUCTION DATA

As previously mentioned, the production vs time information (decline curve) was analyzed to determine ultimate recovery. The curves were also studied to determine if interference could be detected as a result of producing Well No. 7 from the Morrow. Since JRU No. 4 was

completed two years prior to the completion of No. 7, an increase in decline rate would be expected when the newer well was put on line. This phenomenon has not been noted on the decline curve. In fact, following a workover in mid-1977, the decline rate on JRU No. 4 actually decreased from 44% to 24%/year. JRU No. 7 has experienced a constant 20%/year decline since inception.

CONCLUSIONS

JRU Nos. 4 and 7 produce from separate sources of supply within the Morrow interval; therefore, each well should be assigned a separate participating area. In keeping with previously documented information by several operators and New Mexico Oil Conservation Division spacing regulations, I recommend standup 320-acre areas be assigned, i.e. W/2 Section 6 - JRU No. 4, E/2 Section 6 - JRU No. 7.

Keith E. Bucy  
Senior Production Engineer

KEB:gp

## MORROW PRESSURE DATA

6/28/82

Keith E. Bucy

JRU NO. 4

DATE	PRESSURE, PSIA		BHP/Z	CUMULATIVE PROD., BCF	SOURCE
	WELLHEAD	BHP			
9/9/73	---	6144 (13990')	5580	0	4 pt test
11/3/74	2213	2989	3214	1.85	Dwight's
7/12/75	1113	1484	1589	2.99	Dwight's
4/13/76	---	4163 (13600')	4261	3.69	96 hr BHPBU
7/12/76	1663	2238	2424	3.71	Dwight's
9/14/77	1763	2376	2576	3.95	Dwight's
9/20/78	1413	1895	2044	4.75	Dwight's
9/21/80	1260	1685	1812	5.7	Dwight's

JRU NO. 7

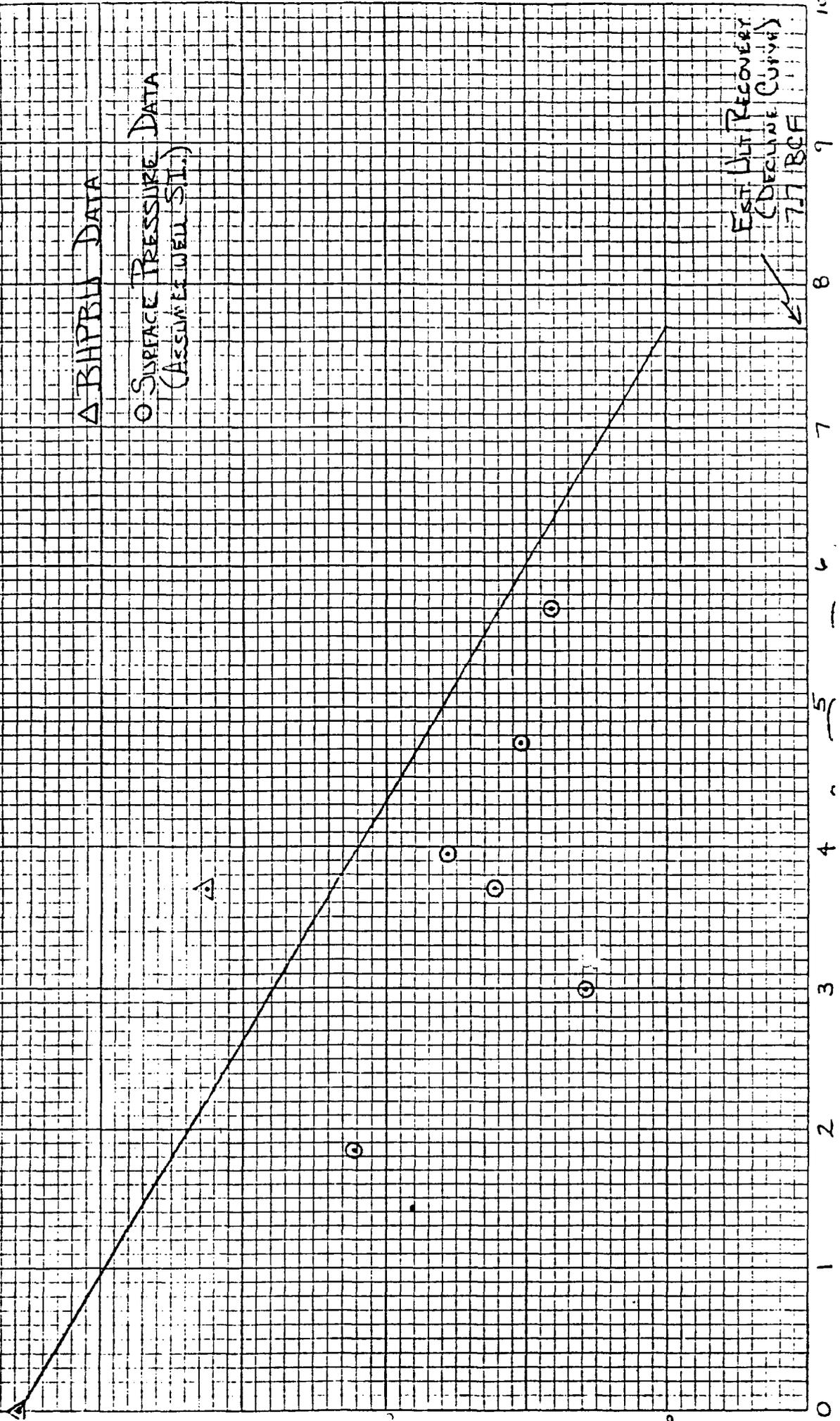
7/75	---	6311 (13870')	5670	0	BHPBU
2/24/76	---	4898'	4810	0.07	BHPBU
7/16/76	2960	3816	3993	0.27	Dwight's
7/14/77	2698	3488	3704	0.76	Dwight's
8/2/79	2840	3666	3864	1.25	Dwight's
8/22/80	2497	3233	3467	1.61	Dwight's

Belco-JRL No. 4

Model (13605-1414)

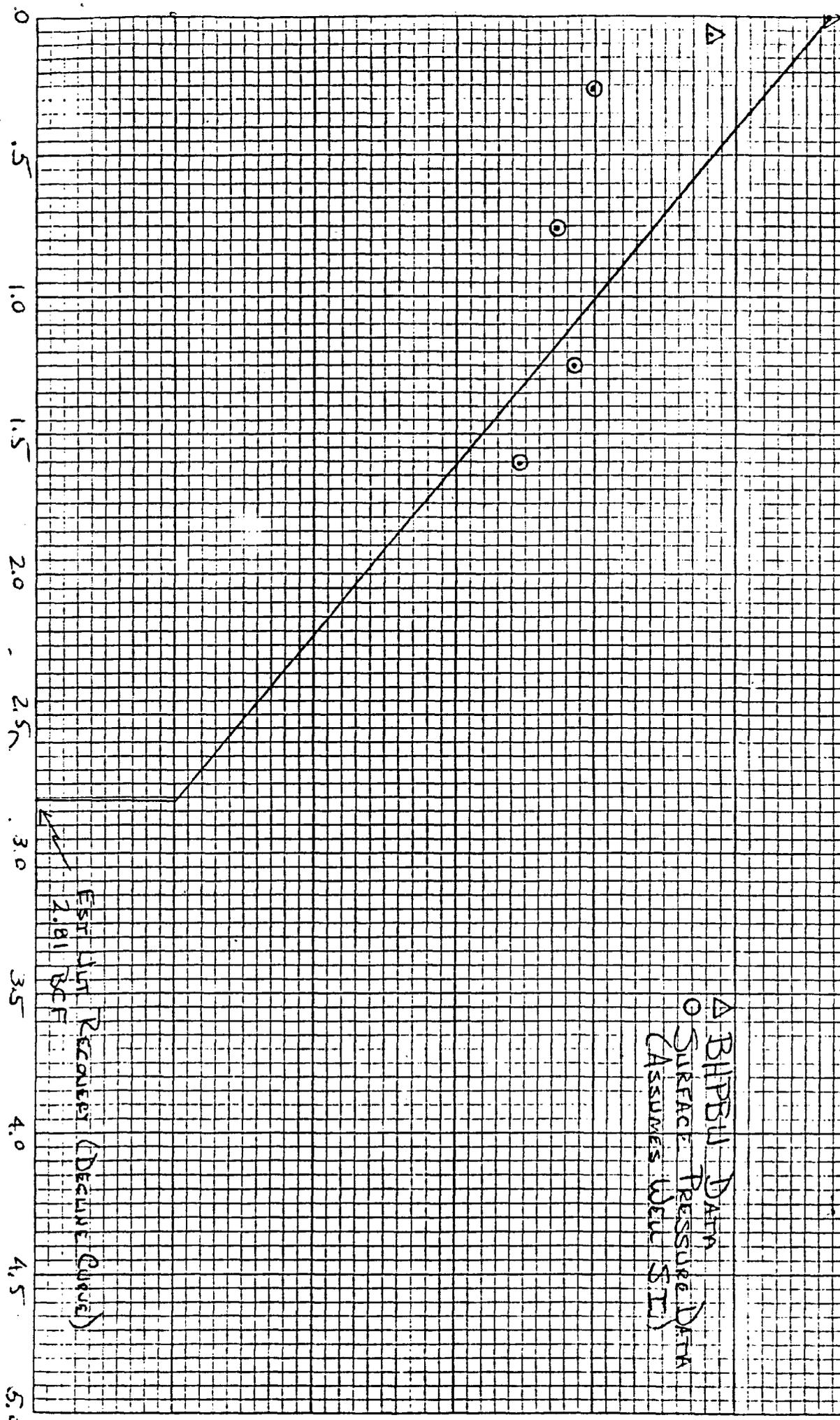
$\Delta$  BHPBL DATA

O SURFACE PRESSURE DATA  
(ASSUMED WELL STIL.)



CONOCO - JRU No. 7  
MORNING (1406Z - 14524)

△ BHPBU DATA  
○ SURFACE PRESSURE DATA  
(ASSUMES WELL S.I.)



EXIT UNIT RECOVERY (DECLINE CURVE)  
2.81 RCF



DATE YR MO	CONDENSATE PROD DDLS	CUM CONDENSATE PROD DDLS	GOR	N FAC	TEMP GRAD	GAS GRAV	LIO GRAV	WELL STATUS	TD	PERFS	GATHERER GAS LIQUID	FIELD DISCOVERY	FIELD TYPE
73													
74	332	332							150	578458	578092473	4770	61360
75	1166	1498							363	1534557	2113110374	2213	29850
76	518	2016							121	1363188	3476071275	1113	14840
77	1947	3963								300902	377071276	1663	22380
78	861	4824							226	421294	4198091477	1763	23760
79	2275	7099								711472	4910092078	1413	18950
80 01	222	7321								53595	5529		
80 02	192	7513								5573	5573		
80 03	113	7626								37725	5610		
80 04	63	7689							25	20690	5631		
80 05	95	7784								22471	5654		
80 06	103	7887							30	21090	5675		
80 07	66	7953							31	20426	5695		
80 08	124	8077							31	21466	5717		
80 09	79	8156							30	19695	5736	16850	1812
80 10	175	8331							31	22790	5759		
80 11	216	8547							30	27402	5786		
80 12	323	8870							31	47353	5834		
TOTALS	1771								246	358774			
81 01	228	9098							31	57489	5891		
81 02	174	9272							28	51728	5943		
81 03	171	9443							30	56162	5999		
81 04	150	9593							30	52990	6052		
81 05	148	9741							31	52873	6105		
81 06	132	9873							30	49687	6155		
81 07	133	10006							31	48458	6203		
81 08	136	10142							31	46522	6250		
81 09	126	10268							30	44372	6294		
81 10	125	10393							31	4076	6330		
81 11	118	10511							29	39987	6378		
81 12	125	10636							17	23837	6402		
TOTALS	1766								319	568231			

API NO.	20803	COMP DATE	090973	DATE 1ST PROD	9 73	GOR		N FAC	.6441	TEMP GRAD	0.82	GAS GRAV	.60	LIO GRAV		WELL STATUS	INACTIVE	TD	14380	PERFS	13865	GATHERER GAS LIQUID	14114NGP	FIELD DISCOVERY	PER	FIELD TYPE
IDENTIFYING NUMBER		OPERATOR		WELL NAME		WELL NO		RESERVOIR																		
STATE	NEW MEXICO	POST	2	FIELD NAME		LOS MEDANOS MORROW (GAS)		FIELD NUMBER		00804570		COUNTY		EDDY		LOCATION		06L 23S		31E		WELL NO		RESERVOIR		
DATE	08 27 75	COMP	22331E06L00PM	FIELD NAME		#4 JAMES RANCH UNIT		FIELD NUMBER				COUNTY				LOCATION						WELL NO		RESERVOIR		
PAGE NO	2876	TOTAL																								

\*\*\* D16\*\*\*



TOTAL SIMPLIFIED



WELL NO	DATE	PROD M3 CF	MLP	WELL STATUS	TD	PERFS	GATHERER	FIELD	FIELD TYPE
							GAS	LIQUID	DISCOVERY
76	12	513583		ACTIVE	14590	4062	1452	DEPG	PER
77		430172							
78		141343							
79	6	310492							
80 01	52	26092							
80 02	52	27030							
80 03	52	27284							
80 04	52	28613							
80 05	52	28399							
80 06	52	26925							
80 07	52	27606							
80 08	52	23305							
80 09	52	22401							
80 10	52	21177							
80 11	52	14245							
80 12	52	19912							
TOTALS		292989							
81 01	52	18734							
81 02	52	20185							
81 03	52	23403							
81 04	52	27300							
81 05	52	27026							
81 06	52	25557							
81 07	52	26175							
81 08	52	19567							
81 09	52	11233							
81 10	52	9398							
81 11	52	15603							
81 12	52	13008							
TOTALS		237193							

APINO	21267	COMP DATE	1 76	DATE 1ST PROD	1 76	GOR		N FAC	92.4	TEMP GRAD	0.00	GAS GRAD	0.57	LIQ GRAD	0.00	WELL STATUS	ACTIVE	TD	14590	PERFS	4062	GATHERER	1452	FIELD	DEPG	FIELD TYPE	PER
IDENTIFYING NUMBER	OPERATOR		WELL NAME		WELL NO		RESERVOIR																				
223531E06G00PM	CONOCO INC		#7 JAMES RANCH UNIT																								
STATE	DIST	FIELD NAME	FIELD NUMBER	COUNTY	LOCATION											PAGE NO	2875										
NEW MEXICO	2	LOS MEDANOS MORROW (GAS)	008045700	EDDY	06G 23S											TOTAL	2875										

\*\*\* 16\*\*\*

CONOCO SERVICES

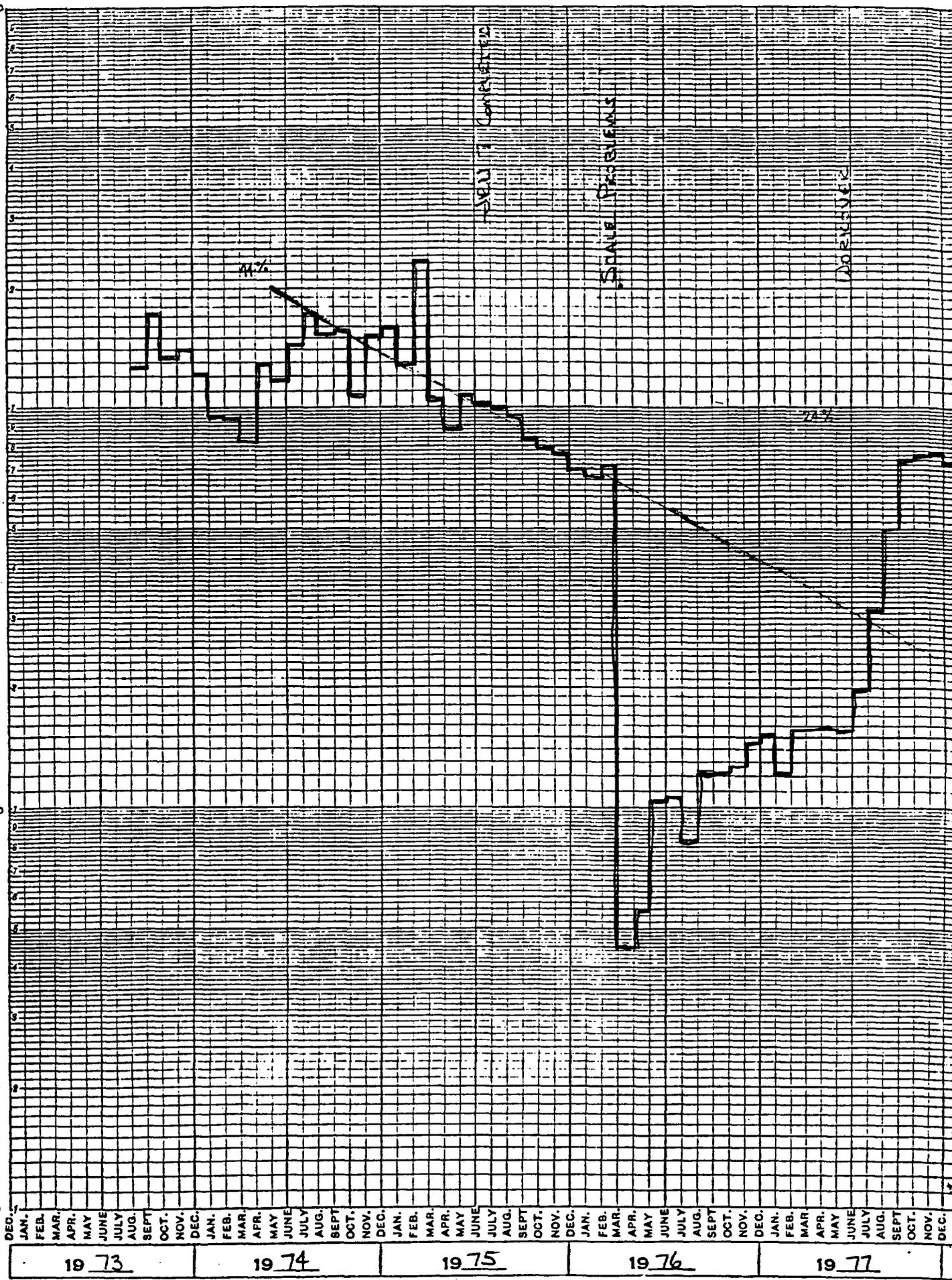
MCF/MONTH

1,000,000

100,000

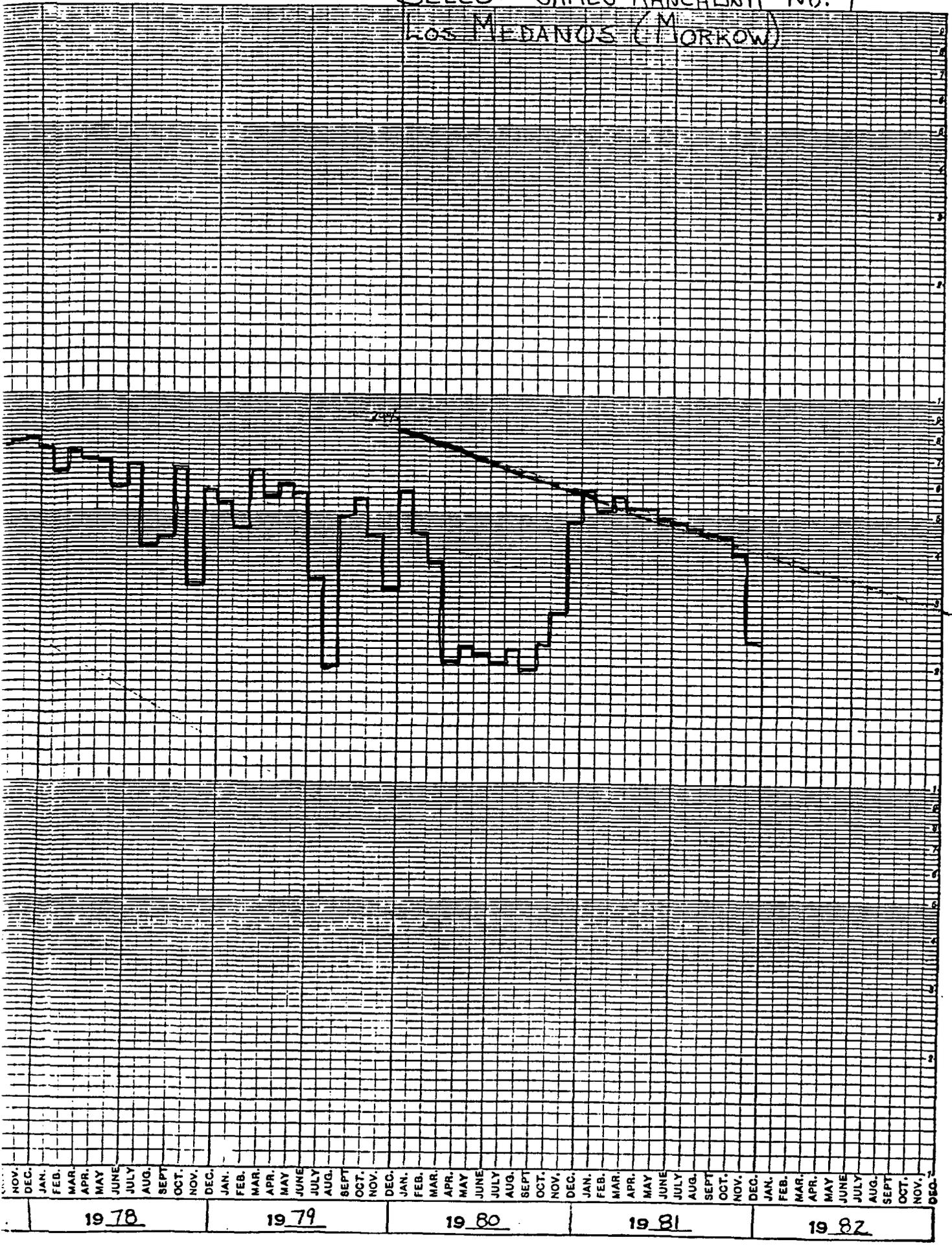
10,000

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# BELCO - JAMES RANCH UNIT No. 4

## LOS MEDANOS (MORROW)



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GRAPH PAPER

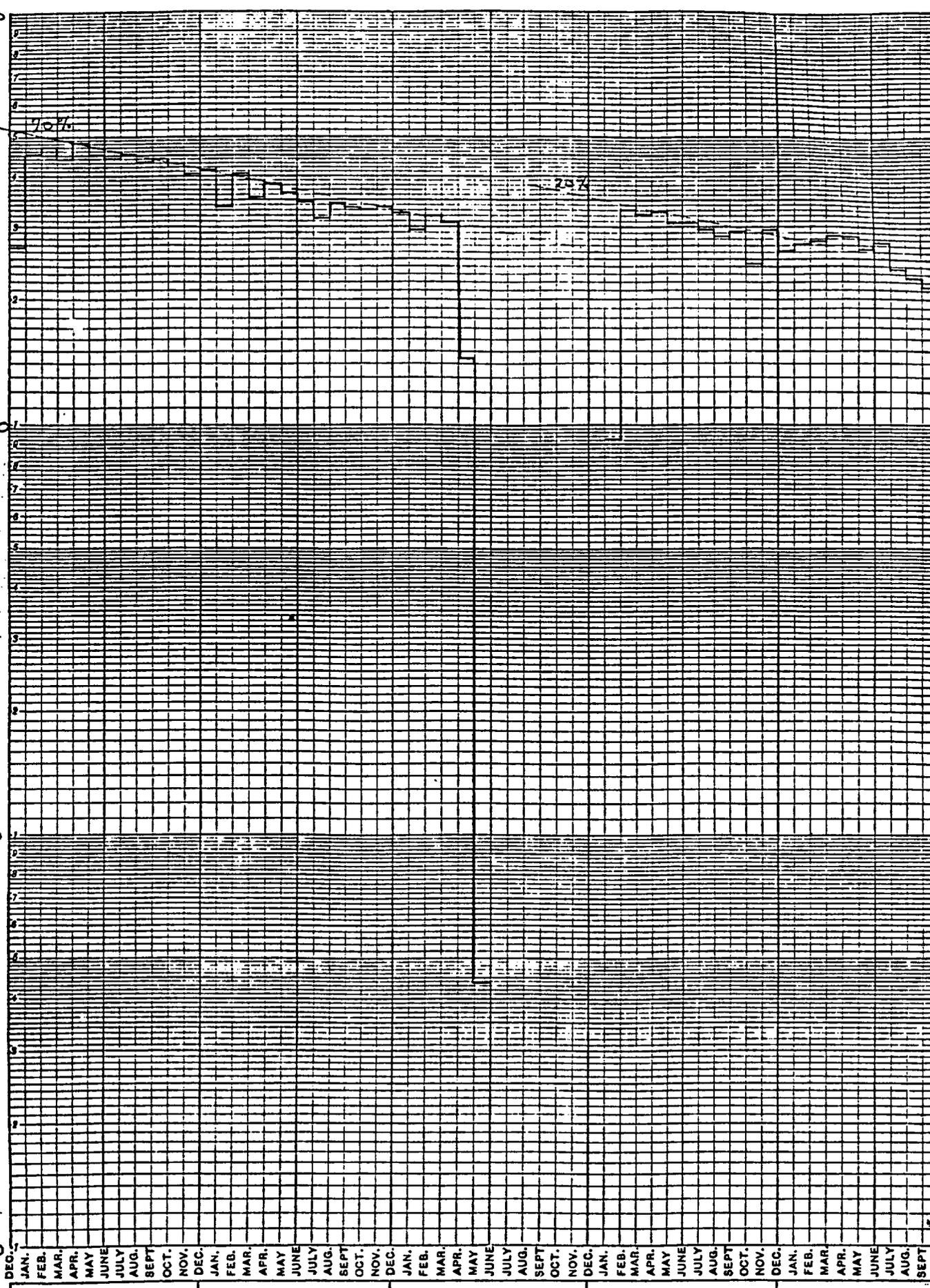
MCF/MONTH

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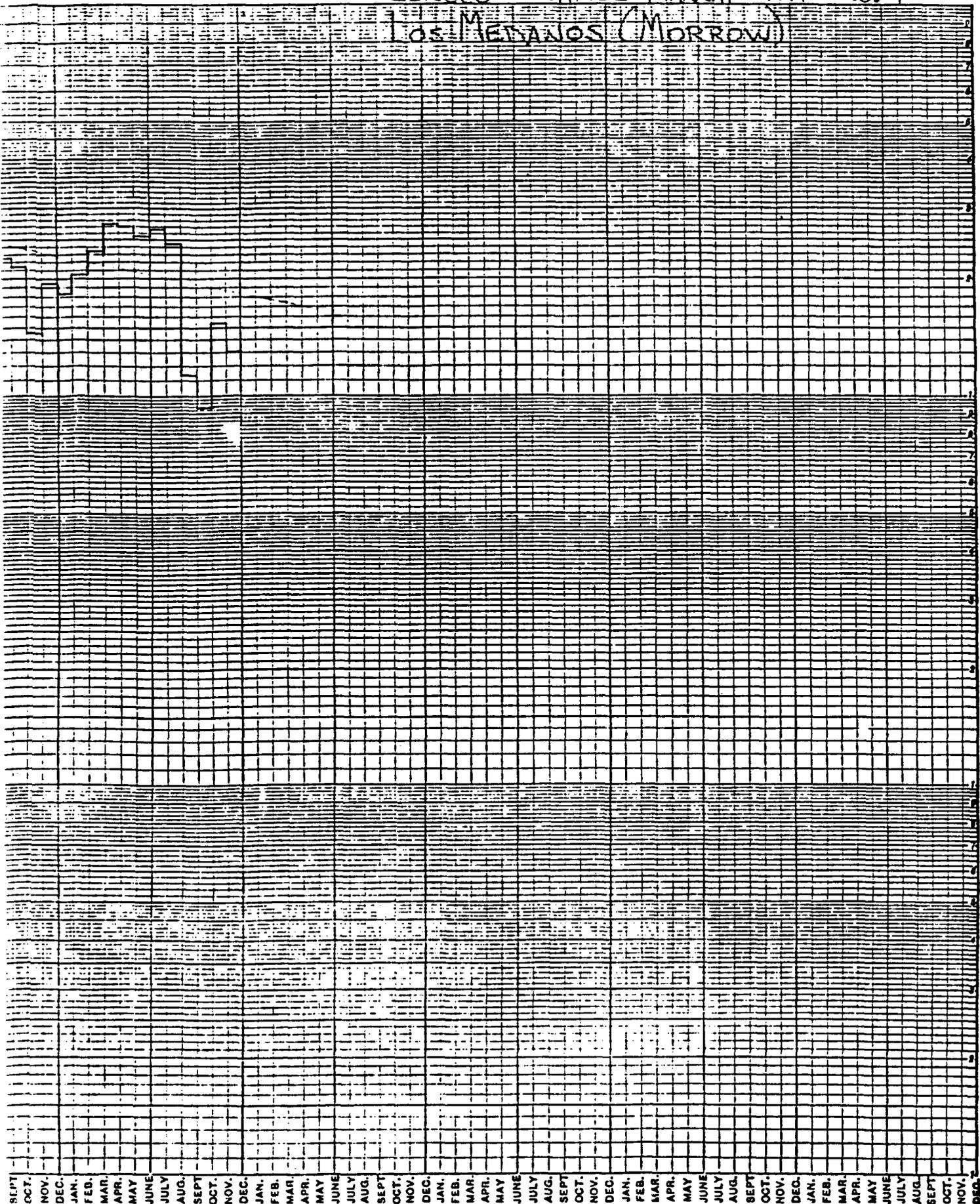
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# CONOCO - JAMES RANCH UNIT No. 7

## LOS MEDANOS (MORROW)



SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.																				
19 81												19 82												19 _____												19 _____												19 _____											

ANCH

UNIT

HILL TANK

11-10856

10856

10856

10856

10856

DGE

UNIT

-10700

-10800

-10900

-11000

-11000

-10792

-10853

-10917

-10845

-10832

-10854

-10884

-11058

James Ranch Unit

TOP LOWER MORROW

S.A.H. 7/82

11-11405

-11405

-11485

JONES

Coquina Pure Gold-Fed 1-B

Coquina Pure Gold-Fed 1-A

Wulf Sprinkle 1-A

Wulf Sprinkle 2-A

Grace 1-Cavin

AME

El Paso Pure Gold 1-Area U TD 15,000

Phillips 1-Sandy U TD 14,857

Pure Gold 1-A

11-10856

10856

10856

10856

10856

DGE

UNIT

HILL TANK

-10700

-10800

-10900

-11000

-11000

-10792

-10853

-10917

-10845

-10832

-10854

-10884

-11058

James Ranch Unit

TOP LOWER MORROW

S.A.H. 7/82

11-11405

-11405

-11485

JONES

Coquina Pure Gold-Fed 1-B

Coquina Pure Gold-Fed 1-A

Wulf Sprinkle 1-A

Wulf Sprinkle 2-A

Grace 1-Cavin

AME

El Paso Pure Gold 1-Area U TD 15,000

Phillips 1-Sandy U TD 14,857

Pure Gold 1-A

Exhibit "C"  
First Revision Morrow Formation  
Participating Area, James Ranch Unit  
Agreement, Eddy County, New Mexico

Spudded: 6-30-74

IP: 1-19-76; O BO, O BW, 2300 MCFGPD

FTP 700#; CP 600#; 18/64" choke

P.L. Conn: El Paso 1-19-76

Perfs: 14,062'-74'; 14,086'-88'; 14,094'-99'; 14,168'-78';  
14,234'-44'; 14,470'-80'; 14,522'-26', w/2 JSPF

Current data: Flowing TP - 750#; CP 1800#; 14/64" choke

Monthly Production: January through June 1980:

January - 26,092 MCF

February - 27,030 MCF

March - 27,284 MCF

April - 28,613 MCF

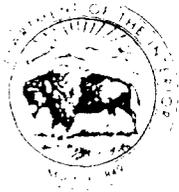
May - 28,399 MCF

June - 26,925 MCF

Cum. Prod. through 6-30-80: 1,559,933 MCFG

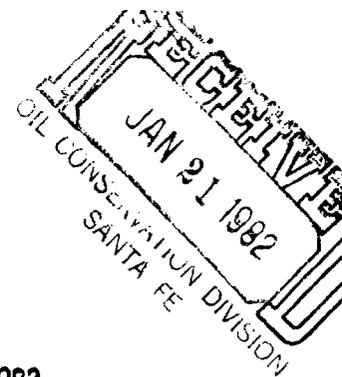
Projected Recoverable Reserves: 2.1 BCFG from 7-1-80

Based on the cost of drilling, completion, discount, taxes,  
and operating through depletion, with a gas price of \$1.45/  
MCF, this is a commercial well.



# United States Department of the Interior

GEOLOGICAL SURVEY  
South Central Region  
P. O. Box 26124  
Albuquerque, New Mexico 87125



JAN 20 1982

Bass Enterprises Production Company  
Attention: Mr. Jens Hansen  
Fort Worth National Bank Building  
Fort Worth, Texas 76102

472

Gentlemen:

An approved copy of your 1982 plan of development for the James Ranch unit area, Eddy County, New Mexico, is enclosed. Such plan, proposing the drilling of the James Ranch unit well #13, was approved on this date subject to like approval by the appropriate officials of the State of New Mexico.

Sincerely yours,

(ORIG. SCD.) JAMES W. SHELTON

FCR Gene F. Daniel  
Deputy Conservation Manager  
Oil and Gas

Enclosure

cc:  
NMOCD, Santa Fe



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR

LARRY KEHOE  
SECRETARY

January 3, 1982

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-2434

BASS ENTERPRISES PRODUCTION CO.  
First City Bank Tower  
201 Main St.  
Fort Worth, Texas 76102

ATTENTION: Jens Hansen

RE: James Ranch Unit  
Well No. 7, Participating Area  
Eddy County, New Mexico

Dear Sir:

The above referenced submittal has been approved by the New Mexico Oil Conservation Division effective this date. Such approval is contingent upon like approval by the New Mexico Commissioner of Public Lands and the United States Minerals Management Service.

Sincerely,

A handwritten signature in cursive script, appearing to read "Roy E. Johnson".

Roy E. Johnson  
Petroleum Geologist

REJ/dp

cc: Commissioner of Public Lands - Santa Fe  
Minerals Management Service - Albuquerque  
OCD District Office

# State of New Mexico



## Commissioner of Public Lands

December 30, 1981

ALEX J. ARMIJO  
COMMISSIONER

P. O. BOX 1148  
SANTA FE, NEW MEXICO 87501

Bass Enterprises Production Co.  
Fort Worth National Bank Building  
Fort Worth, Texas 76102

Re: 1982 Plan of Development  
James Ranch Unit  
Eddy County, New Mexico

472

ATTENTION: Mr. Jens Hansen

Gentlemen:

The Commissioner of Public Lands has this date approved your 1982 Plan of Development for the James Ranch Unit, Eddy County, New Mexico. Such plan proposes the directional drilling of the Unit Well No. 13 which will test the Morrow Formation. Our approval is subject to like approval to by the United States Geological Survey and the New Mexico Oil Conservation Division.

Enclosed is one approved copy for your files.

Please remit a Three (\$3.00) Dollar filing fee.

Very truly yours,

ALEX J. ARMIJO  
COMMISSIONER OF PUBLIC LANDS

BY:  
RAY D. GRAHAM, Director  
Oil and Gas Division  
AC 505/827-2748

AJA/RDG/pm  
encls.  
cc:

OCD-Santa Fe, New Mexico  
USGS-Albuquerque, New Mexico

BASS ENTERPRISES PRODUCTION CO.  
FORT WORTH NATIONAL BANK BUILDING  
FORT WORTH, TEXAS 76102

December 15, 1981

UNITED STATES GEOLOGICAL SURVEY  
P. O. Box 26124  
Albuquerque, New Mexico 87125

COMMISSIONER OF PUBLIC LANDS  
P. O. Box 1148  
Santa Fe, New Mexico 87501

OIL CONSERVATION DIVISION  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: 1982 Plan of Development  
James Ranch Unit  
Eddy County, New Mexico

472

Gentlemen:

In accordance with Section 10 of the James Ranch Unit Agreement dated April 22, 1953, Perry R. Bass, Unit Operator, hereby submits for your approval a Plan of Development for the year 1982.

History of Past Development

We have reviewed in our previous Plans of Development all wells drilled within the Unit and we refer to such Plans for specific reference therein.

1981 Activity

James Ranch Unit Well #9 - This Well was scheduled to be drilled in Section 9, T22S-R30E, to a depth of 14,500' to test the Morrow Formation. Due to objections by the Duvall Corporation, relative to a conflict with their potash operations, Bass has been unable to obtain a Drilling Permit to drill this Well. This matter will be pursued in the customary manner in an attempt to obtain a Drilling Permit.

James Ranch Unit Well #11 - This Well was drilled from a surface location 920' FWL and 1980' FNL, Section 36, T22S-R30E and directionally drilled to a bottom hole location 2640' FEL and 1320' FNL, Section 36, T22S-R30E, to a total depth of 14,600'. The Well was plugged back to a depth of 13,235' and completed in the Atoka Formation with the perforation interval being 13,038'-13,044'. This Well is currently producing as a gas well from the Atoka Formation. However, the deeper Morrow Zones are expected to be produced upon depletion of the Atoka.

UNITED STATES GEOLOGICAL SURVEY  
COMMISSIONER OF PUBLIC LANDS  
OIL CONSERVATION DIVISION  
December 15, 1981  
Page 2 of 3

James Ranch Unit Well #12 - located 1450' FNL and 1830' FEL, Section 21, T22S-R30E. This Well was drilled to a total depth of 14,200' and plugged back to 14,110', and was completed in the Atoka Formation with the perforation interval being 12,665'-12,672'. This Well is currently producing as a gas well from the Atoka Formation.

Participating Areas

We will submit in the near future our recommendations for Commercial Determinations and Participating Areas for the James Ranch #10, #11 and #12 Wells.

Future Development

We plan to drill the following test well/s for unitized substances at the following tentative loctions:

James Ranch Unit Well #13 - This Well will be directionally drilled from a surface location 1440' FNL and 860' FWL in Section 6, T23S-R31E, to a bottom-hole location in the SW/4 of Section 31, T22S-R31E. This Well will be drilled to an approximate total vertical depth of 14,600', which will test the Morrow Formation. The New Mexico Oil Conservation Division is currently considering the directional drilling case presented December 6, 1981 (Case #7439).

Additional Development

This Plan of Development shall constitute the drilling obligation of the Unit Operator under the terms of the James Ranch Unit Agreement ending December 31, 1982.

Modifications

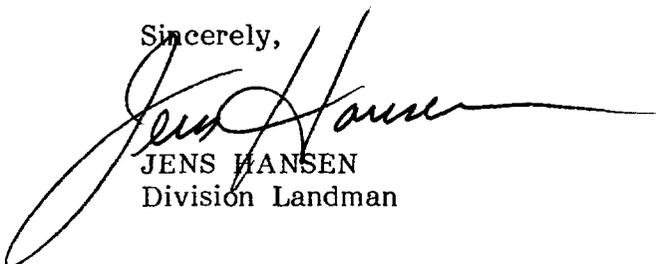
It is agreed that this Plan of Development may be modified from time to time to meet changing conditions.

Effective Date

This Plan of Development shall be effective January 1, 1982.

If this Plan of Development meets with your approval, please indicate by signing in the appropriate space provided below and return one (1) copy for our records.

Sincerely,



JENS HANSEN  
Division Landman

JH:ep

UNITED STATES GEOLOGICAL SURVEY  
COMMISSIONER OF PUBLIC LANDS  
OIL CONSERVATION DIVISION  
December 15, 1981  
Page 3 of 3

AGREED TO AND ACCEPTED this \_\_\_\_\_ day of \_\_\_\_\_, 1981.

UNITED STATES GEOLOGICAL SURVEY

By \_\_\_\_\_

AGREED TO AND ACCEPTED this \_\_\_\_\_ day of \_\_\_\_\_, 1981.

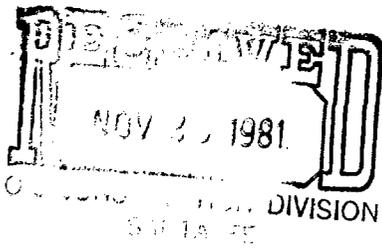
COMMISSIONER OF PUBLIC LANDS

By \_\_\_\_\_

AGREED TO AND ACCEPTED this 12 day of Jan, 1987.

NEW MEXICO OIL CONSERVATION DIVISION

By W. Perry Rouse



BASS ENTERPRISES PRODUCTION CO.  
FORT WORTH NATIONAL BANK BUILDING  
FORT WORTH, TEXAS 76102

November 16, 1981

UNITED STATES GEOLOGICAL SURVEY  
P. O. Box 26124  
Albuquerque, New Mexico 87125

COMMISSIONER OF PUBLIC LANDS  
P. O. Box 1148  
Santa Fe, New Mexico 87501  
Attention: Ray Graham

472

NEW MEXICO OIL CONSERVATION DIVISION  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Commercial Determination  
James Ranch Unit  
Eddy County, New Mexico

Gentlemen:

In accordance with the provisions of Section 11 of the James Ranch Unit Agreement dated April 22, 1953, we hereby submit the attached materials covering the Well listed below to support our recommendation that such following Well be determined to be non-commercial and thereby not receive Participating Areas, and be produced on a lease basis.

James Ranch Unit Well #12-Atoka - located 1450' FNL and 1830' FEL, Section 21, T22S-R30E, Eddy County, New Mexico.

If you should have any questions regarding the data submitted for the Commercial Determination on the above named Well, please contact Steve Rowland in our Midland Office, whose telephone number is (915) 684-5723.

Sincerely,

JENS HANSEN  
Division Landman

JH:ep

JAMES RANCH UNIT NO. 12

James Ranch Unit No. 12 had its initial and only completion in the Atoka horizon in a sand lense. After 2000 gallons 7-1/2% MSR acid, the well was potentialed at 5.093 MMCFGPD. The well was placed on line at 1.008 MMCFGPD and 10 BCPD; however, production immediately declined to the present rate of 544 MCFGPD and 5 BCPD. Water production is hindering the well's performance as current production is 35 BWPD.

WORKSHEET FOR COMMERCIAL DETERMINATION AND PARTICIPATING AREA IN FEDERAL UNITS

WELL DATA

WELL James Ranch 12 FORMATION Atoka  
 LOCATION G UNIT, 1450 FEET FROM N LINE & 1830 FEET FROM E LINE,  
 SECTION 21, RANGE 30E, TOWNSHIP 22S, COUNTY Eddy NEW MEXICO.  
 SPUD DATE 9-4-80 COMPLETION DATE 1-14-81 INIT. PROD. DATE 1-14-81  
 PERFORATIONS 12,665', 12,666', 12,667', 12,668', 12,669', 12,670', 12,671',  
12,672' w/3 gm JRC SSB-II charges, one shot each depth

STIMULATION:

ACID 12,665' - 12,672' with 2,000 gallons 7 1/2% MSR and 24 balls

FRACTURE

POTENTIAL CAOF 5093 MCFPD

(ATTACH COPY OF C-122. ATTACH COPY OF WELLBORE SKETCH OF COMPLETED WELL.)

VOLUMETRIC CALCULATION

	FORMATION	
	SANDS PERFORATED	SANDS NOT PERFORATED BUT POTENTIALLY PRODUCTIVE
Area (A) proration unit size, acres	320	
Porosity ( $\phi$ ), %	5.5	
Water saturation ( $S_w$ ), %	60	
Net thickness (h) > 6% $\phi$ & > 40% $S_w$ , ft	7	
Temperature (T), °F	165	

Bottomhole pressure (P), psia ..... 7,561 .....  
 Recovery factor (RF), (80% assumed) ..... .8 .....  
 Recoverable gas, MCF (See eq. below) ..... 618,231 .....

Recoverable Gas, MCF = (43,560)(Ø)(1-Sw)(A)(h)(RF)(Bgi) where

$$Bgi = 0.03535 \frac{P}{ZT} \left( \frac{MSCF}{Cu Ft} \right) = 0.03535 \frac{(7561)}{(1.19)(625)} = .36$$

-----  
 PERFORMANCE DATA  
 -----

If sufficient history exists, attach plot of gas production rate vs time.

(Cumulative production to 8 / 31 / 81; 55,814 MCF.

Current rate (qi), 16,872 MCF/mo New Completion  
 Economic limit (ql), 3000 MCF/mo  
 Decline rate, dy \_\_\_\_\_ %  
 Remaining gas (Q) = \_\_\_\_\_ MCF  
 Ultimate Recoverable Gas \_\_\_\_\_ MCF

$$Q = \frac{(q_i - q_l) 12 \text{ mo/yr}}{-\ln(1-dy)}$$

Attach plat showing proration unit and participating area.

<u>RECOVERABLE GAS</u>	<u>GAS (MCF)</u>	<u>COND (BBLS)</u>
Gas sand previously produced	-----	-----
Sand perforated	(1) -----	-----
Sand not perforated, but potentially productive	(2) -----	-----
Total recoverable gas	-----	-----

(1) performance recoverable gas if available

(2)  $\frac{\text{performance sand perforated}}{\text{volumetric sand perforated}} \times \frac{\text{volumetric sands not perforated}}{\text{performance sands not perforated}} =$

Participating area size based on ratio of production history and volumetrics

320 acres---minimum area is proration unit.

-----  
ECONOMIC  
-----

\*Well Cost \$ 1,535,860 (to the depth of formation completed)

Recompletion Cost \$ 0

TOTAL COST \$ 1,535,860

(Gas Price)(Net Revenue Interest)(1-Production and Ad Valorem Taxes) + {(Oil Price)  
(Net Revenue Interest)(Cond. Yield, Bbls/MCF)(1-Production and Ad Valorem Taxes) -  
(Oil Price - Base Excise Tax) WFPT Frac}

Net Gas Price = Gas Price (.845)(1-0.1) + (16 + (33-16).7)(0.845)(1-.1)(Cond. Yield,  
Bbls/MCF)

\$2.18/MCF

\*\*Operating Cost \$2000/Month

Bepco Net Income = (Gross Gas) (Net Gas Price)

YEAR	GROSS GAS	BEPCO NET INCOME	OPERATING COST	20% DISCOUNT FACTOR	DISCOUNTED CASH FLOW	
zero	---	---	---	0	1.0000	-1,535,860
1981	55,814	121,674	6,000	1	0.9129	105,599
Through August 31			Through August 31			
198					0.7607	
198					0.6339	
198					0.5283	
198					0.4402	
Remainder					0.3669	

If payout is five years or less, well is considered economical.

(Bepco Net Income - Operating Expense) discount factor = discounted cash flow.

UNECONOMICAL

\* Includes 11% of drilling cost as overhead.

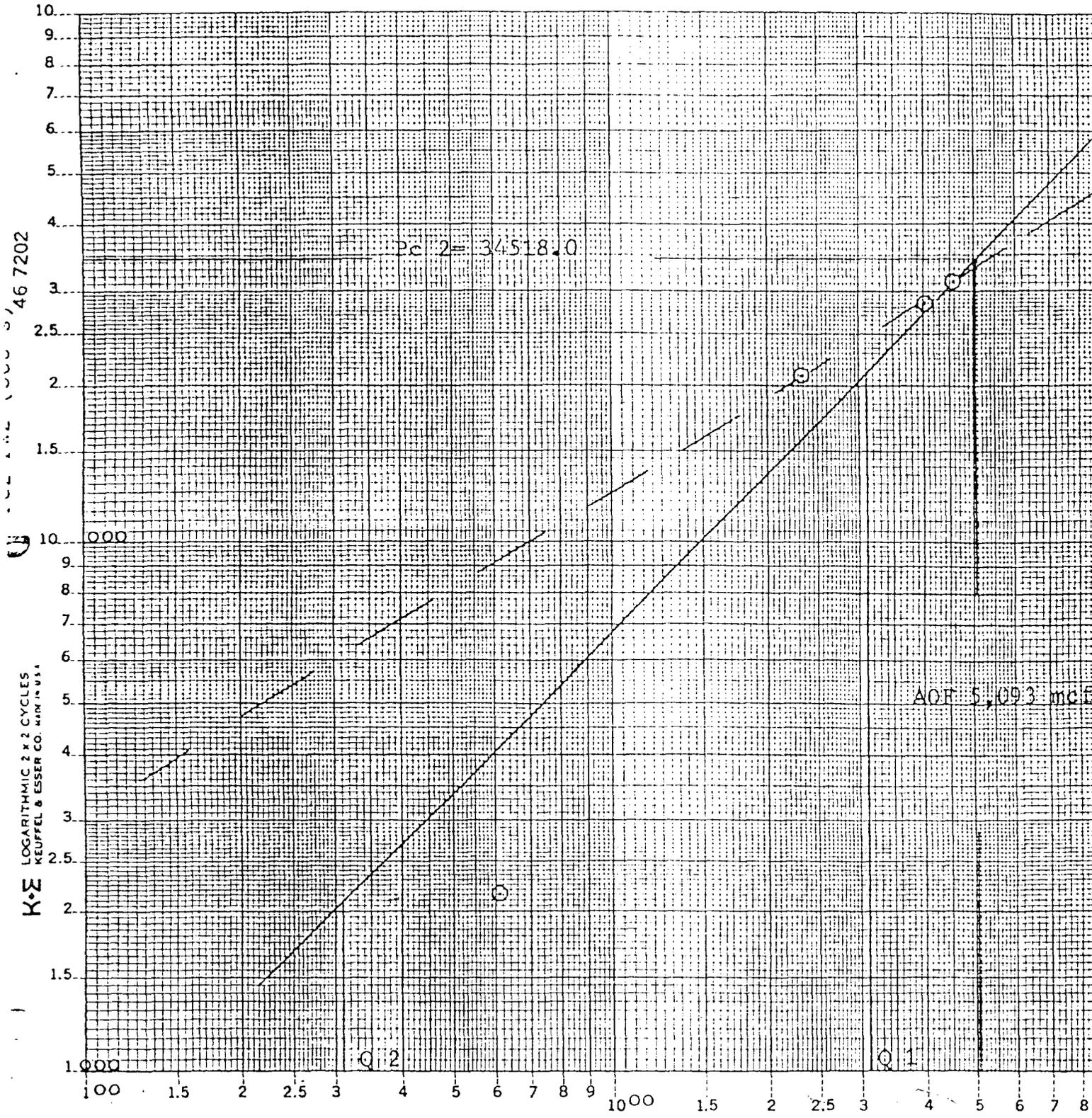
\*\* Includes \$500/month as overhead.

MEXICO OIL CONSERVATION COMMISSION  
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

WJ-  
Form C-122  
Revised 9-1-65

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special		Date 01/09/81									
Company PERRY R. BASS		Corrosion AIR									
Pool UNDESIGNATED		Formation ATOKA									
Completion Date 12/19/80	Total Depth 14200	Plug back To 14110	Elevation 3161.8 GL								
Land or Lease Name JAMES RANCH		Well No. 12									
Csg. Size 5 1/2	Wt. 17#	Set At 14155	Perforations: From 12665 To 12672								
Fig. Size 2 3/8	Wt. 4.7	Set At 12424	Perforations: From To								
Type Well - Single - Protthead - G.C. or C.O. Multiple SINGLE GAS		Packer Set At 12424	County EDDY								
Producing Thru TUBING	Reservoir Temp. °F 198 @ 12424	Mean Annual Temp. °F 60°	Baro. Press. - P <sub>g</sub> 13.2								
State NEW MEXICO											
L 12424	H 12424	G <sub>g</sub> .606	% CO <sub>2</sub> .418								
		% N <sub>2</sub> 1.187	% H <sub>2</sub> S								
		Prover	Meter Run 4"								
			Tags FLG.								
FLOW DATA											
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h <sub>w</sub>	Temp. °F	TUBING DATA		CASING DATA		Duration of Flow
							Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
51								5862			72 hr.
1.	4 X 1,500			600	3.0	87		5250			1 hr.
2.	4 X 1,500			660	38.0	72		3705			1 hr.
3.	4 X 1,500			790	28.0	76		1925			1 hr.
4.	4 X 1,500			810	35.0	70		1150			1 hr.
5.											
RATE OF FLOW CALCULATIONS											
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P <sub>m</sub>	Flow Temp. Factor Ft.	Gravity Factor F <sub>g</sub>	Super Compress. Factor, F <sub>sp</sub>	Rate of Flow Q, MCFD				
1	10.84	42.89	613.2	.9750	1.285	1.047	610				
2	10.84	159.94	673.2	.9887	1.285	1.058	2330				
3	19.81	149.97	803.2	.9850	1.285	1.067	4012				
4	19.81	169.74	823.2	.9905	1.285	1.073	4592				
5.											
NO.	$\gamma_g$	Temp. °R	T <sub>r</sub>	Z	Gas Liquid Hydrocarbon Ratio _____ MCF/STB.						
1.	.91	547	1.51	.912	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.						
2.	1.00	532	1.47	.894	Specific Gravity Separator Gas .606						
3.	1.20	536	1.48	.878	Specific Gravity Flowing Fluid _____ X X X X X						
4.	1.23	530	1.46	.869	Critical Pressure 671 P.S.I.A.						
5.					Critical Temperature 362 R						
r <sub>1</sub> 5875.2    P <sub>1</sub> <sup>2</sup> 34518.0											
NO.	BHP <sup>2</sup>	P <sub>w</sub>	P <sub>w</sub> <sup>2</sup>	P <sub>c</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup>	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.109$						
1	7054.2	5688.73	32361.6	2156.4	(2) $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.109$						
2	4771.2	3688.21	13602.9	20915.1							
3	3248.2	2450.9	6006.9	28511.1	AOI = 0 $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 5.093$						
4	2442.2	1842.7	3395.7	31122.3							
5											
Absolute Open Flow		5,093	MCF @ 15.075	Angle of Slope $\theta$		45°	Slope, n	1,000			
Remarks: THE WELL PRODUCED 22.5 BBLs. OF H <sub>2</sub> O DURING THE TEST.											
Approved by Commission:		Conducted By:		Calculated By:		Checked By:					
		DAVIS SERVICES INC.		RICK PAGAN							

LEASE : JAMES RANCH  
 WELL NO. : # 12  
 UNIT : G / sec 21/twp 22s/rge 30e  
 COUNTY : EDDY  
 STATE : NEW MEXICO  
 DATE : JANUARY 9, 1981



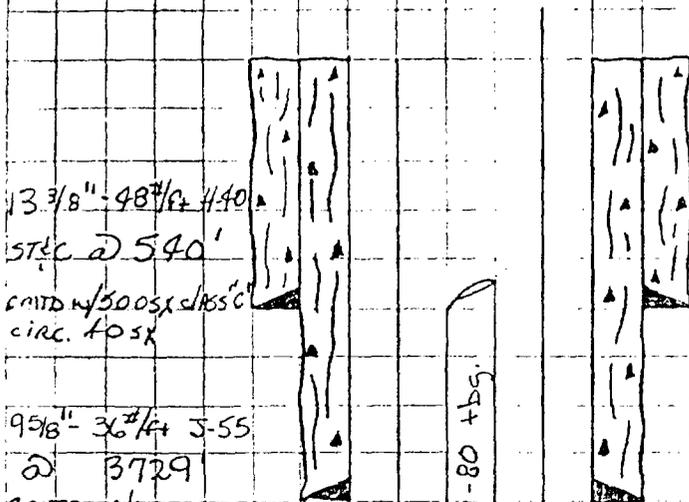
Q = MCF / DAY  
 Q 1 = 3100; LOG OF Q 1 = 3.491362  
 Q 2 = 310; LOG OF Q 2 = 2.491362

N = 1.000  
 $\theta = 45^\circ$

SUBJECT JAMES RANCH NO. 12	DATE 2-23-81	DEPARTMENT	PREPARED BY LDA
-------------------------------	-----------------	------------	--------------------

SEC. 21 - T225 - R30E  
EDDY COUNTY, NEW MEXICO

ELEV: 3162' GL  
3180' KB  
SPUD: 9-4-80  
COMP: 12-21-80



3 3/8" - 48 #/ft 440  
STC @ 540'  
CMTD w/ 500 SX CLASS C  
CIRC. 40 SX

9 5/8" - 36 #/ft J-55  
@ 3729

CMTD w/ 11725 SX B.S. LITE  
TAILED w/ 250 SX CLASS C  
CIRCULATED 300 SX

2 3/8" EUE BHD 4.7# N-80 +bs.

TOC @ 9590'  
(TEMP. SURVEY)

(12-19-80)

2 3/8" x 5 1/2" OTIS MH 2 PACKER @ 12,423' (13,000# comp.)

2 3/8" OTIS N-NIPPLE 1.875 ID w/ 1.791 NO-GO @ 12,435'  
2 3/8" MUESHOE WIPPLE @ 12,436'

ATOKA PERFS 12,665' - 12,672' w/ 1 JSPE USING JRC SSB II (12-6-80)  
ACIDIZED w/ 40 bbls w/ 12 BALL SEALERS (NO ACID GOT TO PERFS) (12-10-80)  
ACIDIZED w/ 200 gal 10% ACETIC ACID (12-15-80)

RESHOT ATOKA PERFS 12,665' - 12,672' w/ 1-9 1/16" +bs. gun (12-17-80)  
ACIDIZED w/ 2000 gal 7 1/2% M.S. ACID (12-20-80)

5 1/2" ODCSA 17 #/ft S-95  
N-80 @ 14,155'

CMTD w/ 435 SX B.S. LITE  
TAILED w/ 895 SX CLASS H"

TD 14,200'  
14,155'

FIELD: Wildcat IATOKA COUNTY: Eddy

OPERATOR: \_\_\_\_\_

LEASE: James Ranch BTY. NO. \_\_\_\_\_

WELLS: 12

	Number Producing Wells	Oil Produced Bbls.	Cumulative Oil Bbls.	Gas Produced MCF	Cumulative Gas MCF	Water Produced Bbls.
Jan.						
Feb.						
March						
April						
May						
June		203		20223		30
July		198		19719		28
August		167		16872		1035
Sept.		<u>368</u>		<u>33,914</u>		<u>1193</u>
Oct.						
Nov.						
Dec.						
Yearly Total						

Jan.						
Feb.						
March						
April						
May						
June						
July						
August						
Sept.						
Oct.						
Nov.						
Dec.						
Yearly Total						

Jan.						
Feb.						
March						
April						
May						
June						
July						
August						
Sept.						
Oct.						
Nov.						
Dec.						
Yearly Total						



MEXICO OIL CONSERVATION COMMISSION  
**WELL LOCATION AND ACREAGE DEDICATION PLAT**

Form C-102  
 Supersedes C-12  
 Effective 1-1-65

All distances must be from the outer boundaries of the Section.

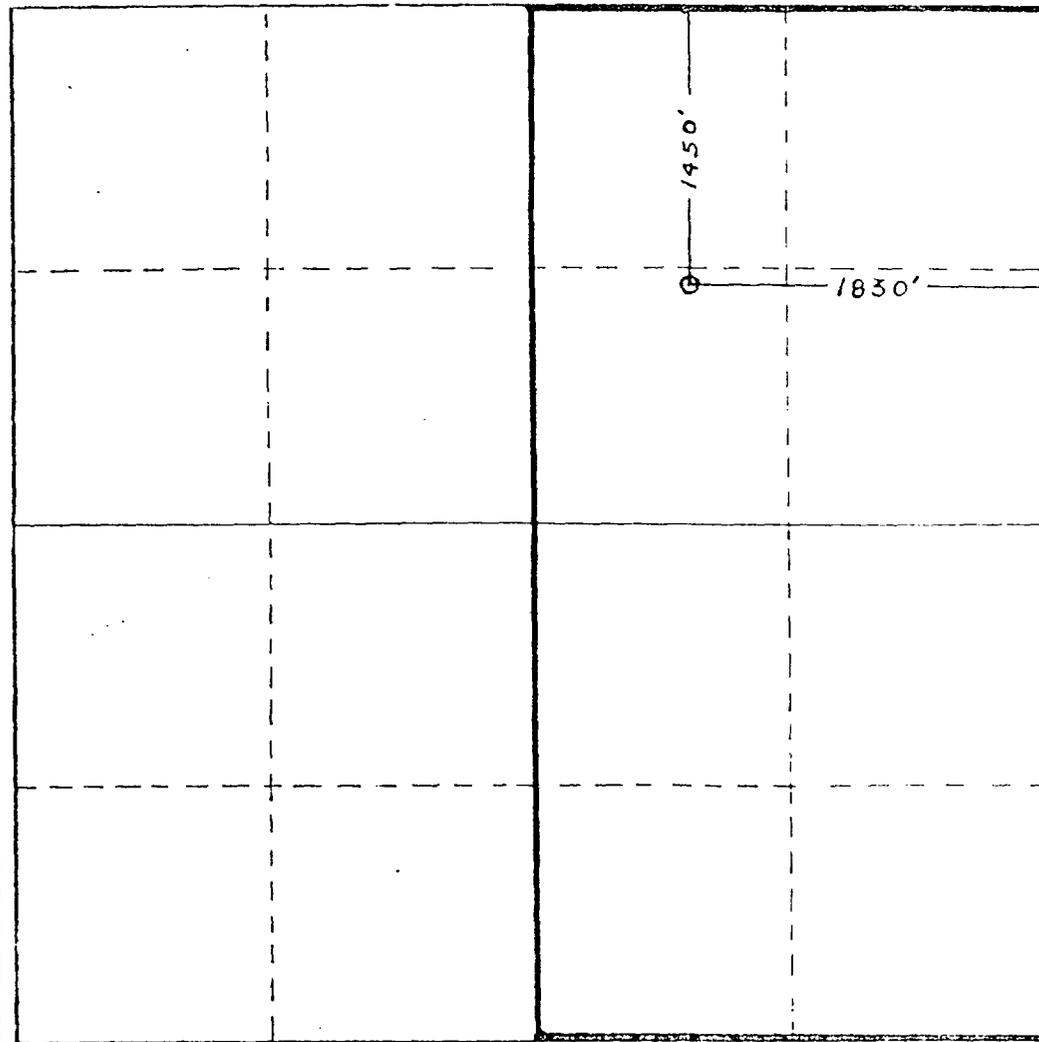
Operator <b>Perry R. Bass</b>		Lease <b>James Ranch Unit</b>			Well No. <b>12</b>
Unit Letter <b>G</b>	Section <b>21</b>	Township <b>22S</b>	Range <b>30E</b>	County <b>Eddy</b>	
Actual Footage Location of Well: <b>1450</b> feet from the <b>North</b> line and <b>1830</b> feet from the <b>East</b> line.					
Ground Level Elev. <b>3161.8'</b>	Producing Formation <b>Atoka</b>		Foot <b>Wildcat</b>	Dedicated Acreage: <b>320</b> Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes     No    If answer is "yes," type of consolidation Unit

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) \_\_\_\_\_

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



**CERTIFICATION**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

*H. F. Wurtz, Jr.*

Name: **H. F. Wurtz, Jr.**

Position: **Senior Production Clerk**

Company: **Perry R. Bass**

Date: **June 10, 1981**

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 knowledge and belief.

Date Surveyed: **April 11, 1980**

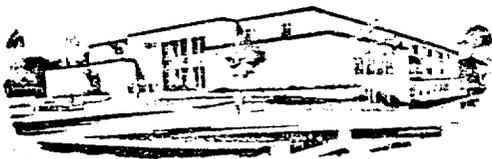
Registered Professional Engineer and/or Land Surveyor

/s/ **John W. West**

Certificate No. **676**



State of New Mexico



Commissioner of Public Lands

October 7, 1981

ALEX J. ARMIJO  
COMMISSIONER

P. O. BOX 1148  
SANTA FE, NEW MEXICO 87501

Bass Enterprises Production Co.  
Fort Worth National Bank Building  
Fort Worth, Texas 76102

Re: James Ranch Unit  
Revised Exhibits "A" and "B"  
Eddy County, New Mexico

472

ATTENTION: Mr. Michael Joseph

Gentlemen:

This will acknowledge your letter of July 23, 1981 and letter from the United States Geological Survey dated October 5, 1981 wherein the second revision to Exhibits "A" and "B" was submitted to this office.

We have this date accepted these corrected exhibits and have been filed in our unit file. Also tract 16 has been changed from E/2SE/4 to W/2SE/4.

Very truly yours,

ALEX J. ARMIJO  
COMMISSIONER OF PUBLIC LANDS

BY:  
RAY D. GRAHAM, Director,  
Oil and Gas Division  
AC 505/827-2748

AJA/RDG/pm

cc:

OCD-Santa Fe, New Mexico  
USGS-Albuquerque, New Mexico

BASS ENTERPRISES PRODUCTION CO.  
FORT WORTH NATIONAL BANK BUILDING  
FORT WORTH, TEXAS 76102

RECEIVED  
AUG 24 1981  
OIL CONSERVATION DIVISION  
SANTA FE

August 20, 1981

UNITED STATES GEOLOGICAL SURVEY  
P. O. Box 26124  
Albuquerque, New Mexico 87125

Attention: Jim Shelton

472

Re: James Ranch Unit Well #7  
Our Lease #4186  
E/2 Section 6, T23S-R31E  
Eddy County, New Mexico  
Application for Approval of the  
Participating Area of the Morrow Formation

Gentlemen:

Under letter dated January 17, 1980, we submitted production data furnished by Conoco, Inc. for a Commercial Determination for the referenced Well. Based on that information, it was our position that the James Ranch Well #7 is capable of producing in commercial quantities and as a result, we recommended the Participating Area for the James Ranch Well #4, which consists of the W/2 of Section 6, T23S-R31E, be expanded to cover the E/2 of Section 6, of the Township and Range, to cover the James Ranch Unit Well #7.

After reviewing our submittal, you returned our application under letter dated April 2, 1981, with the instructions to submit additional data for commercial verification and a schedule as prescribed in Section II of the James Ranch Unit Agreement.

In compliance with your instructions, Bass Enterprises Production Co., as Unit Operator for the James Ranch Unit Agreement approved by the Regional Conservation Manager of the United States Geological Survey effective July 16, 1952, pursuant to the provisions of Section II thereof, respectfully submits for your approval the selection of the following described land to constitute the first revision of the Participating Area for the Morrow Formation, to wit:

Lots 1 and 2, S/2 NE/4 and SE/4, Section 6, T23S-R31E, Eddy County, New Mexico, containing 319.92 acres.

In support of this Application, the following numbered items are attached hereto and made apart hereof:

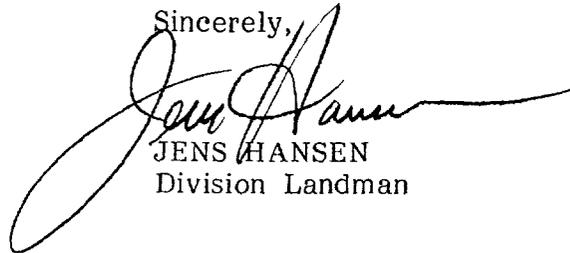
- (1) An ownership map showing thereon the boundaries of the Unit Area, the Participating Area as heretofore established or revised and the boundary of the proposed revision herein. (Exhibit "A")

- (2) A schedule showing the lands entitled to participation in the unitized substances produced from the Morrow Formation with the percentage of participation of each lease or tract indicated thereon. (Exhibit "B")
- (3) Geological and Engineering Report (Exhibit "C")
- (4) Structure Map on Morrow Formation. (Exhibit "D")

This proposed first revision of the Participating Area is predicated upon the knowledge and information first obtained upon completion in paying quantities under the terms of the Unit Agreement on August 1, 1981, of Unit Well #7, in SW/4 of the NE/4 with an initial production of 1,559,933 MCFG up through 6/30/80, from the Morrow Formation at a depth of 14,062' to 14,526'. The effective date of this first revision shall be August 1, 1981, pursuant to Section II of the Unit Agreement.

Consequently, applicant respectfully requests your approval of the hereinabove selection of lands to constitute the first revision of the Participating Area to be effective August 1, 1981.

Sincerely,



JENS HANSEN  
Division Landman

JH:ep

cc: New Mexico Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Belco Petroleum Corp.  
Suite 100  
10000 Old Katy Road  
Houston, Texas 77055  
Attention: Pat Miller

Conoco, Inc.  
P. O. Box 1959  
Midland, Texas 79702

EXHIBIT "B"  
 FIRST REVISION MORROW FORMATION  
 PARTICIPATING AREA, JAMES RANCH UNIT  
 AGREEMENT, EDDY COUNTY, NEW MEXICO

TRACT #	TYPE OF LAND	DESCRIPTION	PARTICIPATING AREA	% OF PARTICIPATION	WORKING INTEREST OWNERS
4	Federal NM-02887-A	Lots 1, 2 S/2 NE/4, NE/4 SE/4	199.92	31.0845	Conoco Inc. 100%
8	Federal NM-04473	Lots 6, 7, E/2 SW/4, W/2 SE/4, SE/4 SE/4	282.09	43.8607	Belco Petroleum Corp. 66.6666 Bass Enterprises Production Co. 25.0000 Perry R. Bass 8.3334
4B	Federal NM-02887-D	Lots 3, 4, 5 SE/4 NW/4	161.14	25.0548	Belco Petroleum Corp. 66.6666 Bass Enterprises Production Co. 25.0000 Perry R. Bass 8.3334
			Total Federal Land	643.15	
			Total State Land	-0-	
			Total Patented Land	-0-	
			Total	643.15	

Exhibit "C"  
First Revision Morrow Formation  
Participating Area, James Ranch Unit  
Agreement, Eddy County, New Mexico

Spudded: 6-30-74

IP: 1-19-76; O BO, O BW, 2300 MCFGPD

FTP 700#; CP 600#; 18/64" choke

P.L. Conn: El Paso 1-19-76

Perfs: 14,062'-74'; 14,086'-88'; 14,094'-99'; 14,168'-78';  
14,234'-44'; 14,470'-80'; 14,522'-26', w/2 JSPF

Current data: Flowing TP - 750#; CP 1800#; 14/64" choke

Monthly Production: January through June 1980:

January - 26,092 MCF

February - 27,030 MCF

March - 27,284 MCF

April - 28,613 MCF

May - 28,399 MCF

June - 26,925 MCF

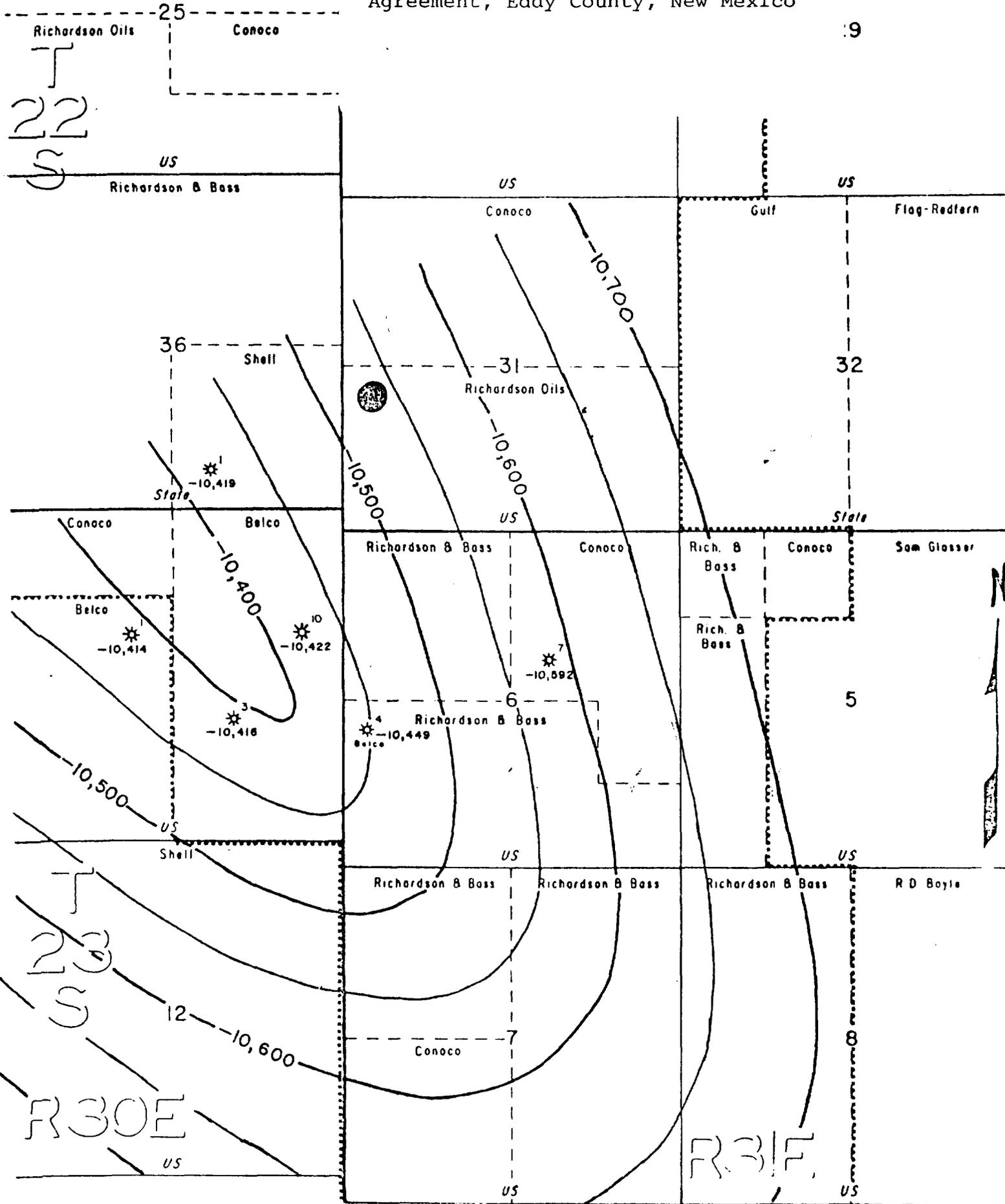
Cum. Prod. through 6-30-80: 1,559,933 MCFG

Projected Recoverable Reserves: 2.1 BCFG from 7-1-80

Based on the cost of drilling, completion, discount, taxes,  
and operating through depletion, with a gas price of \$1.45/  
MCF, this is a commercial well.

3

Exhibit "D"  
First Revision Morrow Formation  
Participating Area, James Ranch Unit  
Agreement, Eddy County, New Mexico



**CONOCO**

PRODUCTION DEPARTMENT

HOBBS DIVISION

JAMES RANCH UNIT  
EDDY COUNTY, NEW MEXICO  
LOS MEDANOS ATOKA POOL  
STRUCTURE ON TOP MORROW FORM.  
CONTOUR INTERVAL=50'

SCALE



JAN 3-16-81

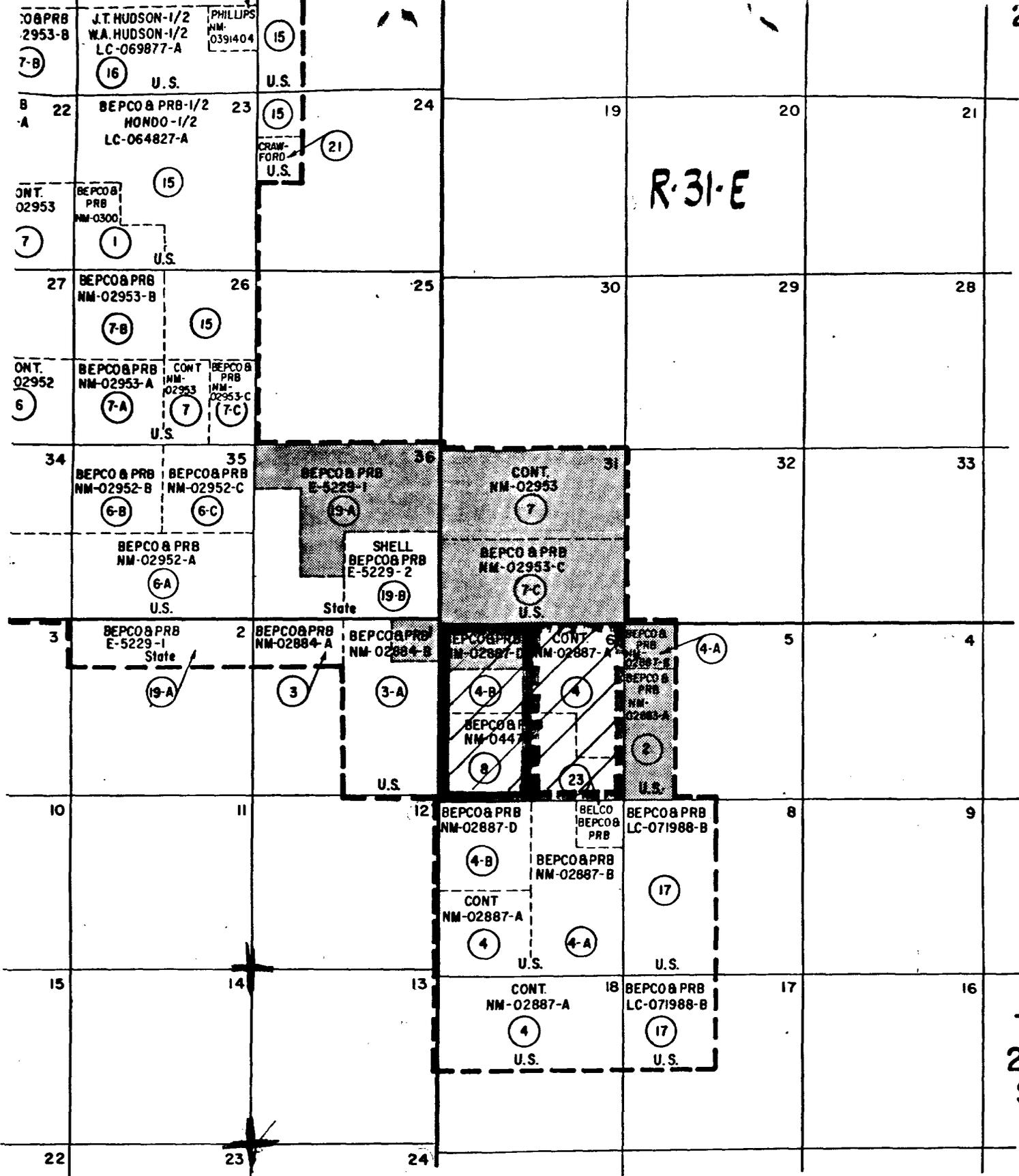
RFL

LEGEND:  
 \* LOCATION  
 • OIL WELL

◊ DRY HOLE  
 ⊕ INJECTION WELL  
 ✕ ABANDONED WELL

⊕ SALT WATER  
 ⊖ DISPOSAL WELL  
 ⊖ DEEPER WELL

22  
S



T  
23  
S

# BASS ENTERPRISES PRODUCTION COMPANY

## WEST TEXAS DIVISION

### JAMES RANCH UNIT AREA

#### EDDY COUNTY, NEW MEXICO

① Tract Number as Listed on Exhibit B

□ Morrow Formation Participating Area

⊛ First Revision

▨ Federal Land

Date 11-15-51

Inter. By M.L.J.

Scale 1" = 4000'

Revised 6-17-81

Drafted By D.A.C.

Dept. LAND

urface )

EXHIBIT B

# State of New Mexico



ALEX J. ARMIJO  
COMMISSIONER



## Commissioner of Public Lands

July 28, 1981

P. O. BOX 1148  
SANTA FE, NEW MEXICO 87501

Bass Enterprises Production Co.  
Fort Worth National Bank Building  
Fort Worth, Texas 76102

Re: James Ranch Unit  
Revised Exhibits "A" and "B"  
Eddy County, New Mexico

ATTENTION: Mr. Michael Joseph

Gentlemen:

This will acknowledge your letter of July 23, 1981 together with three copies each of the second revision to Exhibits "A" and "B".

Such Exhibits correct the tract numbers on Exhibit "A" to correspond with Exhibit "B" which was submitted to this office with your letter of June 9, 1981, also, to correct a typing error that was discovered on Page 1 of Exhibit "B".

We have this date accepted these corrected exhibits and have been filed in our unit file.

Very truly yours,

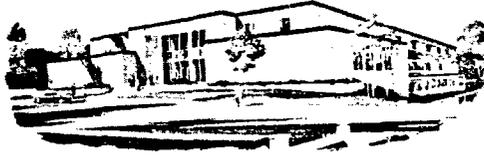
ALEX J. ARMIJO  
COMMISSIONER OF PUBLIC LANDS

BY:  
RAY D. GRAHAM, Director  
Oil and Gas Division  
AC 505-827-2748

AJA/RDG/s  
cc:

OCD- Santa Fe, New Mexico  
USGS-Albuquerque, New Mexico

State of New Mexico



Commissioner of Public Lands

June 22, 1981

ALEX J. ARMIJO  
COMMISSIONER

P. O. BOX 1148  
SANTA FE, NEW MEXICO 87501

Bass Enterprises Production Co.  
Fort Worth National Bank Building  
Fort Worth, Texas 76102

472

Re: James Ranch Unit  
Revised Exhibits "A" and "B"  
Eddy County, New Mexico

ATTENTION: Mr. Michael L. Joseph

Gentlemen:

This will acknowledge receipt of your letter dated June 9, 1981, together with revised Exhibits "A" and "B" to the James Ranch Unit, Eddy County, New Mexico. Such revision is necessary to include the SW/4NW/4 of Section 7-T22S-R31E which was omitted as part of the James Ranch Unit Area.

Such revisions have been accepted by this office and we have this date filed them in the unit file.

Enclosed is one copy reflecting the date it was received in this office.

Very truly yours,

ALEX J. ARMIJO  
COMMISSIONER OF PUBLIC LANDS

BY:  
FLOYD O. PRANDO, Assistant Director  
Oil and Gas Division  
AC 505-827-2748

AJA/FOP/s  
encl.  
cc:

OCD-Santa Fe, New Mexico  
USGS- Albuquerque, New Mexico

BASS ENTERPRISES PRODUCTION CO.  
FORT WORTH NATIONAL BANK BUILDING  
FORT WORTH, TEXAS 76102

June 9, 1981

492

UNITED STATES GEOLOGICAL SURVEY  
P. O. Drawer 1857  
Roswell, New Mexico 88201  
Attn.: James Sutherland

COMMISSIONER OF PUBLIC LANDS  
P. O. Box 1148  
Santa Fe, New Mexico 87501  
Attn.: Alex J. Armijo

NEW MEXICO OIL CONSERVATION DIVISION  
P. O. Box 2088  
Santa Fe, New Mexico 87501  
Attn.: Joe D. Ramey

Re: James Ranch Unit  
Revised Exhibits "A" & "B"  
Eddy County, New Mexico

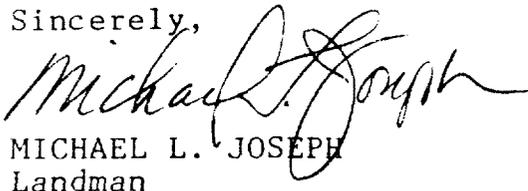
Gentlemen:

Pursuant to my letter dated April 15, 1981, wherein Bass Enterprises Production Co. submitted revised Exhibits "A" & "B" to be made a part of the James Ranch Unit Agreement dated April 22, 1953, it was brought to our attention that the SW/4 NW/4 of Section 7-T22S-R31E was inadvertently omitted as part of the James Ranch Unit Area.

Therefore, in accordance with the terms and provisions of Section 2 of the aforementioned Agreement, Bass hereby respectfully submits revised Exhibits "A" & "B" which include the SW/4 NW/4 of Section 7-T22S-R31E thereby reflecting the correct James Ranch Unit Area pursuant to the condemnation proceedings for the WIPP AREA.

If you should have any questions concerning above, please do not hesitate to contact me at (817) 335-4591.

Sincerely,

  
MICHAEL L. JOSEPH  
Landman

MLJ:ep

