

CASE 2001: Application of BENSON-
MARTIN-SPENCER 2014. COMP. FOR 142-
A-22 SPACING, RTO ALBAMA COUNTY.

CASE No.

2881

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

INDEX OF BENSON-MONTIN-GREER DRILLING CORP. EXHIBITS
IN CASE NO. 2001 BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
AUGUST 14th, 1963

PART I - GENERAL INFORMATION

SECTION A: AREA MAP.

SECTION B: COPY OF NEW MEXICO OIL CONSERVATION COMMISSION ORDER NO. R-172, JULY 24, 1952, TEMPORARY SPACING ORDER, CALLEGOS CANYON UNIT, SHOWING LARGE SIZE OF AREA UNDER TEMPORARY ORDER.

SECTION C: COPY OF NEW MEXICO OIL CONSERVATION COMMISSION ORDER NO. R-172-B, ~~DECEMBER 11, 1952, TEMPORARY SPACING ORDER~~ SPACING BECAUSE OF DEVELOPMENT ON A DIFFERENT PATTERN IN THE COMMON SOURCE OF SUPPLY.

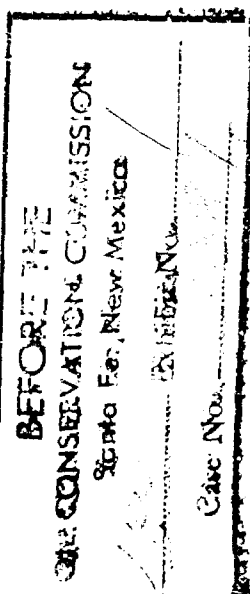
PART II - DATA RELATIVE TO EXTENT OF COMMON SOURCE OF SUPPLY

SECTION D: MAP SHOWING AREA AND EXTENT OF DEVELOPMENT.

SECTION E: CONTOUR MAP.

SECTION F: DATA RELATIVE TO CONTINUITY:

1. CROSS SECTION.
2. BOTTOM HOLE PRESSURE BUILD-UP CURVE, BOLACK-GREER NO. 1 BOLACK, SEPTEMBER 1962.
3. BOTTOM HOLE PRESSURE BUILD-UP SURVEY, BENSON-MONTIN-GREER DRILLING CORP. NO. N-20 JICARILLA, NOVEMBER 1962.
4. BOTTOM HOLE PRESSURE BUILD-UP CURVE, BENSON-MONTIN-GREER DRILLING CORP. NO. N-20 JICARILLA, NOVEMBER 1962.
5. BOTTOM HOLE PRESSURE SURVEY, BENSON-MONTIN-GREER DRILLING CORP. NO. P-19 JICARILLA, JULY 1963.
6. COMPUTATION OF PRESSURE GRADIENT.
7. GRAPHIC DISPLAY OF PRESSURE EQUALIZATION.
8. GRAPHIC DISPLAY OF OIL LEVEL IN PRODUCING INTERVAL (I-5 AND O-17).



PART III - DATA RELATIVE TO OIL RECOVERY

- SECTION G:**
1. CONTOUR MAP OF VERDE GALLUP POOL.
 2. PRODUCTION CURVES OF VARIOUS LEASES IN VERDE GALLUP POOL.

- SECTION H:**
- MAP OF VERDE GALLUP POOL SHOWING APPROXIMATE ULTIMATE RECOVERIES OF VARIOUS LEASES.

PART IV - DATA RELATIVE TO DRAINAGE

- SECTION I:**
- DRAINAGE IN VERDE GALLUP:
1. REFERENCE SECTION G-2.
 2. MAP SHOWING PERCO LEASE, SECTION 19, IN VERDE GALLUP POOL AND DRAINAGE BY EARLY WELLS.

- SECTION J:**
- DATA RE BENSON-MONTIN-GREER DRILLING CORP. N-20 JICARILLA, T-27N, R-1E:
1. SCHEDULE OF BOTTOM HOLE PRESSURE SURVEY, JULY 1963.
 2. GRAPH OF PROJECTED PRESSURE-PRODUCTION BEHAVIOR AND ESTIMATED DRAINAGE AREA.
 3. COPY OF SIMILAR INFORMATION OF BENSON-MONTIN-GREER DRILLING CORP. NO. 2 JONES, CHA CHA FIELD, FROM NEW MEXICO OIL CONSERVATION COMMISSION CASE NO. 2069.

- SECTION K:**
- DATA RE BOLACK-GREER NO. A-14 BOLACK, T-25N, R-1W:
1. PRODUCTION RECORD BY DAYS, DECEMBER 12, 1962 TO JULY 15, 1963.
 2. SUMMARY OF PRODUCTION RATES, MARCH 17, 1963 TO JULY 14, 1963.
 3. COMPUTATION OF RESERVOIR VOLUME AND DRAINAGE AREA.

- SECTION L:**
- DATA RE RATES OF DEPLETION:
1. EXAMPLE OF INTERFERENCE ON 80-ACRE SPACING AND HIGH PRODUCTION RATE. COPY OF TEST ON BENSON-MONTIN-GREER DRILLING CORP. NO. 3 JONES FROM NEW MEXICO OIL CONSERVATION COMMISSION CASE NO. 2069.
 2. CALCULATION OF TIME FOR INTERFERENCE IN AREA OF SHALLOW WELLS BY COMPARISON WITH NO. 3 JONES IN CHA CHA.

3. EXAMPLE OF RATE OF PRODUCTION DECLINE AND TIME REQUIRED TO DEplete RESERVOIR FOR WELLS WITH LOW INITIAL PRODUCTION RATES.
4. GRAPH SHOWING RESULT OF DIRECT ESTIMATE OF TIME REQUIRED FOR INTERFERENCE IN AREA OF WELLS WITH LOW INITIAL PRODUCTION RATES.

PART V -

ECONOMICS

SECTION M:

1. SUMMARY OF WELL COSTS.
2. NET VALUE OF OIL PER BARREL.
3. ECONOMICS OF 2500' WELLS.
4. ECONOMICS OF DEEP WELLS IN SANTA FE NATIONAL FOREST.
5. - continued
6. SIGNIFICANCE OF PIPELINE TO AREA.

PART VI -

MISCELLANEOUS

SECTION N:

SCHEDULE SHOWING COMPARISON OF DAMAGE TO FOREST LANDS AS DEPENDENT ON WELL SPACING.

SECTION O:

SCHEDULE OF ALLOWABLE FACTORS AND ALLOWANCES AS FUNCTION OF SPACING.

SECTION P:

ACREAGE OWNERSHIP AND EXCEPTIONS TO ORDER FOR THAT PART OF AREA WITH SMALL TRACTS:

1. MAP.
2. SCHEDULE OF TRACTS RECOMMENDED FOR NON-STANDARD UNITS.

SECTION Q:

DEFINITION OF VERTICAL LIMITS OF RESERVOIR;

1. SCHEDULE OF FORMATION DEPTHS IN TYPICAL WELLS.

2. STRATIGRAPHIC SECTION OF TYPICAL LOGS SHOWING ELECTRIC LOG TOPS.

SECTION R:

COPY OF APPLICATION.

A

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR THE
PURPOSE OF CONSIDERING:

THE APPLICATION OF BENSON & MONTIN
FOR AN ORDER ESTABLISHING UNIFORM
SPACING OF WELLS FOR THE PICTURED
CLIFFS FORMATION OF THE CALLEGOS
CANYON UNIT AREA AND CERTAIN LANDS
ADJACENT THERETO, SAN JUAN COUNTY,
NEW MEXICO.

CASE NO. 377
ORDER NO. R-172

BY THE COMMISSION:

ORDER OF THE COMMISSION

This cause came on regularly for hearing at 9 o'clock a.m. June 19, 1952, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".
NOW, on this 24 day of July, 1952, the Commission, a quorum being present, having considered the testimony adduced and the exhibits received at said hearings, and being fully advised in the premises,

FINDS:

1. That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
2. That the following described lands in San Juan County, New Mexico, in all probability, embrace a common source of supply of gas in the Pictured Cliffs formation, and include the approximate northwesterly one-half of the West Kutz-Pictured Cliffs Pool as presently defined by Commission Order R-42 in Case No. 244, Commission Order R-156 in Case No. 363, and Commission Order R-156-A in Case No. 363, to-wit:
 - Township 28 North, Range 11 West, NMPM
 - All of Partial Section 7,
 - All of Sections 18 and 19.
 - Township 28 North, Range 12 West, NMPM
 - Partial Sections 10, 11, and 12,
 - Partial Sections 7 through 12, and
 - Sections 13 through 34, incl.
 - Township 28 North, Range 13 West, NMPM
 - Partial Sections 10, 11, and 12,
 - Sections 13, 14, and 15, Sections 23 through 26, incl., and Sections 35 and 36.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR THE
PURPOSE OF CONSIDERING:

CASE NO. 377
ORDER NO. R-172

THE APPLICATION OF BENSON & MONTIN
FOR AN ORDER ESTABLISHING UNIFORM
SPACING OF WELLS FOR THE PICTURED
CLIFFS FORMATION OF THE GALLEGO
CANYON UNIT AREA AND CERTAIN LANDS
ADJACENT THERETO, SAN JUAN COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on regularly for hearing at 9 o'clock a.m. June 19, 1952, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 24 day of July, 1952, the Commission, a quorum being present, having considered the testimony adduced and the exhibits received at said hearings, and being fully advised in the premises,

FINDS:

1. That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
2. That the following described lands in San Juan County, New Mexico, in all probability, embrace a common source of supply of gas in the Pictured Cliffs formation, and include the approximate northwesterly one-half of the West Kutz-Pictured Cliffs Pool as presently defined by Commission Order R-42 in Case No. 244, Commission Order R-156 in Case No. 363, and Commission Order R-156-A in Case No. 363, to-wit:

Township 28 North, Range 11 West, NMPM
All of Partial Section 7,
All of Sections 18 and 19.

Township 28 North, Range 12 West, NMPM
Partial Sections 7 through 12, and
Sections 13 through 34, incl.

Township 28 North, Range 13 West, NMPM
Partial Sections 10, 11, and 12,
Sections 13, 14 and 15, Sections 23
through 26, incl., and Sections 35
and 36.

Township 29 North, Range 12 West, NMPM
SW/4 Section 16, Sections 17 through
21, W/2 and SE/4 of Section 22, W/2
and SE/4 of Section 25, and Sections
26 through 36, incl.

Township 29 North, Range 13 West, NMPM
Sections 9 through 16, Sections 21
through 28, and Sections 33 through
36, incl.

3. That apparently one gas well to the Pictured Cliffs formation of the above lands will efficiently, effectively and economically drain an area of 320 acres, and that testimony indicated that drilling wells in a pattern of greater density is unnecessary, and not to the best interests of conservation, and could result in wasteful use of critical materials.

4. That in an effort to determine whether such measures will insure orderly development, protect correlative rights and prevent possible waste, the above lands should be developed on a 320-acre spacing pattern for a period of one year from date of this order, and at the end of one year applicant shall present testimony to show why 320-acre spacing should be retained.

5. That to insure the proper and uniform spacing of all wells drilled to the common source of supply under the above lands and to protect the correlative rights of all the parties interested therein, all wells drilled therein should be located in the southwest and northeast quarters of each governmental section conforming with Rule 104 of the Commission's Rules and Regulations, with only such exceptions as are necessary for existing non-conforming wells, future wells on good cause shown, and such off-set wells as may be necessary and that approval for such non-conforming locations may be given by the Secretary of the Commission upon proper application therefor.

6. That the existing Commission Order No. R-46 in Case No. 237, relating to the former West Kutz-Pictured Cliffs Pool, and the former South Kutz-Pictured Cliffs Pool, now consolidated into the West Kutz-Pictured Cliffs Pool, should be and remain in full effect and undisturbed hereby.

IT IS THEREFORE ORDERED:

1. That the following described lands in San Juan County, New Mexico, embrace a common source of supply of gas in the Pictured Cliffs formation, and include the approximate northwesterly one-half of the West Kuts-Pictured Cliffs Pool as presently defined by Commission Order R-42 in Case No. 244, Commission Order R-156 in Case No. 363, and Commission Order R-156-A in Case No. 363, to-wit:

Township 28 North, Range 11 West, NMPM
All of Partial Section 7,
All of Sections 18 and 19.

Township 28 North, Range 12 West, NMPM
Partial Sections 7 through 12, and
Sections 13 through 34, incl.

Township 28 North, Range 13 West, NMPM
Partial Sections 10, 11 and 12,
Sections 13, 14 and 15, Sections 23
through 26, incl., and Sections 35
and 36.

Township 29 North, Range 12 West, NMPM
SW/4 Section 16, Sections 17 through
21, W/2 and SE/4 of Section 22, W/2
and SE/4 of Section 25, and Sections
26 through 36, incl.

Township 29 North, Range 13 West, NMPM
Sections 9 through 16, Sections 21
through 28, and Sections 33 through
36, incl.

2. That the above lands be developed on a 320-acre spacing pattern for a period of one year from the date of this order; That at the regular Commission hearing for the month of June, 1953, the operators shall show cause why the above described area should not be developed on a 160-acre pattern.

3. That all wells drilled therein to the Pictured Cliffs formation be located in the southwest and northeast quarters of each governmental section, conforming to Rule 104, of the Commission's Rules and Regulations with only such exceptions as are necessary for existing non-conforming wells, future wells on good cause shown, and such off-set wells as may be necessary, and that approval for such non-conforming locations may be given by the Secretary of the Commission upon proper application therefor.

Page 4.
Case No. 377 - Order No. R-172

4. That the existing Commission Order No. R-46 in Case No. 237 relating to the former West Kuts-Pictured Cliffs Pool, and the former South Kuts-Pictured Cliffs Pool, now consolidated into the West Kuts-Pictured Cliffs Pool, be and remain in full effect and undisturbed hereby.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Edwin L. Mechem
EDWIN L. MECHEM, Chairman

GUY SHEPARD, Member

R. R. Spurr
R. R. SPURR, Secretary



C

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR THE
PURPOSE OF CONSIDERING:

CASE NO. 377
ORDER NO. R-172-B

THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION UNDER THE TERMS OF
ORDER NO. R-172 DIRECTING BENSON
& MONTIN TO APPEAR AND SHOW CAUSE
WHY 160 ACRE SPACING PATTERN SHOULD
NOT BE INSTITUTED FOR PICTURED CLIFFS
GAS WELLS IN THE GALLEGOS CANYON UNIT
AREA, SAN JUAN COUNTY, NEW MEXICO TO
SUPERSEDE THE 320 ACRE SPACING GRANTED
FOR ONE YEAR AFTER ORIGINAL HEARING.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This case came on regularly for hearing at 9 o'clock a. m., August 20, 1953, and on good cause shown by Benson and Montin was continued to September 17, 1953 at 9 o'clock a. m., at which time hearing was duly held on the above captioned matter before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 17th day of December, ¹⁹⁵³ the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That by Order No. R-172, duly signed by the Commission on July 24, 1952, a well spacing pattern based upon 320 acres was established for the development of the Pictured Cliff Formation on the following described acreage for a temporary period of one year from date of said order, said described acreage being within the defined limits of the West Kutz-Pictured Cliffs Gas Pool, as heretofore classified, defined, described and extended by various Commission Orders.

Township 28 North, Range 11 West, NMPM
All of Partial Section 7,
All of Sections 18 and 19.

Township 28 North, Range 12 West, NMPM
Partial Sections 7 through 12, and
Sections 13 through 34, incl.

Township 28 North, Range 13 West, NMPM
Partial Sections 10, 11 and 12,
Sections 13, 14 and 15, Sections 23
through 26, incl., and Sections 35
and 36.

Township 29 North, Range 12 West, NMPM
SW/4 Section 16, Sections 17 through
21, W/2 and SE/4 of Section 22, W/2
and SE/4 of Section 25, and Sections
26 through 36, incl.

Township 29 North, Range 13 West, NMPM
Sections 9 through 16, Sections 21
through 28, and Sections 33 through
36, incl.

(3) That the remaining portion of the West Kutz-Pictured Cliffs Pool lying to the south has been developed on the basis of 160 acre well spacing and production units.

(4) That the Gallegos Canyon Unit Area established under the provisions of the Gallegos Canyon Unit Agreement, approved by the Commission, by Order R-68, comprises approximately the northwesterly one-half of the West Kutz-Pictured Cliffs Pool and that this area has been developed and produced on the basis of 320 acre spacing and production units.

(5) That the West Kutz-Pictured Cliffs gas pool embraces a common source of gas supply and that there is no known underground barrier which would impede the flow of gas within the common source of supply.

(6) That the development of the West Kutz-Pictured Cliffs pool on two different spacing patterns is not in the best interest of conservation and will impair correlative rights.

(7) That the development of lands committed to the Gallegos Canyon Unit Agreement is subject to the terms of the Unit Agreement.

(8) That for the prevention of waste and protection of correlative rights, a uniform spacing pattern should be established for the orderly development and production of the West Kutz-Pictured Cliffs gas pool.

IT IS THEREFORE ORDERED:

(1) That Order ~~R-162~~^{R-172} is hereby terminated.

(2) That the land embraced in said Order No. R-172, as extended, be developed on a 160-acre spacing pattern provided, however, that development on lands committed to the Gallegos Canyon Unit Agreement shall be subject to the terms of the Unit Agreement.

DONE at Santa Fe, New Mexico on the day and year first above written.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

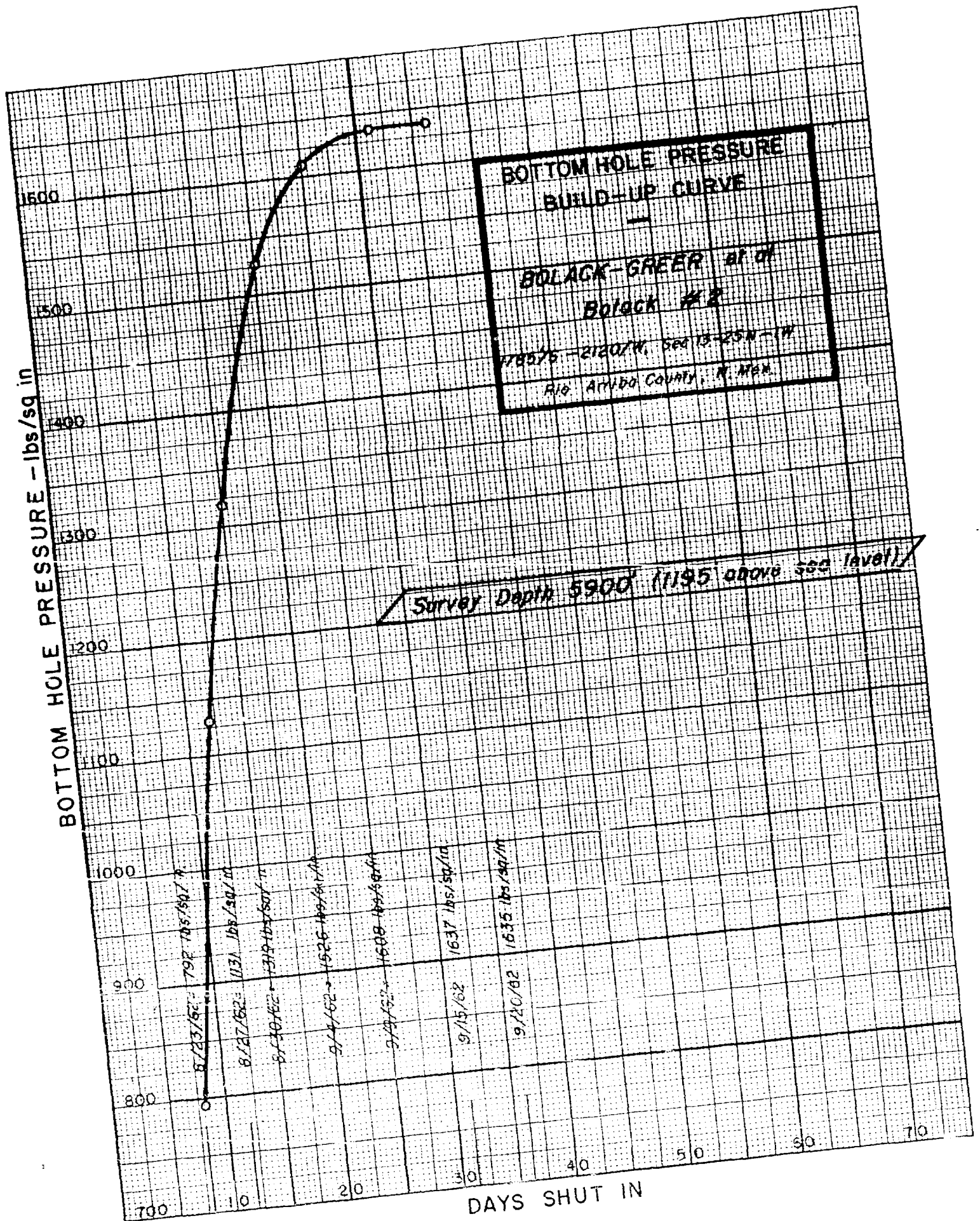
E. S. WALKER, Member

R. R. SPURRIER, Member and Secretary



D

1



BOTTOM HOLE PRESSURE BUILD-UP TEST
HENSON-MONTIN-GREEN DRILLING CORP. NO. N-20 JICARILLA
LOCATION: N - 20 - TWP. 27N, RGE. 1E

ELEVATION: 6984' GROUND
6992' MMS

NOVEMBER, 1962

PRODUCTION RATE PRIOR TO SHUT IN:

Approximately 15 BOPD for 30 days after completion.
(Well producing natural - not fraced)

<u>DATE</u>	<u>TIME</u>	<u>TIME SHUT IN</u>	<u>PRESSURE (psig)</u>	<u>DEPTH (Grd)</u>	<u>PRESSURE AT DATUM OF + 4900' (psig)</u>
11-10-62	10:00 AM est.	0	-	-	-
11-12-62	4:50 PM	53 hrs.	357	2055'	368
11-13-62	9:00 AM est.	69 hrs.	367	2100'	361
11-14-62	9:00 AM est.	93 hrs.	357	2100'	351
11-29-62	9:00 AM est.	19 days	395	2100'	389

PRESSURES MEASURED WITH B-M-G HUMBLE TYPE BOMB WITH 2000# ELEMENT

ALBERT R. GREEN

BOTTOM HOLE PRESSURE SURVEY

BRIDGE-MOUNTAIN-GRASS MILLING CORP., NO. P-19 JICARILLA

LOCATION: P - 19 - TWP. 27N, R08E, 1E

ELEVATION: 7041' ABOVE

7051' MGS

JULY, 1963

DATE	HOUR NO.	TIME	TIME SHOT IN	PRESSURES		DEPTH TO TOF OF CIL. BY FLOAT ON WIRE LINE
				MEASURED WITH MWP BOMB PRESSURE (psig)	DEPTH (fms)	
7-24-63	-	4:00 PM	0	-	-	-
7-28-63	1	12:00 Noon	92 hours	376	21.00	391
	2	1:00 PM	93 hours	377	21.00	392
7-29-63	1	9:30 AM	113 hours	378	21.00	393
	2	10:00 am	114 hours	378	21.00	393
7-30-63	1	10:15 AM	138 hours	378	21.00	393
	2	10:40 AM	139 hours	378	21.00	393
						1084

PRESSURES MEASURED WITH B-M-Q HUNNIE TYPE BOMB WITH 500# ELEMENT

DETERMINATION OF RESERVOIR PRESSURE GRADIENT
PUERTO CHIQUITO POOL
BETWEEN THE DATUM OF + 1195 FEET ABOVE SEA LEVEL
AND
THE DATUM OF + 4900 FEET ABOVE SEA LEVEL

A. GRADIENT AT DATUM OF + 1195 FEET ABOVE SEA LEVEL

Determined from data obtained from Bolack-Greer No. 2
 Bolack, Section 13, Township 27 North, Range 1 East:

1. Density of reservoir oil at 1635 psig and 152°F
 0.7175 gm/cc

Computed from bottom hole sample analysis (Core
 Laboratories report dated November 7, 1962, Page 5)
 for pressures of 1221#, 1376# and 1524#:
 $.7175 \times .433 = 0.311 \text{ (#/sq.in./ft)}$

2. Approximate confirmation:

Direct measure of pressure gradient between depth
 of 5775 and 5975 (Page 11 of Core Laboratories
 Report dated November 7, 1962) $0.315 \text{ (#/sq.in./ft)}$

3. Use 0.311 (most accurate method)

B. GRADIENT AT DATUM OF + 4900 FEET ABOVE SEA LEVEL

Determined from data obtained from Benson-Montin-Greer No.
 N-20 Jicarilla, Section 20, Township 27 North, Range 1 East:

1. Density estimated (by Katz method) using 33° gravity
 oil, GOR of 50 cf/bbl., gas density 0.8 and reservoir
 temperature of 100°F $0.355 \text{ (#/sq.in./ft)}$

2. Density between datum of + 4900 and datum of + 5100
 by direct measurement of pressure gradient by BHP
 tests July 28-29-30, 1963 $0.360 \text{ (#/sq.in./ft)}$

3. Average of 1 and 2 above (each method relatively of
 same accuracy) $\frac{0.355 + 0.360}{2} = 0.357 \text{ (#/sq.in./ft)}$

C. AVERAGE GRADIENT FROM A AND B ABOVE

$$\frac{0.311 + 0.357}{2} = 0.334 \text{ (#/sq.in./ft)}$$

**BOLACK-GREER
#2 BOLACK**

1785 FSL 2120 F WL
SEC. 13-25N-1W
SURFACE ELEV. 7088

**BENSON-MONTIN-GREER
#N-20 JICARILLA**

660 FSL 1980 F WL
SEC. 20-27N-1E
SURFACE ELEV. 6984

INITIAL RESERVOIR PRESSURE
395 PSIG @ DATUM
4900' ABOVE SEA LEVEL

+4900

2101 (grd.) (+4883)

TD 2239 (RKR) 2231 (grd.)

PRESSURE GRADIENT
0.335 LBS/SQ. IN./FT.

5985 (grd.) (+1103)

TD 6022 (RKB)
6010 (grd.)

+1195

INITIAL RESERVOIR PRESSURE
1635 PSIG @ DATUM
1195' ABOVE SEA LEVEL

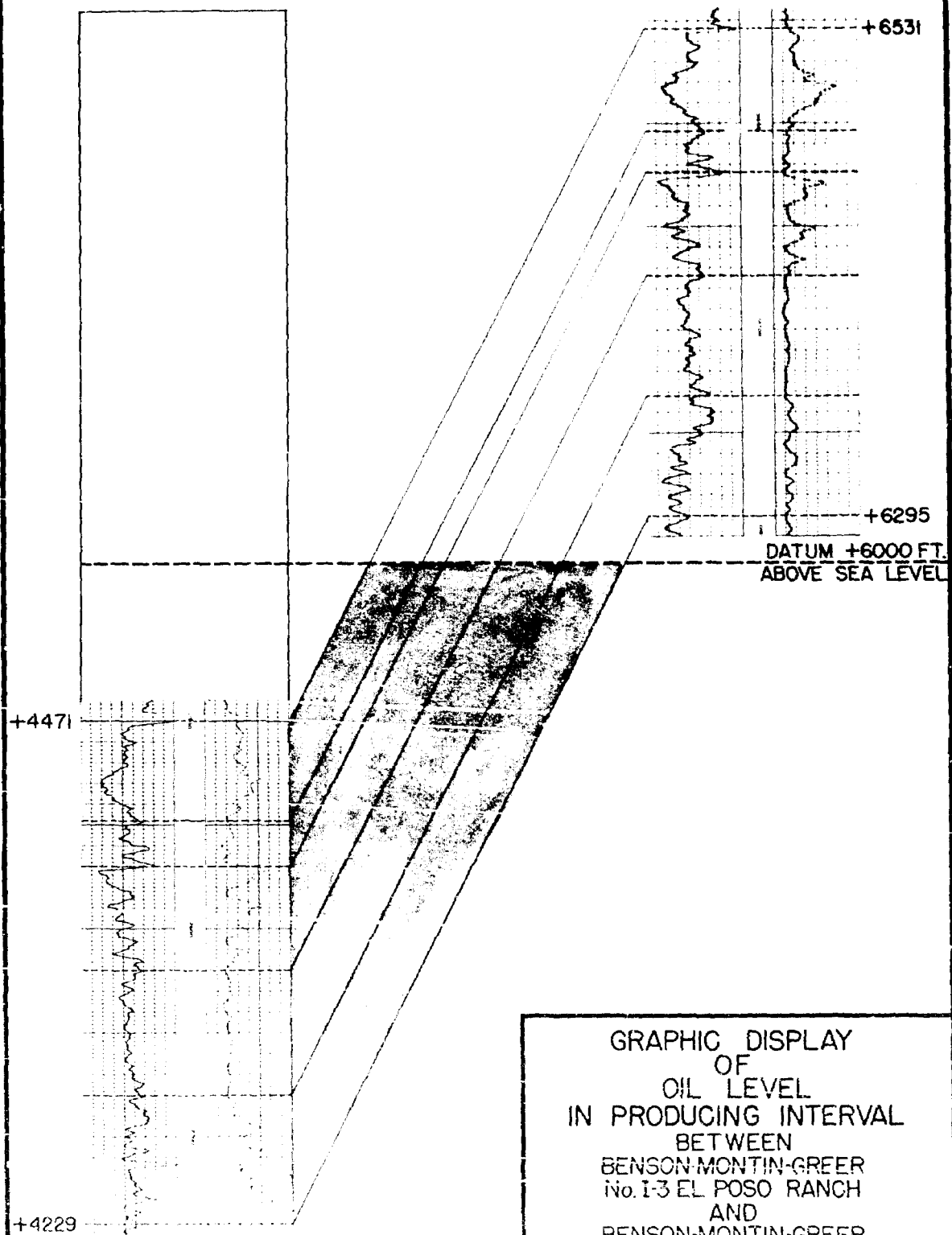
GRAPHIC DISPLAY
OF
PRESSURE EQUALIZATION
BETWEEN
BOLACK-GREER #2 BOLACK
AND
BENSON-MONTIN-GREER #N-20 JICARILLA
VERTICAL SCALE 1"=400'
DATE AUGUST 1, 1963

BENSON-MONTIN-GREER

No. 0-17 APACHE
660' FSL and 1980' FEL
SEC. 17-27N-1E
SURFACE ELEV. 6971

BENSON-MONTIN-GREER

No. 1-3 EL POSO RANCH
1980' FSL and 660' FEL
SEC. 3-27N-1E
SURFACE ELEV. 8085



GRAPHIC DISPLAY
OF
OIL LEVEL
IN PRODUCING INTERVAL
BETWEEN
BENSON-MONTIN-GREER
No. 1-3 EL POSO RANCH
AND
BENSON-MONTIN-GREER
No. 0-17 APACHE
DATE - AUGUST 1, 1963

G

WELL PRESSURE SURVEY
WELL NO. 20 JICARILLA
20 - 20 - 278. 12
11 - 20 - 278. 12

JULY, 1968

DATE	TIME FT	PRESSURES MEASURED WITH BHP BOMB		DEPTH TO TOP OF OIL BY FLOAT ON WIRE LINE
		PRESSURE (PSIG)	DEPTH (GPD)	
7-2-0		-	-	-
7-2 hours		377	2100	371
hours		378	2100	372
7-2 hours		377	2100	371
hours		377	2100	371
7-3 hours		377	2100	371
hours		377	2100	371

BOMB WITH 500% ELECTRON

BOTTOM HOLE PRESSURE SURVEY
JOHN-NORTH-GREEN DRILLING CORP., MO., N-20, TICARILLA
LOCATION: N - 20 - 14P. 27N. RGE. 11E
ELEVATION: 6984' GROUND
6992' RICE
JULY, 1962

DATE	RUN NO.	TIME	PRESSURES			
			MEASURED WITH BHP GAGE	DEPTH	PRESSURE AT DATUM OF + 4900 (PSIG)	DEPTH TO TOP OF OIL BY FLUAT ON WIRE LINE
7-24-63	-	1:00 PM	0	-	-	-
7-28-63	1	10:00 AM	34 hours	377	2100	371
	2	11:00 AM	95 hours	378	2100	372
7-29-63	1	7:15 AM	115 hours	377	2100	371
	2	8:00 AM	116 hours	377	2100	371
7-30-63	1	8:00 AM	140 hours	377	2100	371
	2	9:00 AM	141 hours	377	2100	371

WAS RUN IN TYPE BORE WITH 500' ELEMENT

DIRECTOR GENERAL INVESTIGATION
 DIVISION OF INVESTIGATION
 UNITED STATES DEPARTMENT OF JUSTICE
 WASHINGTON, D. C. 20535
 JUL 29 1963

DATE	RUN NO.	TIME	TEST	REMARKS	TEST	REMARKS
7-24-63	-	1:00 PM	1	1A. 1000	1	1A. 1000
7-28-63	1	10:00 AM	1	1A. 1000	1	1A. 1000
	2	11:00 AM	1	1A. 1000	1	1A. 1000
7-29-63	1	7:15 AM	1	1A. 1000	1	1A. 1000
	2	8:00 AM	1	1A. 1000	1	1A. 1000
7-30-63	1	8:00 AM	1	1A. 1000	1	1A. 1000
	2	9:00 AM	1	1A. 1000	1	1A. 1000

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED
 DATE 10-10-2001 BY 60322 UCBAW

DAILY PRODUCTION RECORD
BOLACK-CHIEF NO. A-14 BOLACK
LOCATION: A - 14 - TWP. 25N, RGE. 1W

<u>DATE</u>	<u>BARRELS OIL</u>	<u>NO. HOURS PUMPED</u>	<u>REMARKS</u>
<u>1962</u>			
December 12	37	1	
13	83	16	
14	67	22	
15	28	22	
16	-	-	Pump inoperative
17	21	8	
18	-	-	Top screen plugged
19	11	4	
20	-	-	Waiting on new pump
21	-	-	
22	143	24	
23	-	-	Pump stuck
24	-	-	
25	-	-	
26	20	3	
27	6	1 1/2	Engine died
28	-	-	Pump stuck
29	-	-	
30	113	23	
31	103	23	
<u>1963</u>			
January 1	93	23	
2	73	23	
3	42	23	
4	48	23	
5	57	23	
6	23	20	
7	37	27	
8	90	17	
9	36	23	
10	43	24	
11	10	23	Pump trouble
12	109	24	
13	77	23	
14	55	20	
15	55	20	
16	50	23	
17	-	-	Installing heater in tank
18	-	-	
19	70	21	

ALBERT R. GREER

<u>DATE</u>	<u>BARLS. OIL</u>	<u>NO. HOURS PUMPED</u>	<u>REMARKS</u>
January 20	52	20	Pump stuck
21	-	-	
22	-	-	
23	-	-	
24	85	22	
25	107	18	
26	20	?	
27	82	21	
28	82	22	
29	73	21	
30	60	21	
31	78	19	
February 1	57	22	Road washed out
2	63	24	
3	-	-	
4	-	-	
5	70	24	Roads impassable
6	50	21	
7	62	23	
8	67	22	
9	42	22	
10	50	22	
11	-	-	
12	-	-	
13	-	-	
14	-	-	
15	-	-	Roads impassable
16	-	-	
17	88	21	
18	63	22	
19	65	23	
20	65	20	
21	55	20	
22	53	22	
23	53	23	
24	-	-	
25	-	-	
26	-	-	
27	-	-	
28	-	-	
March 1	-	-	Roads impassable
2	112	19	
3	77	22	
4	-	-	
5	-	-	
6	73	19	
7	73	22	
8	73	22	
9	77	24	
10	-	-	
11	83	23	
12	60	23	

ALBERT R. GREER

DATE	RELS. OIL	NO. HOURS PUMPED	REMARKS
March 13	-	-	
14	77	-	Roads impassable
15	80	23	
16	80	23	
17	70	17	
18	40	22	On March 17th operating pressure of hydraulic pump indicated well pro- ducing at capacity
19	80	?	
20	-	23	
21	30	-	
22	75	19	
23	53	23	
24	65	9	
25	73	18	Cleaning flow lines
26	60	22	
27	83	?	
28	60	23	
29	68	23	
30	67	23	
31	55	24	
		?	
April 1	-	-	
2	88	-	
3	80	20	Engine died
4	77	23	
5	57	24	
6	65	22	
7	65	23	
8	65	23	
9	45	19	
10	53	?	
11	73	23	Engine died
12	58	23	Production estimated
13	65	24	
14	70	23	
15	83	23	
16	43	30	
17	70	16	
18	25	23	
19	60	23	
20	60	22	
21	62	23	
22	58	23	
23	58	25	
24	67	21	
25	65	23	
26	65	22	
27	60	23	
28	60	23	
29	60	24	
30	60	22	
		22	

<u>DATE</u>	<u>WELS.</u> <u>OIL</u>	<u>NO. HOURS</u> <u>FUELED</u>	<u>REMARKS</u>
May			
1	63	21	
2	63	22	
3	63	22	
4	63	21	
5	63	21	
6	63	23	
7	63	23	
8	63	23	
9	63	23	
10	63	23	
11	63	23	
12	63	23	
13	63	23	
14	63	23	
15	63	23	
16	63	23	
17	63	23	
18	63	23	
19	63	23	
20	63	23	
21	63	23	
22	63	23	
23	63	23	
24	63	23	
25	63	23	
26	63	23	
27	63	23	
28	63	23	
29	63	23	
30	63	23	
31	63	23	
June			
1	63	23	
2	63	23	
3	63	24	
4	63	24	
5	63	25	
6	63	22	
7	63	22	
8	63	22	
9	63	22	
10	63	22	
11	63	22	
12	63	22	
13	63	22	
14	63	22	
15	63	22	
16	63	22	
17	63	22	
18	63	22	
19	63	22	
20	63	22	
21	63	22	
22	63	22	

<u>DATE</u>	<u>WELS.</u> <u>OIL</u>	<u>NO. HOURS</u> <u>FOOTED</u>	<u>REMARKS</u>
June			
23	52	22	
24	63	21	
25	82	27 1/2	
26	122	17 1/2	
27	63	23	
28	70	23 1/2	
29	55	16	
30	53	23	
July			
1	62	23	
2	66	23	
3	63	24	
4	58	22	
5	73	24	
6	67	24	
7	67	24	
8	58	22	
9	63	24	
10	65	24	
11	62	24	
12	55	25	
13	62	24	
14	63	25	
15	55	23	

ALBERT R. GREER

SUMMARY OF OIL PRODUCTION AND RATES OF PRODUCTION
FOR BOLACK-GREER NO. A-14 BOLACK
FOR PERIOD MARCH 17, 1963 to JULY 14, 1963

Production rates as determined from:

A. Averages of 10-day periods

<u>Period</u>	<u>Production for period (bbls)</u>	<u>Average Production Rate (BOPD)</u>
March 17 to March 26	596	59.6
March 27 to April 5	635	63.5
April 6 to April 15	637	63.7
April 16 to April 25	616	61.6
April 26 to May 5	621	62.1
May 6 to May 15	627	62.7
May 16 to May 25	636	63.6
May 26 to June 4	647	64.7
June 5 to June 14	628	62.8
June 15 to June 24	625	62.5
June 25 to July 4	624	62.4
July 5 to July 14	657	65.7

B. Averages of 30-day periods

<u>Period</u>	<u>Production for period (bbls)</u>	<u>Average Production Rate (BOPD)</u>
March 17 to April 15	1868	62.3
April 16 to May 15	1864	62.1
May 16 to June 14	1911	63.7
June 15 to July 14	1906	63.5

C. Total production for 120-day period 7,549 barrels

COMPUTATION OF RESERVE VOLUME
AND DRAINAGE AREA
WOLACK-GRUBB NO. A-14 WOLACK

Estimated maximum decline in productivity
March 17, 1963 to July 14, 1963

2 BOPD

Production for period

7,549 bbls.

$$7549 \times \frac{62}{2} = 230,000 \text{ bbl.}$$

Minimum drainage area at 500 barrels per acre:

$$\frac{230,000 \text{ bbls.}}{500 \text{ bbl./acre}} = 460 \text{ acres}$$

1

**COMPARATIVE RATE OF DEPLETION
CHA CHA SALINE AND PUERTO CHIQUITO SALTWATER WELLS
AS TO THE PERCENTAGE OF DEPLETION OF INTERFERENCE
APPROXIMATELY EQUIVALENT TO BE
OF SAME ORDER OF MAGNITUDE**

	<u>CHA CHA</u>	<u>PUERTO CHIQUITO</u>
Per well production rate at time of interference test	140 approx.	30 approx.
Well spacing	80 acres	160 acres

$$\frac{150}{30} \times \frac{160}{80} = 10 = \text{comparative rate of depletion.}$$

To lower reservoir pressure by same percentage as in Cha Cha in
3 months time will in Puerto Chiquito require 30 months.

COSTS OF DRILLING WELLS IN THE PUERTO CHISQUITO AREA

Data is for wells in which Benson-Montana (Greer owns an interest. Figures do not include cost of leasehold acquisition or cost of operation

APPROX. DEPTH TO "ZONE A"	WELL	LOCATION	SUM OF ACTUAL COSTS AS OF AUGUST 1, 1963	ESTIMATED ADDITIONAL COSTS YET TO BE EXPENDED	TOTAL
2000'	N-20	N-20-T27N-R1E	\$ 45,355.55 *	\$ 2,000.00	\$ 47,355.55 *
2500'	P-19	P-19-T27N-R1E	39,162.59 *	15,000.00	54,162.59 *
2500'	0-17	0-17-T27N-R1E	50,331.16 *	0	50,331.16 *
2500'	I-8	I-8-T26N-R1E	39,811.25 *	18,000.00	57,811.25 *
2500'				5,000.00	184,079.17
6000'	#2 Dolack	K-13-T25N-R1E	175,079.17		
6000'	A-14 Dolack	A-14-T25N-R1W	135,713.62 **	70,000.00 **	205,713.62 **
7500'	#1 Dolack	0-9-T26N-R1W	183,608.34	40,000.00	223,608.34

* Includes cost of used pumping unit installed at less than new price.

** The A-14 is producing through intermediate casing string and above 1000' of drill pipe and drill collars left in hole because of down-hole explosion. Additional cost contemplates reworking well to sidetrack fish, run production casing and frac.

**CURRENT NET VALUE OF OIL TO WORKING INTEREST
FROM WELLS ON LEASES IN WHICH
KINISKIN-ROCKIE-GRUBER OWNS AN INTEREST
IN THE PUNTO GIGUERO AREA
(BEFORE OPERATING EXPENSE)**

A. Highest Value (for deep wells on some of the leases in the Canada Ojitos Unit)

Posted price of 40° oil		\$2.75
Less Gravity penalty (for 38° oil)	.04	
Less transportation differential (51¢ to Lybrook + 15¢)	.66	
Value after adjustment for gravity and transportation		\$2.05
Less royalty and taxes	.39	
Net value to working interest before operating expense		<u>\$1.66</u>

B. Lowest Value (for shallow wells in T27N-R1E)

Posted price of 40° oil		\$2.75
Less gravity penalty (for 33° oil)	.14	
Less transportation differential (62¢ to Lybrook + 15¢)	.77	
Value after adjustment for gravity and transportation		\$1.84
Less royalty, overriding royalty and taxes	.58	
Net value to working interest before operating expense		<u>\$1.26</u>

ECONOMICS OF DEVELOPMENT DEPENDENT ON WELL SPACING
FOR 2500' WELLS, PUERTO GILBERTO AREA

PER BARREL REVENUE:

Net value of oil per barrel to working interest before operating expense	\$1.26
Less operating expense	<u>.25</u>
Per barrel revenue	\$1.01

	<u>WELL SPACING - ACRES PER WELL</u>		
	<u>40</u>	<u>80</u>	<u>160</u>
Gross oil production at 500 barrels per acre	20,000 bbl.	40,000 bbl.	80,000 bbl.
Revenue to working interest	\$20,200	\$40,400	\$80,800
Drilling Cost	\$50,000	\$50,000	\$50,000
PROFIT or (LOSS)	(\$29,800)	(\$9,600)	\$30,800

PROFIT FIGURE DOES NOT INCLUDE AN ALLOWANCE FOR DRY HOLES,
LEASEHOLD COST, INTEREST ON INVESTMENT OR INCOME TAXES.

**ECONOMICS OF DEVELOPMENT AS DEPENDENT ON WELL SPACING
FOR WELLS IN THAT PART OF THE PUNTO GUISADO POOL
WHICH ARE DRILLED IN THE SANJA PE NATIONAL FOREST
CONSTITUTING "ZONE A" OF MICHIANA
AT AVERAGE EARTH OF + 1000 FEET SEA LEVEL REFERENCE**

I. BASIS OF DRILLING AND COMPLETION COST ESTIMATE:

(a) Average cost of first two wells (No. 2 Bolack and A-14 Bolack) drilled from canyon floor to top of "Zone A" at $\pm 5000'$		\$200,000
(b) Estimated future cost of similar wells drilled from canyon floor		\$125,000
(c) Estimated cost differential per foot for increased depths if necessary to build locations at higher elevations on mountain sides:		
1. Rotary rig cost	\$ 7.00	
2. Trucking costs	5.00	
3. Mud and water (probably will experience loss of circulation)	35.00	
4. Intermediate casing (7-5/8") and tubing	4.00	
	<u>\$51.00</u>	
(Use \$50.00 for estimate)		

II. PER BARREL REVENUE:

Net value of oil per barrel to working interest before operating expense	\$1.66
Less operating expense	<u>.25</u>
Per barrel revenue	\$1.41

III.

**SUMMARY OF ECONOMICS AS DEPENDENT ON WELL SPACING
FOR WELLS IN THE EAST PART OF THE PUEBLO CHICOITO POOL
WHICH ARE LOCATED IN THE MARTA YR NATIONAL FOREST.**

	WELL 40	SPACING 80	ACRES 160	PER WELL 320
Gross production at 500 barrels per acre	20,000 bbl.	40,000 bbl.	80,000 bbl.	160,000 bbl.
Revenue to working interest	\$28,200	\$56,400	\$112,800	\$225,600
Drilling and completion cost:				
(a) Basic cost of 6000' well located in canyon floor, less road and location	\$115,000	\$115,000	\$115,000	\$115,000
(b) Road and location costs	30,000	35,000	30,000	10,000
(c) Depth differential cost: 150 acres - 1000' 80 acres - 800' 40 acres - 500'	30,000	40,000	50,000	0
TOTAL COST PER WELL	\$175,000	\$190,000	\$195,000	\$125,000
PROFIT or (LOSS) per well	(\$146,800)	(\$133,600)	(\$ 32,200)	\$100,600

PROPERTY PLASER DOES NOT INCLUDE ALLOWANCE FOR DEPT HOLES, LEASEHOLD COST, INTEREST ON INVESTMENT OR INCOME TAXES.

**SIGNIFICANCE OF PIPELINE
TO FUTURE CHANGING AREA
ON TOTAL VALUE OF PROVED OIL**

**PER BARREL REVENUE FROM OIL
(AFTER TRANSPORTATION, GRAVITY
PENALTY, ROYALTY, TAXES AND
OPERATING EXPENSES)**

	<u>HIGHEST VALUE</u>	<u>LOWEST VALUE</u>
(a) Current revenue	\$1.41	\$1.01
(b) Maximum revenue if no transportation cost	\$1.94	\$1.45
(c) Probable revenue after five years of pipeline operation, assuming substantial reserves proven	\$1.70	\$1.32
(d) Percent increase (c) over (a)	20%	30%

N

ESTIMATE OF COMPARATIVE COST OF CONSTRUCTION
OF ROADS AND LOCATIONS
AND REHABILITATION MAINTENANCE TO FOREST LANDS
UNDER THE NATIONAL FOREST
AS PERCENTAGE OF WELL SPACING

	WELL	SPACING	ACRES	PER	WELL
	320	160	80		40
Estimated per well cost of roads and location	\$10,000	\$10,000 1st well 50,000 2nd well	\$10,000 1st well 50,000 2nd well 40,000 3rd well 40,000 4th well	\$25,000 1st to 4th 35,000 5th to 8th	
Average	\$10,000	\$30,000	\$35,000	\$20,000	
Total cost per 640-acre section	\$20,000	\$120,000	\$280,000	\$400,000	
Road and location costs per section as percent of cost of 40-acre development	4.1%	25%	58%	100%	
Comparative damage to forest lands	2%	25%	58%	100%	

ESTIMATE DOES NOT INCLUDE PRICE PAID TO FOREST FOR TREES DESTROYED. THIS COST IS BASED ON A
ROAD-PRICE BASIS AND IT IS ASSUMED THAT MOST OF THIS COST CAN BE RECOVERED BY SELLING THE
TIMBER TO LAMAR WILLS.

**COMPARATIVE ALLOWABLE FACTORS FOR
VARIOUS DEPTHS AND SIZES OF PRODUCTION UNITS
IN ACCORDANCE WITH PRESENT PRACTICES OF
THE NEW MEXICO OIL CONSERVATION COMMISSION**

DEPTH	SIZE OF PRODUCTION UNIT		
	40 ACRES		160 ACRES
	BASIC FACTOR	DEPTH FACTOR	TOTAL
5000'	1.0	0	1.0
5000 - 6000'	1.0	0.33	1.33
6000 - 7000'	1.0	0.77	1.77
7000 - 8000'	1.0	1.33	2.33

**COMPARATIVE ALLOWABLES DETERMINED
IN THE ABOVE FACTORS FOR
A BASIC ALLOWABLE OF 70 BOPD**

DEPTH	SIZE OF PRODUCTION UNIT		
	40 ACRES		160 ACRES
	BASIC FACTOR	DEPTH FACTOR	TOTAL
5000'	70	0	70
5000 - 6000'	93	0.33	124
6000 - 7000'	124	0.77	163
7000 - 8000'	163	1.33	233

P

RECOMMENDED NON-STANDARD UNITS
UNDER 160-ACRE SPACING ORDER

<u>TRACT DESCRIPTION</u>	<u>SIZE (ACRES)</u>	<u>STATUS</u>
<u>T-26N. R-1E</u>		
Section 5: E $\frac{1}{2}$ NE $\frac{1}{4}$	80 approx.	Drilled
W $\frac{1}{2}$ NE $\frac{1}{4}$	80 approx.	Drilled
E $\frac{1}{2}$ SW $\frac{1}{4}$	80 approx.	Drilled
W $\frac{1}{2}$ SW $\frac{1}{4}$	80 approx.	Undrilled
Section 9: E $\frac{1}{2}$ NW $\frac{1}{4}$	80	Drilled
W $\frac{1}{2}$ NW $\frac{1}{4}$	80	Undrilled
Section 15: SE $\frac{1}{4}$ SW $\frac{1}{4}$	40	Drilling
N $\frac{1}{2}$ SW $\frac{1}{4}$ and SW $\frac{1}{4}$ SW $\frac{1}{4}$	120	Undrilled
Section 16: E $\frac{1}{2}$ NE $\frac{1}{4}$	80	Drilled
W $\frac{1}{2}$ NE $\frac{1}{4}$	80	Undrilled
Section 21: E $\frac{1}{2}$ SE $\frac{1}{4}$	80	Drilled
W $\frac{1}{2}$ SE $\frac{1}{4}$	80	Undrilled
Section 22: W $\frac{1}{2}$ NW $\frac{1}{4}$	80	Drilled
E $\frac{1}{2}$ NW $\frac{1}{4}$	80	Undrilled
<u>T-27N. R-1E</u>		
Section 28: N $\frac{1}{2}$ NW $\frac{1}{4}$	80	Drilled
SW $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 4	64.31	Drilling
SE $\frac{1}{4}$ NW $\frac{1}{4}$ and Lot 3	64.01	Undrilled
Section 29: N $\frac{1}{2}$ NE $\frac{1}{4}$	80	Drilled
N $\frac{1}{2}$ NW $\frac{1}{4}$	80	Drilled
SW $\frac{1}{4}$ NW $\frac{1}{4}$ and Lot 4	64.30	Drilled
SE $\frac{1}{4}$ NW $\frac{1}{4}$ and Lot 3	64.30	Drilled
SW $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 2	64.30	Drilled
SE $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 1	64.30	Drilled

IDENTIFICATION OF PRODUCTIVE INTERVAL OF MANCOS FORMATION
UNDER CONSIDERATION IN NEW MEXICO OIL CONSERVATION COMMISSION
CASE NO. 2001
FROM TYPICAL LOGS OF WELLS IN AREA

	<u>DEPTH</u>	
	<u>BOLACK-GREER</u> <u>#1 BOLACK</u>	<u>INTER</u> <u>#1 HIJO</u>
1. Top of Mancos Shale Formation	6155'	1175'
Top of Niobrara member	6968'	1997'
Top of Carlile member	7865'	2887'
Top of Greenhorn member	8065'	3085'
Top of Graneros member	8137'	3143'
2. Top of Dakota Sandstone Formation	8335'	3335'

The productive interval which Benson-Montin-Greer Drilling Corp. asks be recognized as a common source of supply are those zones of the Mancos shale formation included between the depths set out below for the subject wells:

<u>WELL</u>	<u>DEPTH OF</u> <u>PRODUCTIVE INTERVAL</u>	
	<u>FROM</u>	<u>TO</u>
Bolack-Greer #1 Bolack O - 9 - Twp. 26N, Rge. 1W	6968'	8065'
Inter #1 Hijo F - 5 - Twp. 26N, Rge. 1E	1997'	3085'

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN RE: THE APPLICATION OF -

BENSON-MONTIN-GREER DRILLING CORP.

for a Temporary Order Spacing the Gallup Formation underlying the following described lands in Rio Arriba County, New Mexico, to-wit:

All of Townships 25, 26, and 27 North, Range 1 East and Range 1 West, and the N/2 of Township 24 North, Range 1 East and Range 1 West

For 160 acre drilling and spacing units, providing for interference tests and transfer of allowable during such temporary spacing order.

APPLICATION FOR TEMPORARY SPACING ORDER

Comes now the applicant, Benson-Montin-Greer Drilling Corp., and states:

1. That wells have been drilled or are drilling into the Gallup formation on the above described lands as set out in detail in Exhibit "A" attached hereto.
2. That the Gallup sand encountered and to be encountered on the above described lands has been demonstrated by the drilling of the wells described on Exhibit "A" to lie between the depths of 1,000 feet and 7,000 feet; that the Gallup formation in this area is approximately 1,000 feet thick and that it dips sharply from east to west so that the depth of the formation is much greater on the west edge of the above described area; that all of said area is underlain by one common source of supply in the Gallup formation.
3. That present information indicates that one (1) well drilled into the above described Gallup sand formation

common source of supply will adequately, efficiently and economically drain 160 acres, and that the Commission should enter an order which provides that only one (1) well can be drilled on each quarter-section; that such well should be located within 150 feet of the center of any 40 acre tract located within a quarter-section drilling and spacing unit with provisions that the Commission could grant an exception for a greater diversion from the center of the 40 acre tract where surface conditions require; and that such order should further provide for an exception for all those wells and quarter-sections upon which they are drilled described in Exhibit "A" which have been drilled or are being drilled more than one to a quarter-section or which have been drilled where the owner of the well does not own the lease on the entire quarter-section upon which it is located.

4. That the Puerto-Chiquito Pool lies within the captioned area covered by this Application; that no other designated pools are located within such area but that wells are producing within such area in undesignated pools.

5. That the Commission should enter a Temporary Order for a period of three (3) years which permits only one (1) well to be drilled on each quarter-section within the above described common source of supply, in accord with the provisions set out in this Application and that during such period of time applicant and other operators in the pool be granted permission to conduct interference tests in wells completed in the area and that in order to adequately conduct such interference tests such order grant the privilege of transferring allowables from one producing well to other producing wells on the same lease; that when such interference tests have been conducted, and the pool sufficiently

developed under a proper temporary spacing order, the question of 160 acre spacing be again heard by the Commission and at such time if geological and engineering information then available confirm the present information regarding one (1) well adequately, efficiently and economically draining a 160 acre tract, that then such 160 acre spacing order be made permanent.

6. That the temporary order which applicant requests the Commission to enter, as above set out, should further provide that all wells located in the above described common source of supply, on 160 acre drilling and spacing units, should be granted an allowable consistent with the Commission's current practices and that such wells be given an allowable equivalent to four (4) allowables for a 40 acre well and that no depth factor be allowed for any well in the pool.

7. That granting of the temporary 160 acre spacing order, and the other relief herein requested, will prevent waste and protect correlative rights and that drilling more than one (1) well to each 160 acre tract in the above described common source of supply will create waste and interfere with correlative rights of parties owning minerals therein; that at the present time it is necessary that all oil produced from wells located within the above described area be hauled a distance of from 50 to 65 miles to the nearest purchasing station; that it is now necessary in order to prevent the excessive cost of such hauling charges that a pipe line be built into the area covered by this Application and that drilling and development will be curtailed unless and until such pipe line can be built; that it is economically feasible to build such

pipe line if the area is developed on 160 acre drilling and spacing units but it is not economically feasible to build such pipe line if the area is to be developed on less than 160 acre spacing; that the Gallup formation in this area renders a low ultimate per acre recovery and requires that one well be permitted to recover the oil from not less than 160 acres, and that if wells are drilled on a denser pattern then the income from production will not cover the cost of drilling and much of the area covered by this application will never be drilled.

8. That the names and addresses of all parties interested in the subject matter of this application, so far as they are known to applicant, are so shown in Exhibit "B" attached hereto and made a part hereof.

WHEREFORE, applicant prays that this Application be set down for hearing; that due notice be given of such hearing in accord with the rules of this Commission and the laws of the State of New Mexico, and that upon such hearing and from the evidence to be adduced, the Commission enter its order as follows:

1. granting temporary 160 acre drilling and spacing units for the above described common source of supply with one (1) well to be drilled on each such unit in the approximate center of any 40 acre tract allocated thereto with a 165 foot tolerance with further provision for greater deviation on administrative approval where surface lands require.

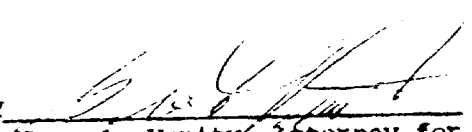
2. permitting producers from the common source of supply to conduct interference tests by transferring the allowable from one producing well on a lease to the other producing

wells thereon;

3. granting wells producing from 160 acre tracts under the above prescribed order an allowable of four (4) times that for the ordinary 40 acre wells of 5,000 feet, or less, in depth; and,

4. prescribing such other rules and regulations as may be necessary to prevent waste and protect correlative rights.

VERITY, BURR, COOLFY & JONES

BY 

Geo. L. Verity, Attorney for
Benson-Montin-Greer Drilling
Corp., Applicant

EXHIBIT A TO
BENSON-MONTIN-GREER DRILLING CORP. APPLICATION
FOR TEMPORARY SPACING ORDER

TOWNSHIP 24 NORTH, RANGE 1 EAST, N.M.P.M.

- Section 5: Lemm & Maiatico #1 Arellano
1963' FNL, 1980' FWL
- Lemm & Maiatico #1 Western Development
660' FSL, 990' FEL
- Lemm & Maiatico #1 Intex Government
1963' FNL, 1980' FWL

TOWNSHIP 25 NORTH, RANGE 1 EAST, N.M.P.M.

- Section 10: Royal Development Company #1 Harvey
1650' FNL, 330' FWL
- Section 32: Standard Oil Co. of Texas #1 Federal (17-32)
660' FSL, 1650' FWL
- Standard Oil Co. of Texas #2 Federal (17-32)
2350' FNL 1650' FWL

TOWNSHIP 25 NORTH, RANGE 1 WEST, N.M.P.M.

- Section 13: Bolack Greer et al #2 Bolack
1785' FSL, 2120' FWL
- Section 14: Bolack, Greer et al #A-14 Bolack
1125' FNL, 450' FEL

TOWNSHIP 26 NORTH, RANGE 1 EAST, N.M.P.M.

- Section 4: Benson-Montin-Greer Drilling Corp.
Puerto Chiquito Unit D-4 (Drilling)
395' FNL, 330' FWL
- Section 5: Standard Oil Co. of Texas #1-5 Intex
1650' FNL, 990' FEL
- Intex Oil Company #1 USL-Aito
650' FNL, 1980' FEL
- R. L. Bayless #1-X Hijo
1650' FNL, 1650' FWL
- Section 6: R. L. Bayless #1 Bernie
1450' FNL, 430' FEL
- Section 8: Benson-Montin-Greer Drilling Corp.
Puerto Chiquito Unit I-8 (Drilling)
1980' FSL, 660' FEL
- Section 9: Intex Oil Company #1 USL-Bajo
1980' FNL, 1980' FWL
- Section 15: Harold O'Connor #1 Jean Reed Federal
370' FSL, 1650' FWL (Drilling)

TOWNSHIP 26 NORTH, RANGE 1 EAST, N.M.P.M. (continued)

- Section 16: Intex Oil Company & South Penn #1 USL-Casa
1976' FNL, 593' FEL
- Section 19: Mountain States Natural Gas Corp. #1 Cynthia
660' FNL, 660' FEL
- Section 21: Intex Oil Company & South Penn #1-21 USL-Gran
1975' FSL, 485' FEL
- Section 26: Coral Oil and Gas Company #1 Grevey
660' FSL, 660' FWL
- Section 27: Intex Oil Company & South Penn #1 USL-Duro
660' FNL, 1980' FWL

TOWNSHIP 26 NORTH, RANGE 1 WEST, N.M.P.M.

- Section 9: Bolaek, Greer et al #1 Bolack (Drilling)
1080' FSL, 1920' FEL

TOWNSHIP 27 NORTH, RANGE 1 EAST, N.M.P.M.

- Section 17: Benson-Montin-Greer Drilling Corp. #O-17 Apache
660' FSL, 1980' FEL
- Section 19: Benson-Montin-Greer Drilling Corp. P-19 Jicarilla
660' FSL, 660' FWL
- Section 20: Benson-Montin-Greer Drilling Corp. N-20 Jicarilla
660' FSL, 1980' FWL
- Section 21: E. L. Fundingsland #11 Jicarilla
330' FSL, 660' FWL
- Section 28: E. L. Fundingsland #12 Jicarilla
1900' FNL, 1850' FEL
- Section 29: R. L. Bayless #1 Betsy
471' FSL, 660' FWL
- R. L. Bayless #2 Betsy
1650' FNL, 1650' FEL
- R. L. Bayless #3 Betsy
660' FNL, 1980' FWL
- R. L. Bayless #4 Betsy
330' FSL, 1980' FWL
- R. L. Bayless #5 Betsy
660' FNL, 660' FEL
- R. L. Bayless #6 Betsy
471' FSL, 660' FEL

EXHIBIT B TO
BENSON-MONTIN-GREER DRILLING CORP. APPLICATION
FOR TEMPORARY SPACING ORDER

Atlas Corporation, National Bank of Tulsa Building, Tulsa 3,
Oklahoma

M. A. Barton, Box 2154, Santa Fe, New Mexico

R. L. Bayless, Box 1541, Farmington, New Mexico

Benson-Montin-Greer Drilling Corp. 158 Petroleum Center Building,
Farmington, New Mexico

Tom Bolack, 1010 North Dustin, Farmington, New Mexico

Alice Bolack, 1010 North Dustin, Farmington, New Mexico

Bolack-Greer, Inc., 158 Petroleum Center Building, Farmington,
New Mexico

Burk Royalty Company, 800 Oil and Gas Building, Wichita Falls,
Texas

F. H. Carpenter, Sour Lake, Texas

Coral Oil & Gas Company, 2127 San Mateo NE, Albuquerque, New
Mexico

J. V. Fritts, Box 4176, Albuquerque, New Mexico

E. L. Fundingsland, 1402 Denver US National Building, Denver,
Colorado

Albert R. Greer, 158 Petroleum Center Building, Farmington,
New Mexico

H & S Drilling Company, Tri-State Insurance Building, Tulsa 19,
Oklahoma

Humble Oil and Refining Company, Box 801, Tulsa, Oklahoma

Intex Oil Company, 531 California Avenue, Bakersfield, Calif.

Lemm and Matatico, 806 Connecticut Avenue, Washington, D.C.

Jack London, Jr., 1390 First National Building, Oklahoma City 2,
Oklahoma

Mobil Oil Corp., 612 S. Flower Street, Los Angeles 54, Calif.

Montin-Harbert Pipeline Construction Co., Inc.,
1390 First National Building, Oklahoma City 2, Oklahoma

Wm. V. Montin, 1390 First National Building, Oklahoma City 2,
Oklahoma

Mountain States Natural Gas Corp., Box 1362, Tulsa, Oklahoma

Harold O'Connor, 300 Carlisle SE, Albuquerque, New Mexico

Pan American Petroleum Corp., Box 1410, Fort Worth, Texas

Noel Reynolds, 305 Korber Building, Albuquerque, New Mexico

Royal Development Company, Box 1299, Albuquerque, New Mexico

Skelly Oil Company, Box 1650, Tulsa, Oklahoma

Joe E. Smith, 8285 White Road, Beaumont, Texas

Robert D. Snow, Tri-State Insurance Building, Tulsa 19, Oklahoma

Standard Oil Company of Texas, Box 2766, Amarillo, Texas

Stanley J. Stanley, 1702 Chaco, Farmington, New Mexico

Virgil L. Stoabs, 158 Petroleum Center Building, Farmington,
New Mexico

Sunray DX Oil Company, 101 University Boulevard, Denver 6,
Colorado

Texota Oil Company, 318 Denver US National Building, Denver,
Colorado

Thor-Westcliffe Development, Inc., 302 East Palace Avenue,
Santa Fe, New Mexico

OPENING STATEMENT IN THE BENSON-MONTIN-GREER APPLICATION
FOR TEMPORARY SPACING ORDER IN PUERTO CHIQUITA POOL

May it please the Commission:

Benson-Montin-Greer Drilling Corporation, the applicant in this case, is acutely conscious of the fact that its application is unusual in New Mexico on three counts. In the first place, we have asked for 160 acre spacing for oil production. In addition to this, we are requesting that the Commission rule that seven townships are now encompassed within a common source of supply that at present has not been fully developed; and in the third place, we are requesting the Commission to grant a temporary spacing order for a period of three years.

The stature and fine reputation of this Commission is known throughout the Interstate Oil Compact Commission and its subscribing states. This Commission has been doing a stalwart job in behalf of conserving the oil and gas resources of our state, but changes are taking place in the development of oil and gas reservoirs that require new and different concepts of conservation regulations. Some Conservation Commissions in the States, and especially in the provinces of Canada, have reflected by recent orders that they acknowledge the need of new concepts of conservation in order to stay abreast of the advance of the industry.

We should like for the Commission to be aware of the fact that outside of New Mexico, promulgation of initial orders of the nature here requested are in no wise unusual treatment. We will present to the Commission compelling evidence as to why our application in all three of its apparently unusual aspects should be granted.

For the past few years, several State Commissions, as well as those in the Provinces, have realized the necessity of making initial spacing orders extend to the extremity of the prospectively productive area. They have also recognized that the industry has improved its techniques and have learned, along with the industry, that the new techniques increase the rate of production and that, given sufficient time, even low-grade reservoirs will drain much larger areas than ever before known, thus making it possible for the industry to develop areas of low-grade reservoirs such as are encountered in the San Juan Basin. If the conservation law of a state cannot accommodate itself to the newly discovered technique and knowledge of the industry so that low-grade reservoirs can be economically developed on wide spacing, then such newly-found knowledge and newly discovered techniques are of no avail, because such low-grade reservoirs will remain beyond the opportunity of development.

Thus, we trust that by reason of these facts the Commission will not prejudice the case here being presented today and that it will acknowledge the necessity in the industry and consider the facts with regard to the ability of one well to drain 160 acres in light of the current techniques and knowledge in the industry concerning such points. With regard to the third point that applicant acknowledges is unusual within the State of New Mexico, we believe that we will show the Commission the conditions in the pool in question require that the requested temporary order extend for a three-year period in order that time be allowed to complete an accumulation of proper evidence to support the order on incontrovertible basis.

The development of oil pools on wide spacing in Canada has made the Canadian oil frontier most attractive to American dollars and it could be shown to the Commission today, if necessary, that oil industry dollars have gone from Northwestern New Mexico to Canada. If we are to keep the oil industry interested in Northwestern New Mexico, it is

absolutely imperative that the Commission recognize the necessity of wide spacing in order that the operators can develop the low-grade Gallup reservoirs encountered in the area. If they can develop these reservoirs, we believe that the economic doldrums now known in San Juan Basin can be considerably alleviated and that the Basin will once again become attractive to the exploratory and development oil dollar. This depression of the San Juan Basin is made apparent every time the newspaper prints a story about the number of drilling rigs operating in the Basin, and this Commission is probably aware of the fact that there are now only 37 active drilling rigs compared with 100 a few years ago.

The problem that Northwestern New Mexico is facing is that the oil explorer cannot expect to find another Hobbs Pool, which started producing over 30 years ago and is still producing with many wells making top allowables. On the contrary, the principal producing oil formation that explorers are likely to find and must develop in the San Juan Basin is a low-grade reservoir in the Gallup formation. Their primary recoveries in the average case are less than 1,000 bbls. per acre.

When applicant discovered the Cha Cha Gallup Pool in 1959, the first wells were drilled under the state-wide 40 acre spacing order. Irrespective of such spacing order, this applicant realized the necessity of wider spacing in order to make the pool economic, and voluntarily developed the early wells in the Southeastern end of the pool on 80 acre spacing. By September of 1960, upon this applicant's request, the Commission granted a temporary 80 acre spacing order, which, in October of 1961, was made permanent. The Cha Cha Gallup Pool was later extended to cover the entire area of production from the Pool and the Northwestern portion of the Pool was voluntarily developed on 160 acres, irrespective of the 80 acre order and the 80 acre development on the Southeastern portion of this same common source of supply. We now know that the entire Pool should have been developed on 160 acres and that a vast amount of oil has been left in the ground in the Southeastern portion of the pool because it was developed on 80 acre spacing rather than 160. Also, millions of cubic feet of gas were flared from the Pool which could have been conserved if the entire area had been developed on 160 acres. We hope to prevent the recurrence of such a tragedy in the Puerto Chiquita area. The Commission I am sure will remember the repeated continuances the producers urged upon it with regard to the operation of its no-flare order. Our evidence will show to the Commission that the necessity for these extensions was directly related to the fact that the Southeastern portion of the Pool was being developed upon 80 rather than 160 acre spacing. The Commission was certainly in no way at fault with regard to the spacing established for the Cha Cha Gallup Pool, as it granted the widest spacing requested. We earnestly hope the Commission will allow this applicant and the industry to profit from its experience at Cha Cha Gallup and grant the order here requested.

The Verde Gallup Pool, which was a fractured shale closely similar to the one before the Commission for consideration today, was discovered a scant seven years ago. Yet, we find that today it is practically depleted. It was developed under a 40 acre order, although some of the producers only developed the Pool on 80 acres and a few on 160 acres. The Pool as a whole has proven to be an unprofitable or marginal venture.

It was only four years ago that the Cha Cha Gallup Pool, which I previously referred to in some detail, was discovered. Yet today, the 80 acre portion of the Pool is depleted so far as primary oil is concerned.

We are informed that the recent application heard by this Commission with regard to the Boulder Gallup Pool to the North of the one here under consideration, asked for 80 acre spacing and that the proof presented to the Commission was that, on 80 acre spacing, operators can expect to recover through the total life of the Pool, only 110% of the amount of money required to drill and complete a producing well, which we are sure this Commission realizes does not justify continued development.

The facts and evidence that will today be presented to the Commission with regard to the Puerto Chiquita Pool are somewhat similar with regard to recoveries to those presented to the Commission on the Boulder Pool. But we certainly are not going to form a part of the conspiracy of ignorance that resulted in the tragedy of Cha Cha Gallup and ask this Commission to promulgate an 80 acre order. We are to the contrary doing the only thing that we believe is intelligent and will permit development in asking this Commission to enter a temporary 160 acre order, effective over the entire extremities of what is now believed will be productive limits of the Puerto Chiquita Gallup producing area.

With the exception of the applicant and Humble Oil & Refining Company, practically all of the companies holding leases in the seven-township area under consideration today, have declined to expend exploratory dollars and have farmed out or released their acreage. Whereas, the applicant has, in the last twelve months, expended \$1,000,000 in exploration and development of the area. This expenditure was made upon the conviction and faith that the area can be economically developed on wider spacing than is customarily approved by the New Mexico Commission, but the applicant is acutely conscious of the new techniques previously alluded to and the fact that it has been positively demonstrated in the San Juan Basin that oil can be drained on wider spacing than 80 acres, and therefore low-grade reservoirs developed which cannot be economically produced on 80 acres or narrower spacing. If this Commission will acknowledge the requirements of the development of this area, we earnestly believe it will result in the development of the Puerto Chiquita area with the greatest possible recovery of oil and that this, in turn, will stimulate other exploration in the San Juan Basin.

This brings us to the place where we hope that the Commission will be able to see the necessity of making the order effective over the entire prospective producing area and promulgate a temporary order for a period of three years. As just observed, the application for the Boulder Pool was only for 80 acres, although the evidence demonstrated that it could not be profitably developed on 80 acres. But the producers of the Boulder Pool are already hung on the petard of having the area developed on 80 acres before apprehending the knowledge that they needed wider spacing in order to realize a profit. Thus, we see that if Puerto Chiquita is not to find itself in the same deplorable condition, it is necessary that the Commission extend its temporary order to the entire outlines of what the best present geological evidence is as to its eventual productive limits.

The conditions are two-fold which require that a temporary order must extend for a period of three years, and we expect to develop detailed and convincing evidence to this effect.

Our evidence today will show to the Commission that on the average, a recovery of only 500 barrels per acre can be anticipated from the Puerto Chiquita Pool and that one well will drain an area in excess of 160 acres. Our method of proof today will be of exactly the same nature as that which proved reliable in predicting drainage in the Cha Cha spacing hearing.

Our initial application here is made early in the life of the Pool as was the Cha Cha application and must be based upon the limited preliminary information available at such point of development, and for this reason, we only make application for temporary spacing; but if we wait to make the application until all facts have been conclusively developed, then any order of the Commission would be too late to serve a useful purpose and the only thing that can be proved is what ought to have been done. The Commission is fully aware of the fact that if it grants this application based on the limited information now available, and later development under temporary order should prove that the Pool should be developed on closer spacing, then the temporary order can be amended at that time and nothing will have been lost and no oil will have been wasted, for it is always a simple matter to drill

additional development wells; while it is, of course, impossible to undrill unnecessary wells. Applicant is aware of the fact that a few wells in the area have been drilled closer than 160 acre spacing. Considerable thought has been given to this fact and negotiations with the affected owners have resulted in solution to all problems that are presented with regard to change in spacing. How these problems have been resolved will be developed in our testimony.

At the present time, all oil being produced in the Puerto Chiquita area must be trucked to the pipeline at a cost of from 60¢ to 80¢ per barrel. This added cost of production is a further deterrent to development in the area. From past experience of Gallup fields being developed on close spacing, no pipeline company is willing to build a line into this area, but the applicant is today authorized by Llave Pipeline Co. to represent to the Commission that if it will grant the application of Benson-Montin-Greer, it will immediately commence construction of a pipeline from El Paso Natural Gas Products Company's Apache Station into the Puerto Chiquita area, and that it can, if it is given an immediate starting date, complete said line prior to winter weather making construction impossible.

In conclusion, we believe that our evidence will show to the Commission that every aspect of this application should be granted. That it is necessary that such application be granted in order to insure orderly development, protect correlative rights and prevent waste in this Pool. We also believe that by the granting of such order, the entire San Juan Basin will be advantaged and exploration increased.

Respectfully submitted,

BENSON-MONTIN-GREER DRILLING CORP.

By _____
Albert R. Greer

11/2/63

Lease AM-02407

No. 23-63

DOCKET: REGULAR HEARING - WEDNESDAY - AUGUST 14, 1963

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING,
SANTA FE, NEW MEXICO

12:00
ALLOWABLE (1) Consideration of the oil allowable for September, 1963;

8 pm
(2) Consideration of the allowable production of gas for September, 1963, from ten prorated pools in Lea and Eddy Counties, New Mexico, also consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, for September, 1963.

Verity
Kellahan
Rea
Spencer
CASE 2881 Application of Benson-Montin-Greer Drilling Corporation for 160-acre spacing, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks temporary 160-acre spacing for a period of three years for oil wells completed in the Gallup formation underlying Townships 25, 26 and 27 North, Ranges 1 East and 1 West, Rio Arriba County, New Mexico, and for authority to conduct interference tests and to transfer allowables during said temporary period.

5:00
CASE 2882 Southeastern New Mexico nomenclature case calling for an order for the creation, contraction and extension of certain pools in Chaves, Eddy, and Lea Counties, New Mexico.

(a) Create a new pool in Eddy County, New Mexico, classified as an oil pool for San Andres production, designated as the Crow Flats-San Andres Pool, and described as:

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
SECTION 22: SE/4

(b) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production, designated as the Flying "M"-Pennsylvanian Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 33 EAST, NMPM
SECTION 15: NW/4

(c) Create a new pool in Lea County, New Mexico, classified as an oil pool for Devonian production, designated as the Jenkins-Devonian Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM
SECTION 30: NE/4

(d) Create a new pool in Chaves County, New Mexico, classified as an oil pool for San Andres production, designated as the L. E. Ranch-San Andres Pool, and described as:

TOWNSHIP 10 SOUTH, RANGE 28 EAST, NMPM
SECTION 21: SW/4
SECTION 28: NW/4
SECTION 29: NE/4

(e) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production, designated as the Maljamar-Pennsylvanian Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
SECTION 5: NW/4

(f) Create a new pool in Lea County, New Mexico, classified as an oil pool for Granite Wash production, designated as the Wantz-Granite Wash Pool, and described as:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM
SECTION 2: SE/4

(g) Create a new pool in Lea County, New Mexico, classified as an oil pool for Yates production, designated as the West Wilson-Yates Pool, and described as:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM
SECTION 2: SW/4

(h) Contract the Red Lake Pool in Eddy County, New Mexico, by the deletion of the following area:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 29: S/2 SE/4

(i) Extend the Artesia Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 25: SW/4 SW/4
SECTION 29: S/2 SE/4

(j) Extend the Atoka-Pennsylvanian Gas Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM
SECTION 30: NE/4 and E/2 NW/4

(k) Extend the North Benson Queen-Grayburg Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM
SECTION 28: S/2 SW/4
SECTION 29: S/2

- (l) Extend the Bronco-Siluro Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 13 SOUTH, RANGE 38 EAST, NMPM
SECTION 2: E/2

- (m) Extend the South Brunson-Ellenburger Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 38 EAST, NMPM
SECTION 31: NW/4

- (n) Extend the Chisum-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 28 EAST, NMPM
SECTION 7: E/2 W/2
SECTION 18: N/2 NW/4

- (o) Extend the North Hackberry-Yates Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 19: SW/4
SECTION 30: NW/4 NW/4

- (p) Extend the Inbe-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 34 EAST, NMPM
SECTION 18: SE/4

- (q) Extend the Lea-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
SECTION 13: NW/4

- (r) Extend the West Lusk-Yates Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 22: NE/4 NW/4

- (s) Extend the East Millman-Seven Rivers Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
SECTION 29: SE/4 NW/4 and NE/4 SW/4

Docket No. 23-63

- (t) Extend the Oil Center-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
SECTION 3: SW/4

- (u) Extend the East Red Lake-Queen Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 1: NW/4 SW/4

- (v) That the vertical limits of the East Red Lake-Queen Pool be extended to include the Grayburg formation and rename the East Red Lake-Queen Pool to East Red Lake Queen-Grayburg Pool;

- (w) Extend the Turkey Track Queen-Grayburg Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM
SECTION 29: SE/4 SE/4
SECTION 33: NE/4 NW/4

- (x) Extend the Vacuum-Abo Reef Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
SECTION 8: SW/4
SECTION 17: NW/4

- (y) Extend the Vacuum-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 36: SW/4

- (z) Extend the Vacuum-Glorieta Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: SW/4
SECTION 36: NW/4

- (aa) Extend the Vacuum-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: W/2
SECTION 36: W/2

- (bb) Extend the Vandagriff-Keyes Gas Pool in Eddy County, New Mexico, to include therein:

-5-

Docket No. 23-63

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
SECTION 33: SW/4

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 11: NW/4

(cc) Extend the Weir-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM
SECTION 10: SW/4

(dd) Extend the Indian Hills-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 24 EAST, NMPM
SECTION 20: SE/4, S/2 NE/4, SE/4 NW/4 and E/2 SW/4
SECTION 28: NW/4, W/2 NE/4, NW/4 SE/4 and N/2 SW/4
SECTION 29: NE/4, N/2 SE/4, NE/4 SW/4 and E/2 NW/4

dag/

DOCKET: REGULAR HEARING - WEDNESDAY - AUGUST 14, 1963

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING,
SANTA FE, NEW MEXICO

ALLOWABLE: (1) Consideration of the oil allowable for September, 1963;

(2) Consideration of the allowable production of gas for September, 1963, from ten prorated pools in Lea and Eddy Counties, New Mexico, also consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, for September, 1963.

CASE 2881: Application of Benson-Montin-Greer Drilling Corporation for 160-acre spacing, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks temporary 160-acre spacing for a period of three years for oil wells completed in the Gallup formation underlying Townships 25, 26 and 27 North, Ranges 1 East and 1 West, Rio Arriba County, New Mexico, and for authority to conduct interference tests and to transfer allowables during said temporary period.

CASE 2882: Southeastern New Mexico nomenclature case calling for an order for the creation, contraction and extension of certain pools in Chaves, Eddy, and Lea Counties. New Mexico.

5 pages
(a) Create a new pool in Eddy County, New Mexico, classified as an oil pool for San Andres production, designated as the Crow Flats-San Andres Pool, and described as:

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
SECTION 22: SE/4

(b) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production, designated as the Flying "M"-Pennsylvanian Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 33 EAST, NMPM
SECTION 15: NW/4

(c) Create a new pool in Lea County, New Mexico, classified as an oil pool for Devonian production, designated as the Jenkins-Devonian Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM
SECTION 30: NE/4

(d) Create a new pool in Chaves County, New Mexico, classified as an oil pool for San Andres production, designated as the L. E. Ranch-San Andres Pool, and described as:

TOWNSHIP 10 SOUTH, RANGE 28 EAST, NMPM

SECTION 21: SW/4

SECTION 28: NW/4

SECTION 29: NE/4

(e) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production, designated as the Maljamar-Pennsylvanian Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM

SECTION 5: NW/4

(f) Create a new pool in Lea County, New Mexico, classified as an oil pool for Granite Wash production, designated as the Wantz-Granite Wash Pool, and described as:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM

SECTION 2: SE/4

(g) Create a new pool in Lea County, New Mexico, classified as an oil pool for Yates production, designated as the West Wilson-Yates Pool, and described as:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM

SECTION 2: SW/4

(h) Contract the Red Lake Pool in Eddy County, New Mexico, by the deletion of the following area:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM

SECTION 29: S/2 SE/4

(i) Extend the Artesia Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM

SECTION 25: SW/4 SW/4

SECTION 29: S/2 SE/4

(j) Extend the Atoka-Pennsylvanian Gas Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM

SECTION 30: NE/4 and E/2 NW/4

(k) Extend the North Benson Queen-Grayburg Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM

SECTION 28: S/2 SW/4

SECTION 29: S/2

- (l) Extend the Bronco-Siluro Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 13 SOUTH, RANGE 38 EAST, NMPM
SECTION 2: E/2

- (m) Extend the South Brunson-Ellenburger Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 38 EAST, NMPM
SECTION 31: NW/4

- (n) Extend the Chisum-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 28 EAST, NMPM
SECTION 7: E/2 W/2
SECTION 18: N/2 NW/4

- (o) Extend the North Hackberry-Yates Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 19: SW/4
SECTION 30: NW/4 NW/4

- (p) Extend the Inbe-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 34 EAST, NMPM
SECTION 18: SE/4

- (q) Extend the Lea-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
SECTION 13: NW/4

- (r) Extend the West Lusk-Yates Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 22: NE/4 NW/4

- (s) Extend the East Millman-Seven Rivers Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
SECTION 29: SE/4 NW/4 and NE/4 SW/4

(t) Extend the Oil Center-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
SECTION 3: SW/4

(u) Extend the East Red Lake-Queen Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 1: NW/4 SW/4

(v) That the vertical limits of the East Red Lake-Queen Pool be extended to include the Grayburg formation and rename the East Red Lake-Queen Pool to East Red Lake Queen-Grayburg Pool.

(w) Extend the Turkey Track Queen-Grayburg Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM
SECTION 29: SE/4 SE/4
SECTION 33: NE/4 NW/4

(x) Extend the Vacuum-Abo Reef Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
SECTION 8: SW/4
SECTION 17: NW/4

(y) Extend the Vacuum-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 36: SW/4

(z) Extend the Vacuum-Glorieta Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: SW/4
SECTION 36: NW/4

(aa) Extend the Vacuum-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: W/2
SECTION 36: W/2

(bb) Extend the Vandagriff-Keyes Gas Pool in Eddy County, New Mexico, to include therein:

-5-
Docket No. 23-63

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
SECTION 33: SW/4

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 11: NW/4

(cc) Extend the Weir-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM
SECTION 10: SW/4

(dd) Extend the Indian Hills-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 24 EAST, NMPM
SECTION 20: SE/4, S/2 NE/4, SE/4 NW/4 and E/2 SW/4
SECTION 28: NW/4, W/2 NE/4, NW/4 SE/4 and N/2 SW/4
SECTION 29: NE/4, N/2 SE/4, NE/4 SW/4 and E/2 NW/4

dag/

Albert R. Greer
William V. Montin
William Harbert
Jack London Jr.
Stanley J. Stanley
Cliff Sherree
Tom Bolack
Virgil L. Steabs
Richard Bramblette
Shur Bolack Inc.
Montin Harbert Pipe
Line Co.

New Mexico

Statehouse Reporting Service

Published by

R. W. BYRAM & COMPANY OF NEW MEXICO
DRAWER M CAPITOL STATION AUSTIN, TEXAS

THE INFORMATION CONTAINED IN THIS NEWS-LETTER IS PRIVATE AND CONFIDENTIAL. FOR LIMITED PUBLICATION ONLY. NO PART MAY BE REPRODUCED WITHOUT SPECIFIC PERMISSION. COPYRIGHT 1961.

August 16, 1963

Vol. 7 - No. 29

MARSHALL SMITH - Page 5

STATEWIDE HEARING

Allowables Remain at 40 and 70

The New Mexico Oil Conservation Commission held its statewide allowable hearing in Santa Fe Wednesday and pegged the allowables for September at the same level as for August -- 40 barrels for the Southeast and 70 barrels for the Northwest. The decision was announced immediately after the allowable hearings. Members of the Commission present were Governor Jack M. Campbell and A. L. (Pete) Porter.

Ray Risien, Crude Oil Department Manager for Signal Oil and Gas Company, presented industry testimony. He said the latest statistical information on crude stocks and refined products inventories revealed the following:

	<u>Latest week</u>	<u>Change from one year ago</u>
Crude Stocks	254,799,000	up 11,413,000
Gasoline Stocks	187,472,000	up 5,214,000
Kerosene Stocks	34,147,000	up 781,000
Distillate Stocks	142,879,000	up 2,465,000
Residual Stocks	49,997,000	down 720,000
Four-product Stocks	414,495,000	up 7,740,000

Risien said the figures indicated that crude stocks as well as most product inventories are above the desired level as compared to the same period of last year.

"This suggests," he said, "that caution should be exercised in setting the allowable for September. Signal's current stocks of crude oil and products are approximately in balance. Our nomination for the month of September, 1963, of 17,506 barrels daily represents Signal's firm demand for New Mexico crude."

OCC Engineer James Kapteina reported the U. S. Bureau of Mines estimate of demand for New Mexico crude for September, 1963, as 300,000 BPD, a decrease of 10,000 BPD for August.

Purchaser nominations for Southeast New Mexico decreased 1,372 BPD, or .05 per cent, to 273,242. Northwest New Mexico nominations were at 31,133, an increase of .22 per cent, or 68 BPD.

Total statewide nominations were at 304,375 for September, a decrease of 1,304 or .43 per cent from August.

	<u>SE</u>	<u>NW</u>
Estimated allowable	351,527	32,197
Supplemental	5,000	2,500
Total allowable	356,527	34,697
Estimated production	275,949	23,182
Compared with August (barrels)	+ 2,072	+ 481
Compared with August (per cent)	+ .76	+ 2.12

Special allowables: North Mason-Delaware Pool, 27 BOPD, up one BOPD from August; South Carter-San Andres Pool, 45 BOPD, up one BOPD from August. No back allowables were involved.

Gas Allowable - for September, 1963

OCC Gas Engineer Elvis Urz presented the gas nominations.

<u>Southeast New Mexico</u>	<u>September, 1963</u>	<u>% Change from September, 1962</u>
Bagley, Lower	72,500	- 5.8
Bagley, Upper	52,100	- 14.0
Blinebry	1,309,800	- 29.0
Crosby-Devonian	410,900	- 19.4
Eumont	3,713,900	- 19.3
Jalmat	3,986,700	/ 12.7
Justis	218,200	/ 6.9
Monument-McKee	130,500	- 12.4
Tubb	1,288,900	- 20.8
Atoka-Penn.	350,000	/ 7.7
Total	11,533,500 MCF	- 17.4 %

Northwest New Mexico

Blanco-MV	8,681,700	- 2.0
Basin-DK	7,108,100	- 32.4
Aztec-PC	577,400	- 35.8
Ballard-PC	635,800	- 46.2
So. Blanco-PC	2,493,800	- 18.8
Fulcher Kurtz-PC	301,300	- 18.0
Tapacito-PC	514,600	/ 16.4
West Kurtz-PC	248,000	- 18.2
Devils Fork	142,800	- 36.7
* Devils Fork Estimate	154,388	/ 23.2
Total	20,703,500 MCF	- 20.0 %

* Based on anticipated volumetric equivalent at end of balancing period.

It was decided to accept the Devils Fork volumetric equivalent estimate of 154,388 instead of the 142,800 figure.

Total on Devils Fork Estimate:	20,715,088 MCF	- 19.6%
Both Areas:	32,534,188 MCF	- 18.1 %

Gas Production Analysis for First Six Months of 1962 versus First Six Months of 1963

<u>Casinghead Gas</u>	<u>Production</u>	<u>No. of Wells</u>	<u>Average Well Production</u>
Northwest New Mexico:			
Per cent change	- 25.0	/ 5.9	- 30.2
Southeast New Mexico:			
Per cent change	- 1.1	/ 4.2	- 5.1
Total Casinghead Gas:			
Per cent change	- 3.8	/ 4.4	- 7.9
1st 6 months 1963	147,586,682	16,443	8,976
1st 6 months 1962	153,400,285	15,754	9,741
<u>Dry Gas</u>			
Northwest New Mexico:			
Per cent change	/ 1.5	/ 7.3	- 5.4
Southeast New Mexico:			
Per cent change	/ 0.5	/ 3.3	- 2.7

Gas Production Analysis for First Six Months of 1962 versus First Six Months of 1963 (Continued)

<u>Dry Gas</u>	<u>Production</u>	<u>No. of Wells</u>	<u>Average Well Production</u>
Total Dry Gas:			
Per cent change	↑ 1.2	↑ 6.5	- 5.1
1st 6 months 1963	247, 309, 861	7, 170	34, 492
1st 6 months 1962	244, 459, 755	6, 732	36, 313
Total Gas:			
Per cent change	- 0.8	↑ 5.01	
1st 6 months 1963	394, 896, 543	23, 613	
1st 6 months 1962	397, 920, 090	22, 486	

Note:

Total Northwest gas down 2.2 per cent

Total Southeast gas down 0.4 per cent

RIO ARRIBA COUNTY

Benson-Montin-Greer Spacing, Interference Tests (Case 2881)

Benson-Montin-Greer Drilling Corporation applied for 160-acre spacing for three years for oil wells in the Gallup fractured shale formation underlying all of T-25, 26 and 27-N, R-1-E and R-1-W, and the N/2 of T-24-N, R-1-E and R-1-W. The application also asked for authority to conduct interference tests and to transfer allowables during the temporary period. It was asked that wells could be located within 150 feet of the center of any 40-acre tract located within a quarter section with provisions that OCC could grant exception for greater diversion from the center of a 40-acre tract where the surface conditions require it.

In a lengthy opening statement urging consideration and approval of the application, Attorney George L. Verity said in part:

"Benson-Montin-Greer Drilling Corporation is acutely conscious of the fact that its application is unusual in New Mexico on three counts. In the first place, we have asked for 160-acre spacing for oil production. In addition, we are requesting that the Commission rule that six townships are now encompassed within a common source of supply that at present has not been developed. In the third place, we are requesting the Commission to grant a temporary spacing order for a period of three years.

"We should like for the Commission to be aware of the fact that outside of New Mexico, promulgation of initial orders of the nature here requested are in no wise unusual treatment. . . . For the past few years, several State Commissions, as well as in Canada, have realized the necessity of making initial spacing orders extend to the extremity of the prospectively productive area. They have also recognized that the industry has improved its techniques and has learned that the new techniques increase the rate of production. Given sufficient time, even low-grade reservoirs will drain much larger areas than ever before known, thus making it possible for the industry to develop areas of low-grade reservoirs such as are encountered in the San Juan Basin.

"We will show the Commission the conditions in the pool require that the requested temporary order extend for a three-year period in order that time be allowed to complete an accumulation of proper evidence to support the order on an incontrovertible basis.

"The development of oil pools on wide spacing in Canada has made the Canadian oil frontier most attractive to American dollars. It could be shown to the Commission that oil industry dollars have gone from Northwestern New Mexico to Canada.

"This depression of the San Juan Basin is made apparent every time the newspaper prints a story about the number of drilling rigs operating in the Basin. . . . There are now only 31 active drilling rigs compared with 100 a few years ago. . . . The principal producing oil formation that explorers are likely to find and must develop in San Juan Basin is a low-grade reservoir in the Gallup formation. Their primary recoveries in the average case are less than 1,000 barrels per acre.

"When the applicant discovered the Cha Cha-Gallup Pool in 1959. . . . this applicant realized the necessity of wider spacing and voluntarily developed the early wells in the Southeastern end of the pool on 80-acre spacing. . . . We now know that the entire pool should have been developed on 160 acres and that a vast amount of oil has been left in the ground because it was developed on 80-acre spacing rather than 160. Also, millions of cubic feet of gas were flared from the pool which could have been conserved if the entire area had been developed on 160 acres. . . . It was only four years ago that the Cha Cha-Gallup Pool was discovered. Yet, today, the 80-acre portion of the pool is depleted as far as primary oil is concerned.

"Practically all the companies holding leases in the seven-township area under consideration have declined to expend exploratory dollars and have farmed out or released their acreage. Whereas, the applicant has, in the past 12 months, expended \$1 million in exploration and development of the area. This expenditure was made up on the conviction that the area can be economically developed on wider spacing than is customarily approved by the New Mexico Commission.

"Our evidence will show that on the average, a recovery of only 500 barrels per acre can be anticipated from the Puerto Chiquito Pool and that one well will drain in excess of 160 acres. . . . Our initial application here is made early in the life of the pool. . . . but if we wait to make the application until all facts have been conclusively developed, then any order of the Commission would be too late to serve a useful purpose. The only thing that can be proved is what ought to have been done. . . . It is impossible to undrill unnecessary wells. . . . A few wells in the area have been drilled closer than 160-acre spacing. . . . Negotiations with the affected owners have resulted in solution to all problems that are presented with regard to change in spacing.

"At present, all oil being produced in the Puerto Chiquito area must be trucked to the pipeline at a cost of from 60¢ to 80¢ per barrel. This added cost of production is a further deterrent to development in the area. . . . The applicant is authorized by Llaves Pipeline Company to represent to the Commission that if it will grant application, it will immediately commence construction of a pipeline from El Paso Natural Gas Products Company's Apache Station into the Puerto Chiquito area. If it is given an immediate starting date, it can complete this line prior to winter weather making construction impossible.

"We believe that the entire San Juan Basin will be advantaged and exploration increased by the granting of such order."

Albert R. Greer testified in behalf of Benson-Montin-Greer Drilling Corporation under direct examination by George Verity, attorney.

Greer said there is definite production or activity in the entire area except for one township. He said the strike runs from north to south and that the formation dips down to the west. The Gallup formation is encountered at about 1,500 feet on the east and at 6,000 and below on the west. He said the Boulder Pool to the north is separated from the Puerto Chiquito Pool by a fault. Electric logs for wells throughout the length of the cross section are very similar and wells that are 10 miles apart have equalized pressure of about 393 lbs. The entire reservoir is Gallup fractured shale.

The formation definitely has primary fractures and perhaps secondary fractures and fracture treatment helps greatly, according to Greer. Wells that produced only a couple of barrels an hour before they were fracked now produce up to 40 BOPD. The wells are pumping and there is no water encountered in the reservoir. It is considered that the drive mechanism is solution gas and that there may be some gravity drive. The Gallup formation in this area is approximately 1,000 feet thick, and that all of the area is underlain by one common source of supply in the Gallup formation.

Greer pointed out that the economics of development for 2,500-foot wells in the Puerto Chiquito area showed a loss of \$29,800 for wells spaced on 40 acres. He said there would be a loss of \$9,600 for wells on 80 acres, but a profit of \$30,800 for wells on 160 acres. The profit figures do not include an allowance for dry holes, leasehold cost, interest on investment, or income taxes.

Wells in that part of the pool which are drilled in the Santa Fe National Forest would show a loss of \$146,800 if drilled on 40 acres, a loss of \$133,600 for wells on 80-acre spacing, a loss of \$82,200 on 160 acres, but a profit of \$100,600 for wells drilled on 320-acre spacing. Again, the profit figure does not include allowances for dry holes, leasehold costs, interest on investment or income taxes.

The estimate of damage to forest lands in the Santa Fe National Forest disclosed that comparative damage would be two per cent if the wells were drilled on 320-acre spacing, 25 per cent damage if drilled on 160-acre spacing, 58 per cent if 80 acres, 100 per cent damage if drilled on 40-acre spacing.

The applicant also requested that the wells should be granted an allowable equivalent to four allowables for a 40-acre well and that no depth factor be allowed for any well in the pool.

George Selinger, attorney for Skelly Oil Company, stated that approval of the application would be a step in the right direction to give elbow room for development purposes. He said that Texas, Oklahoma, and Kansas have in many instances insisted on dense spacing and have retarded development of low-grade reservoirs. He pointed out that in North Dakota 90 per cent of the wells are drilled on either 80, 160, 320 or 640-acre spacing.

Bill Loar, attorney for Sunray DX, said that his company does not have acreage in the immediate area but does have acreage in the Basin. He commended the applicant in their approach, and said he felt that the economics of the area was such that wide spacing was necessary. He pointed out that denser spacing could always be started at a later date.

Benson-Montin-Greer Spacing, Interference Tests (Case 2881) (Continued)

Robert D. Latimore, forest supervisor in the Santa Fe National Forest, testified that the Forest Service would prefer the widest possible spacing to prevent destruction of timber which is commercial in that area. He said the forest service prefers not more than one well per 640 acres during the period of exploration and not less than 160-acre spacing when the field is proven.

John Mason appeared as a witness for El Paso Natural Gas Products Company and testified under examination by Charles C. Spann, attorney. He pointed out that the Commission can either prevent waste or cause waste by its decisions. He said that development can be discouraged by insistence on dense spacing, and that his company urges approval of the application on the basis that new reserves will be needed in the area to furnish crude to the El Paso refinery.

Standard Oil Company of Texas indicated by letter that it had no objection to the granting of the application.

Pan American Petroleum Corporation supported the application by letter.

Bill Shoger, district supervisor of the U. S. G. S. in Roswell, said that the U. S. G. S has no objection to the application.

Howard Bratton, attorney for Humble Oil and Refining Company, said that his company owned leases on about 7,000 acres in T-27-N, R-1-W and about 1,000 acres of scattered leases. He said that Humble thought granting the application was advisable and desirable because it would encourage exploration, and that the three-year temporary order was a reasonable request.

James S. Reyos, realty officer for the Jicarilla Indian Tribe Agency of Dulce, New Mexico, said that the tribe offered no objection to the application and had spent money to reseed grass in the area which would be destroyed by closer spacing.

Jason Kellahin, attorney for R. L. Bayless, said that Bayless had wells in the area with closer than 160-acre spacing, but that arrangements had been worked out with the applicant and that Bayless urged approval of the application.

George Verity, attorney for Benson-Montin-Greer, pointed out in conclusion that granting the application could in no way damage any party, and that low recovery and wide spacing makes a three-year temporary order necessary for orderly development. He pointed out that the Commission could reopen the case at any time it so desired.

* * * * *

INCIDENTAL INFORMATION - MARSHALL SMITH

A couple of young men in Santa Fe celebrated their birthday anniversaries on the same day recently, Friday, August 16. They are Alva L. (Pete) Porter and his son who has an identical name, as well as the same birthday as his dad.....

It is tentatively scheduled that the OCC October regular hearing will be held in Hobbs, N.M.

Lt. James Durrett, OCC attorney, is spending the last two weeks of August at Fort Polk, La., on Army maneuvers with his reserve unit. Lt. Durrett is with the U. S. Army 156th Quartermaster Command. In case of national emergency the 156th would be in command of all petroleum products and supplies in any theater of operations. Jim left on a troop train Friday. In Durrett's absence, Oliver Payne, former OCC attorney and now New Mexico Assistant Attorney General, will handle legal duties for the OCC.

Harold Garcia, who works in the OCC Gas Department, will also be at Fort Polk on maneuvers during the last two weeks of August.

Elvis A. Utz, OCC gas engineer, has been asked to serve on the general committee for the Southwestern Gas Measurement Short Course to be held at the University of Oklahoma during April of next year. Members of the general committee will determine subjects and obtain instructors for approximately 90 courses. Utz received the request from W. H. Carson, Dean Emeritus of the College of Engineering, University of Oklahoma.

The NMPIC annual convention is scheduled for September 8 through 10 in Albuquerque at the Schine Western Skies Hotel. Speakers include Keynote Frank Ikard, president of the American Petroleum Institute, New York; Governor Jack M. Campbell; C. A. Cash, president of the Shamrock Oil and Gas Corporation, Amarillo; J. E. Buchanan, president of the Asphalt Institute, College Park, Maryland; and banquet speaker, Dr. Kenneth McFarland.

Pete Porter has been asked to be one of the speakers at the first session of the annual meeting of the Interstate Oil Compact Commission, to be held this year in Santa Fe. The meeting will be December 9 through 11, and 33 oil and gas producing states will be represented. The request came from IOCC chairman, Governor Matthew E. Welsh of Indiana.

State Game Commission has announced this year's bird hunting seasons. Dove season will be from September 1 through October 30. Daily limit is 10, possession 20, singly or in the aggregate of mourning and whitewing. Rails and gallinules season is from September 1 through October 20. Sora rail limit is 25, possession 25. Other rails and gallinules 15, possession 15, singly or in the aggregate. Wilson's snipe season runs from September 1 through October 15. Daily limit is eight, possession eight. Shooting hours on dove will be from one-half hour before sunrise until sunset. On the other species the shooting hours are sunrise to sunset.

Robert J. Brown,

Las Vegas, has been elected chairman of the State Game Commission. His term runs to January 1, 1964. He is a dairy man and a rancher, and an ardent hunter and fisherman.

Annual Indian

Market will be held under the portal of the Palace of the Governors in Santa Fe August 24-5. There will be Indian dances in the patio. It is sponsored by the Southwestern Association of Indian Affairs.

New Mexico State Fair will be held September 12 through 22 in Albuquerque. Scheduled are nine nights of championship rodeo, parimutuel horse racing every day at 1:15 P. M., and many other events. Valuation of the State Fair is nearly \$15 million with nearly 100 permanent buildings. The fair is wholly self-supporting.

Results of a study by the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School shows that: "The class of 25 to 30 (pupils) . . . will have no regular place in the secondary schools of tomorrow. . . Not only is the size financially uneconomical, it means deadening repetition for teachers who must go over the same material for several sections. . . With a teacher's other activities this leaves insufficient time for preparing instruction, developing imaginative teaching materials, counseling individual students, evaluating students and keeping professionally up-to-date".

State Land Office revenues amount to approximately half a million dollars a week. Of the total land area in New Mexico of 77, 767, 040 acres, the State owns more than 11 million acres. The Federal government owns 34 million acres, and privately owned lands account for more than 32 million acres.

More than \$750, 000 will be available to New Mexico airports from the Federal Aviation Agency during the 1964 fiscal year, if the communities match the Federal funds. Farmington will get \$126, 405 in Federal funds, Hobbs \$19, 733, Jalisco \$13, 486, Reserve \$7, 630, Roswell \$95, 592, Silver City \$59, 993, Taos \$89, 983, and Albuquerque's Sunport, \$388, 054.

State Health Department reminds parents that State law requires children to be immunized against polio, diphtheria, tetanus, and smallpox. Most schools also require a child to show a birth certificate if he is entering school for the first time.

Passenger cars registered in New Mexico will have the same plates again next year. Other vehicles will get new plates with black numbers on a canary yellow background.

UNM's Bureau of Business Research reveals that the first five months of this year showed New Mexico employment to be up 4.3 per cent over the same period last year. Government jobs and the trades accounted for most of the increased employment. Finance, real estate, and insurance also added workers, but other categories showed fewer employees than last year. New construction contracts showed more than \$50 million more than in the first five months of last year.

* * * * *

EXAMINER HEARING SET - AUGUST 21 - SANTA FE
Daniel S. Nutter - Elvis A. Utz - Examiners

BLUITT-WOLFCAMP GAS POOL

Commission-called to Review Rules (Case 2355 - Reopened)

Commission-called to reopen Case 2355 to review the rules approved in Order No. R-2051-A which extended the temporary 320-acre proration units for the Bluit-Wolfcamp Gas Pool, Roosevelt County, for one year. Interested parties may appear and show cause why the pool should not be developed on 160-acre units. This case was continued from the examiner hearing held August 7, 1963.

FOWLER FIELD

Pan American Unorthodox Location (Case 2883)

Application of Pan American Petroleum Corporation for approval of an unorthodox location for the Fowler-Blinebry Oil Pool 990 feet from the S and W lines, Sec. 15, T-24-S, R-37-E, Lea County for a well to be drilled as a Tubbs gas, Blinebry oil and Paddock gas triple completion.

TABLE MESA POOL

Continental Pressure Maintenance Project (Case 2384)

Application of Continental Oil Company for authority to institute a pressure maintenance project in the Table Mesa Pool, San Juan County. Water will be injected into the Dakota formation through its No. 25 Table Mesa Well, Unit K, Sec. 34, T-28-N, R-17-W.

CAPROCK-QUEEN POOL

John H. Trigg Unorthodox Locations (Case 2885)

Application of John H. Trigg for approval of four unorthodox oil well locations in his waterflood project, Caprock-Queen Pool, Chaves County. All of the locations are in Sec. 4, T-14-S, R-31-E: 1320 feet from the N line, 2475 feet from the E line; 2764 feet from the N line, 2557 feet from the E line; 1320 feet from the N and E lines; 1320 feet from the N line and 1485 feet from the W line.

SQUARE LAKE POOL

Ambassador Capacity Waterflood Project (Case 2886)

Application of Ambassador Oil Corporation for authority to institute a capacity allowable waterflood project on its Federal "Q" lease comprising the NW/4 Sec. 3, T-17-S, R-30-E, Square Lake Pool, Eddy County. Water will be injected through two wells located in the NW/4 of the section.

WEST KEMNITZ-WOLFCAMP OIL POOL

Apache New Oil Pool, Special Rules (Case 2887)

Application of Apache Corporation for the creation of a new oil pool for Lower Wolfcamp production to be designated the West Kemnitz-Wolfcamp Oil Pool, and for temporary rules including 80-acre spacing and restricted well locations. The area is in Sec. 31, T-16-S, R-33-E, Lea County.

LEA COUNTY

British-American Unit Agreement (Case 2888)

Application of The British-American Oil Producing Company for approval of the Jaimat Deep Unit Area comprising 10,568.81 acres of State land in T-21 and 22-S, R-35-E, Lea County.

EDDY COUNTY

A. O. Wooden New Gas Pool, Spacing, Dual Completion (Case 2889)

Application of A. O. Wooden for creation of a new Queen gas pool for his No. 16 Harbold Well, Unit N, Sec. 28, T-17-S, R-27-E, Eddy County, and for 80-acre spacing for the new pool. Permission is also asked to complete dually (conventional) the No. 16 Harbold Well to produce oil from the Premier Sand of the Grayburg formation, Red Lake Pool, through the tubing, and gas from the Penrose Sand of the Queen formation through the casing-tubing annulus.

BLANCO-MESA VERDE POOL

Consolidated Oil & Gas, Inc., Unorthodox Location (Case 2876)

Application of Consolidated Oil & Gas, Inc., for permission to recomplete its No. 4-8 Jicarilla Well at an unorthodox Blanco-Mesaverde Pool location 1550 feet from the N line and 890 feet from the W line of Sec. 8, T-26-N, R-5-W, Rio Arriba County. This case was continued from the examiner hearing held August 7, 1963.

* * * * *

EXAMINER HEARING SET - SEPTEMBER 4 - SANTA FE

Elvis A. Utz - Daniel S. Nutter - Examiners

EDDY COUNTY

S. P. Yates Unorthodox Location (Case 2890)

Application of S. P. Yates for approval of an unorthodox location in the Seven Rivers formation 1435 feet from the N line and 1155 feet from the E line, Sec. 12, T-20-S, R-26-E, Eddy County.

LEA COUNTY

Continental New Oil Pool (Case 2891)

Application of Continental Oil Company to create a new oil pool comprising portions of Secs. 30 and 31, T-26-S, R-32-E, Lea County, to be designated the Battleaxe-Delaware Pool.

BAISH POOL

Continental Waterflood Project (Case 2892)

Application of Continental Oil Company for authority to institute a waterflood project in the Baish Pool, Lea County. Water will be injected into the Yates formation through four wells located in the NE/4 Sec. 21, T-17-S, R-32-E.

INDIAN HILLS-UPPER PENNSYLVANIAN GAS POOL

Murphy H. Baxter Compulsory Pooling (Case 2893)

Application of Murphy H. Baxter to force pool all mineral interests in the Indian Hills-Upper Pennsylvanian Gas Pool underlying all of Sec. 32, T-21-S, R-24-E, Eddy County.

EDDY COUNTY

Murphy H. Baxter Unorthodox Location (Case 2894)

Application of Murphy H. Baxter for authority to drill the No. 1 Marathon State Well at an unorthodox location 844 feet from the N line and 473 feet from the W line, Sec. 32, T-21-S, R-24-E, Indian Hills-Upper Pennsylvanian Gas Pool, Eddy County.

• • • • •

ORDERS ENTERED

LYBROOK-GALLUP POOL

Commission-called to Review Rules (Case 2575-Reopened)

OCC Order No. R-2267-A continued in effect for an additional one-year period the temporary rules adopted by Order No. R-2267 for the Lybrook-Gallup Pool, Rio Arriba County. This case will be reopened at an examiner hearing in August, 1964, at which time 160-acre gas proration units and 40-acre oil proration units will be established if the operators do not present substantial evidence to justify continuation of the 320-acre gas proration units and 80-acre oil proration units now in effect. Hearing: July 10, 1963.

CAPROCK-QUEEN POOL

Continental Waterflood Project (Case 2838)

OCC Order No. R-2550 approved the waterflood project in the Caprock-Queen Pool, Chaves County, requested by Continental Oil Company. Injection will be into the Queen formation through 17 wells in Secs. 23, 27, 34, 35, T-14-S, R-31-E. The project will be governed by Rule 701. Hearing: June 26, 1963.

LA PLATA-GALLUP OIL POOL

Standard of Texas Special Rules (Case 2858)

OCC Order No. R-2549 approved the application of Standard Oil Company of Texas for temporary rules for the La Plata-Gallup Oil Pool, San Juan County, including 80-acre spacing units. The case will be reopened at an examiner hearing in August, 1964, to consider the establishment of 40-acre spacing units. Hearing: July 10, 1963.

SAN JUAN COUNTY

Humble Pressure Maintenance Project (Case 2865)

OCC Order No. R-2541 approved the application of Humble Oil & Refining Company for a pressure maintenance project in the Many Rocks-Gallup Oil Pool, San Juan County. Designated the Many Rocks-Gallup Pressure Maintenance Project No. 1, the area comprises: T-31-N, R-17-W W/2, SE/4, SW/4 NE/4 Sec. 1; NE/4, NE/4 SE/4 Sec. 2; NE/4, NE/4 NW/4 Sec. 12. Nine injection wells will be utilized. Special rules will govern the project. Hearing: July 24, 1963.

BASIN-DAKOTA POOL

J. Gregory Merrion Compulsory Pooling (Case 2870)

OCC Order No. R-2540 approved the application of J. Gregory Merrion & Associates to pool all mineral interests in the Basin-Dakota Gas Pool underlying the S/2 Sec. 34, T-25-N, R-6-W. A well will be drilled 1850 feet from the S and W lines of the section. Cost of operating the well was set at \$75.00, and twenty-five per cent has been set as the risk charge. Hearing: August 7, 1963.

• • • • •

NORTHWESTERN NEW MEXICO

<u>Operator & Well No.</u>	<u>Location</u>	<u>County</u>	<u>Remarks</u>
<u>NEW LOCATIONS:</u>			
H. S. Birdseye #22-1 Santa Fe RR	22-20N-11W 1650/N; 2310/W	McK	Wildcat, Menefee test, Elev. 6320 GL.
Continental Oil Co. #3 Jicarilla 20	20-25N-4W 1980/S & W	RA	Wildcat, Gallup test, Elev. 7041 DF.
Caulkins Oil Co. #11 Breech "F" D	35-27N-6W 990/N; 2310/E	RA	Basin Pool, Dakota test, Elev. not given.
El Paso Nat. Gas Co. #186 Rincon Unit	33-27N-7W 840/S; 1570/E	RA	Largo & Basin Pools, Gallup & Dakota tests, Elev. 6725 DF; <u>Dual.</u>
Pan American Pet. Corp. #1 G. L. Davies "B"	27-28N-13W 1090/N & E	SJ	Basin Pool, Dakota test, Elev. not given.
Champion Oil & Gas #1 Navajo T.O.C.	35-28N-14W 2300/S; 660/W	SJ	Wildcat, Gallup test, Elev. 5760 GL.
Skelly Oil Co. #11 Navajo "P"	35-32N-17W 810/N; 510/W	SJ	Many Rocks Pool, Gallup test, Elev. 5919 DF.
<u>COMPLETIONS:</u>			
Geo. Senutovitch #8 Ross	2-17N-11W 3077/N; 614/E Wildcat-MV	McK	Spd. 1/1963; Compl. 1/1963; Elev. 6700 DF; TD 150; Mesaverde Formation from sur- face to TD; <u>Strat test; Plugged & Abandoned</u> <u>1/1963.</u>
Geo. Senutovitch #7-6 N. Mex. "C"	2-17N-11W 3026/N; 1040/E Wildcat-MV	McK	Spd. 1/27/63; Compl. 1/29/63; TD 320; Mesaverde Formation from surface to TD; <u>Dry</u> <u>hole; Plugged & Abandoned 1/29/63.</u>
Geo. Senutovitch #7 X N. Mex. "B"	2-17N-11W 3078/N; 1190/E Wildcat-MV	McK	Spd. 1/24/63; Compl. 1/26/63; Elev. 6700 DF; TD 314; Mesaverde Formation from sur- face to TD; <u>Dry hole; Plugged & Abandoned</u> <u>1/26/63.</u>
Geo. Senutovitch #3 Ross	2-17N-11W 3314/N; 1544/E Wildcat-MV	McK	Spd. 1/1963; Compl. 1/1963; Elev. 6700 DF; TD 150; Mesaverde Formation from sur- face to TD; <u>Strat test; Plugged & Abandoned</u> <u>1/1963.</u>
Geo. Senutovitch #4 Ross	2-17N-11W 3247/N; 1895/E Wildcat-MV	McK	Spd. 1/1963; Compl. 1/1963; Elev. 6700 DF; TD 150; Mesaverde Formation from sur- face to TD; <u>Strat test; Plugged & Abandoned</u> <u>1/1963.</u>
Geo. Senutovitch #22-2X	22-17N-11W 3450/N; 600/E Wildcat-MV	McK	Spd. 1/21/63; Compl. 1/22/63; Elev. 6719 DF; TD 170; Mesaverde Formation from sur- face to TD; <u>Dry hole; Plugged & Abandoned</u> <u>1/22/63.</u>
Geo. Senutovitch #24-2X	24-17N-11W 515/S; 1000/W Wildcat-MV	McK	Spd. 1/20/63; Compl. 1/22/63; Elev. 6775 DF; TD 200; Mesaverde Formation from sur- face to TD; <u>Dry hole; Plugged & Abandoned</u> <u>1/22/63.</u>
Osborn & Weir #14 Scanlon	22-20N-9W 495/W; 165/E Chaco Wash-MV	McK	Spd. 6/30/63; Compl. 7/29/63; Elev. 6420 GL; TD 342; 2 @ 315 w/10; Mesaverde Form- ation from surface to TD; <u>Water Injection Well.</u>
Osborn & Weir #18 Scanlon	22-20N-9W 825/S; 1650/W Chaco Wash-MV	McK	Spd. 7/8/63; Compl. 7/28/63; Elev. 6242 GL; TD 360; 2 @ 325 w/3; Mesaverde Form- ation from surface to TD; <u>Water Injection Well.</u>

NORTHWESTERN NEW MEXICO, continued:

<u>Operator & Well No.</u>	<u>Location</u>	<u>County</u>	<u>Remarks</u>
<u>COMPLETIONS, continued:</u>			
El Paso Nat. Gas Products #128 Canyon Largo Unit	6-24N-6W 840/S & W Devils Fork	RA	Spd. 5/23/63; Compl. 6/3/63; Elev. 6713 DF; TD 5885, PB 5856; Prod Form Gallup; IP 43 BO/D; Grav. 39; 8-5/8 @ 176 w/150; 4-1/2 @ 5884 w/250; 2-3/8 @ 5817; SOF Perfs 5822-5836; Tops: Kirtland 1880, Fruit- land 2005, Pict Cliffs 2287, Cliff House 3827, Menefee 3892, Pt. Lookout 4551, Mancos 4760, Gallup 5605.
El Paso Nat. Gas Products #130 Canyon Largo Unit	9-24N-6W 1750/N; 790/W Devils Fork	RA	Spd. 6/23/63; Compl. 7/2/63; Elev. 5478 DF; TD 5610, PB 5565; Prod Form Gallup; IP 119 BO/D; Grav. 39.2; 8-5/8 @ 175 w/150; 4-1/2 @ 6509 w/250; 2-3/8 @ 5543; SOF Perfs 5547-5563; Tops: Kirtland 1632, Fruitland 1851, Pict Cliffs 2110, Cliff House 3581, Menefee 3653, Pt. Lookout 4273, Mancos 4465, Gallup 5340.
El Paso Nat. Gas Products #129 Huerfano Unit	9-26N-9W 1750/N; 1090/W Basin	SJ	Spd. 6/21/63; Compl. 7/4/63; Elev. 6454 DF; TD 6794, PB 6672; Prod Form Dakota; IP 2830 MCF/D; SICP 2011 12/D; AIF 3062; 10-3/4 @ 327 w/230; 4-1/2 @ 6792 w/498; 2-3/8 @ 6660; SWF Perfs 6570-6664; Tops: Kirtland 1392, Fruitland 1885, Pict Cliffs 2158, Cliff House 3699, Menefee 3779, Pt. Lookout 4511, Mancos 4736, Gallup 5620, Sanostee 6203, Greenhorn 6482, Dakota 6663.
Rip C. Underwood #20-1 Jicarilla 280	20-30N-1W 660/S & E Wildcat-Dak.	RA	Spd. 6/1/63; Compl. 7/20/63; Elev. 7986 DF; TD 3075; 9-5/8 @ 120 w/80; 7 @ 3075 w/100; <u>Plugged & Abandoned 7/20/63.</u>
Aztec Oil & Gas #1 Davis	11-31N-12W 1650/N; 990/W --	SJ	<u>OWWO; Re-Spd. 7/30/63; Elev. 6229 DF,</u> 4-1/2 @ 5326 w/225; 2-3/8 @ 5018; SWF Perfs 5048-5310; Deliverability after WO 1097 MCF/D.
Humble Oil & Refg. Co. #217 Navajo Tribe "G"	12-31N-17W 1820/N; 500/E Many Rocks	SJ	Spd. 6/27/63; Compl. 7/16/63; Elev. 5345 GL; TD 1305, PB 1284; Prod Form Gallup; IP 38 BO/D; Grav. 41; 7 @ 33 w/10; 4-1/2 @ 1305 w/55; 2-7/8 @ 1253; SOF Perfs 1245-1253; Tops: Gallup 1094, Sanostee 1225.
Murphy Corp. #3 Navajo "AA"	13-32N-17W 2140/N; 1920/E Undes.	SJ	Spd. 7/3/63; Compl. 7/6/63; Elev. 5354 GL; TD 1492, PB 1483; Prod Form Gallup, IP 65 BO/D; 7 @ 33 w/10; 4-1/2 @ 1483 w/35; 2-3/8 @ 1472; SOF Perfs 1443-1445; Top: Gallup 1442.

SUMMARY:

Wells Drilling-----	89	(oil & gas)
Locations not Spd.-----	86	"
New Locations-----	7	"
Completed Producters-----	5	"

SOUTHEASTERN NEW MEXICOARTESIA AREA

<u>Operator & Well No.</u>	<u>Location</u>	<u>County</u>	<u>Remarks</u>
<u>NEW LOCATIONS:</u>			
Cima Capitan, Inc. (N. S. L.) #7 Adkins Williams	17-18S-28E 330/S; 990/E	Eddy	Lov., Artesia.
V. S. Welch #2 Kenwood Fed.	29-18S-31E 990/N; 330/W	Eddy	Queen, Shugart.
<u>COMPLETIONS:</u>			
Shell Oil Co. #8 Henshaw Deep Unit	23-16S-30E 1980/S & W	Eddy	Wolfcamp, Undes. Henshaw-Wolfcamp.
Wm. A. & Ed. R. Hudson #1 Lowe Fed.	35-17S-31E 660/S & E	Eddy	San Andres, Wildcat.
V. S. Welch #1-X Kenwood	29-18S-31E 2310/N; 360/W	Eddy	Queen, Shugart.
Neil H. Wills #32 Federal	13-20S-28E 1980/S; 2630/E	Eddy	Yates Sand, Russell.
Pan American Pet. Corp. #2 Big Eddy Unit	19-21S-28E 660/S & E	Eddy	Strawn, Wildcat.
Tom Brown Drlg. Co., Inc. #1 Siegreist Draw Unit	28-19S-23E 1980/N & W	Eddy	Wildcat; <u>Plugged & Abandoned.</u>
Carper Sivley Empire Joint Account #15 Magruder	35-17S-27E 1650/S; 2310/W	Eddy	Wildcat; <u>Temporarily Abandoned.</u>
Resler & Sheldon #1 Blake St.	30-17S-28E 330/S; 990/E	Eddy	Empire Yates-7-Rivers; <u>Temporarily Abandoned.</u>

* * * * *

New Mexico

Statehouse Reporting Service

Published by

R. W. BYRAM & COMPANY OF NEW MEXICO
DRAWER M CAPITOL STATION AUSTIN, TEXAS

THE INFORMATION CONTAINED IN THIS NEWS-LETTER IS PRIVATE AND CONFIDENTIAL. FOR LIMITED PUBLICATION ONLY. NO PART MAY BE REPRODUCED WITHOUT SPECIFIC PERMISSION. COPYRIGHT 1961.

July 26, 1963

Vol. 7 - No. 26

MARSHALL SMITH - Page 4

EXAMINER HEARING HELD - JULY 24 - SANTA FE

Daniel S. Nutter - Examiner

LEA COUNTY

Midwest Unit Agreement (Case 2864)

J. R. Rowan, district landman, and Don Matson, district manager, both from Midland, presented the case for Midwest Oil Corporation at a hearing Wednesday for approval of the Custer Mountain Unit Area, comprising 11,523.68 acres of State, Federal and Fee lands in Lea County. Howard Bratton was the attorney. The acreage included Secs. 3, 4, 5, 7, 8, 9, 10, 14, 15, 16, 17, 18, 20, 21, 22, 23, 26, and 27, T-24-S, R-35-E.

Of the acreage, 8205.46 acres or 71.191 per cent is Federal; 1920 acres or 16.658 per cent is State; and 1400.49 acres or 12.151 per cent is Fee lands. Rowan testified that 84.35 per cent of the working interest acreage is committed and of the remaining 15.65 per cent uncommitted, 5.38 per cent is Fee acreage.

Preliminary approval has been given by the U. S. G. S. and by the State land office.

A test well in the approximate center of the NE/4 SW/4 Sec. 9 will test the Devonian and will go no deeper than 15,500 feet.

Matson testified that there appear to be three structural highs in the area, two within the unit and one outside in Sec. 11. Seismic information was the basis for the structure and isopach maps submitted as exhibits. There is an anticlinal feature covering Secs. 4, 5, 8, and 9 with control closure of 400 feet with associated faulting on the east side which positions the closure to be on the upthrown side of the fault block. Another possible structure is suggested in a rapid dip to the south. Objective horizons will be members of the Delaware Mountain group, particularly the Devonian and Pennsylvanian.

The cost to drill a producing well was estimated to be \$858,250. If it turns out a dry hole, the cost will probably be about \$798,185.

SAN JUAN COUNTY

Humble Pressure Maintenance Project (Case 2865)

Humble Oil & Refining Company requested permission at a hearing Wednesday to institute a pressure maintenance project underlying its Navajo "G" lease in Secs. 1, 2, 11, and 12, T-31-N, R-17-W, San Juan County, in the Many Rocks Field, and was represented by T. W. Fautin, production geologist, and Donald V. Emery, district engineer, both from Durango, and by Howard Bratton, attorney.

The first well in the field was the completion by Atlantic on the southeast edge of the field in December, 1962, and since then approximately 38 wells in all have been completed on 40-acre spacing.

The project area is northeast of the Horseshoe-Gallup field. The producing formation is Gallup sandstone which is continuous in the area and dips to the east. There is no evidence of a gas cap or underlying water. There is a porosity and permeability pinch-out between the two pools. Reservoir characteristics are very similar to those in the Horseshoe-Gallup Pool.

From 12 cored wells in the Many Rocks Field, average porosity was 15.4 per cent, average permeability 135 mds., estimated connate water saturation is 35 per cent, subsurface fluid samples have not been taken but the estimated solution GOR is 250 CFB, formation volume factor 1.1, reservoir viscosity 1.4 centipoises, reservoir temperature 92 degrees F, BHP taken on a well completed by Humble in May, 1963, was 465 psia at datum / 4123 and this is believed to be close to the original reservoir pressure; principal producing mechanism is solution gas drive.

Total primary recovery is 15 per cent of original oil in place; pressure maintenance is expected to increase recovery ultimately to 33 per cent of oil in place or approximately 120 per cent over primary. In total barrels, recovery in the project area will be approximately 700,000 by primary and 760,000 by pressure maintenance, or a total of approximately 1,500,000 barrels.

Humble Pressure Maintenance Project (Case 2865) (Continued)

Source of the injection water will be the Morrison formation from a well located in Sec. 10, T-31-N, R-17-W, which supplies water for the Horseshoe-Gallup Project No. 2 approved in Order No. R-1745. Water will be injected at the rate of 100 barrels per well per day to a depth of approximately 1175 to 1275 feet. Total rate will be 1000 barrels per day upon completion of the project. The pattern will be 80-acre, five-spot.

Some of the six injection wells are being drilled and tested for possible production. All proposed injection wells are requested to be approved as such, and any change from that classification will be made by administrative request. Injection pressure will be approximately 1200 pounds subsurface.

Response to the project is expected to be similar to the results received in the Horseshoe-Gallup Project 2. Injection in this project commenced in late 1960 and by late 1961 a definite response was noted and at the current time production at 1260 barrels of oil per day is just 150 barrels less than was produced at peak primary.

Bratton called attention to a requested amendment to the application, whereby none of the wells directly offsetting the project area will be allowed to produce more than a single allowable prior to January 1, 1964, the date set as a tentative deadline to permit offsetting operators to complete their plans for projects and to get them into operation.

Tide Water Oil Company, by wire, concurred in the requested amendment and asked that an extension of the January 1, 1964 deadline be given if circumstances indicated it was needed.

Cities Service, with an interest in Skelly leases to the north, concurred.

Mobil Oil Company supported the application as amended, and anticipates a similar project to the southeast which it is hoped will be completed prior to the deadline set.

LEA COUNTY

Humble Dual Completion (Case 2866)

Dismissed: Humble Oil and Refining Company requested dismissal of its application to complete dually (combination) its No. 1 State "BV" Well, Unit A, Sec. 18, T-18-S, R-35-E, Lea County. The proposed Bone Springs completion drill stem tested salt water and the well will be completed singly in the Devonian.

LANGLIE-MATTIX POOL

George L. Buckles Waterflood Project (Case 2867)

George L. Buckles, Monahans, Texas, under questioning by Jason Kellahin, attorney, presented the testimony at a hearing Wednesday in the application of George L. Buckles Company to institute waterflood operations in the Langlie-Mattix Pool, Lea County, on its Knight lease, E/2 SE/4 Sec. 21 and W/2 SW/4 Sec. 22, T-24-S, R-37-E.

There are four producing wells on the 160-acre lease and these will be enclosed in four 40-acre five-spot patterns. Nine injection wells will be drilled, eight as close to property lines as possible (five feet out of the corner has been approved by the Commission on prior occasions), one at each corner of the lease, one on each side and the ninth in the center. The center well will be drilled first to evaluate the flood possibilities and all formations encountered will be tested.

Injection will be into the Queen sand from 3450 to 3550 feet, and a closed system will be used. Injection pressure will be approximately 1000 pounds and injection rate will be 300 barrels per well per day, but this may be changed. It was planned initially to construct a water plant putting out 2700 barrels per day with one pump and one well. The change may be to two pumps and 500 barrels to be injected. Later, injection rates will be dictated by performance and proration. Source water will be the Rustler formation which is a brine water found at approximately 1100 feet.

Cumulative production from the lease to July 1, 1963, was 752,894 barrels of 36 API gravity oil. Estimated additional recovery from flooding, one and one-half million barrels, possibly two million.

Amerada has a flood project to the south which has an 80-acre five-spot pattern, and a comparison of the effectiveness of the two patterns can be made. The Amerada project apparently has had no response as yet from its injection operations.

Offset operators have been advised of the proposed flood and no objections have been raised, although there has been no concurrence.

NORTH MASON-DELAWARE POOL

Continental Non-Standard Oil Unit (Case 2868)

Continental Oil Company's district engineer at Hobbs, E. D. Coltharp, testified under questioning by Jason Kellahin, attorney, at a hearing Wednesday, on the request for approval of a non-standard oil proration unit comprising Lots 2 and 3, Sec. 31, T-26-S, R-32-E, Lea County. The well on the proposed unit, No. 1

Continental Non-Standard Oil Unit (Case 2868) (Continued)

Russell Federal 31, is completed in an undesignated pool, rather than the North Mason-Delaware Pool, as originally indicated. It is 1650 feet from the N line and 3630 feet from the E line of the section.

Sec. 31 is a partial section, with the state line to the south and the county and range lines to the west.

A well to the north encountered three feet of pay but was not considered to be commercial. Other production has been found to the south and east of the proposed unit, including a well in a similar non-standard unit approved for Gulf.

LUSK-MORROW GAS POOL

Shell Oil Unorthodox Location (Case 2841)

Dismissed: Shell requested dismissal of Case 2841, wherein it had requested permission to complete its No. B-1 Middleton Federal Well at an unorthodox location 660 feet from the N and W lines of Sec. 31, T-19-S, R-32-E, in the Lusk-Morrow Gas Pool, Lea County, believing it futile to attempt such a completion. The well had been drilled originally to the Strawn which had been unproductive.

LEA COUNTY

Marathon Dual Completion (Case 2869)

Marathon Oil Company asked for approval of a conventional dual completion of its No. 5 State Warn A/C 3 Well, Unit H, Sec. 33, T-17-S, R-35-E, Lea County, at a hearing held Wednesday. Representing Marathon, John R. Barber, area petroleum engineer from Hobbs, and Dick Morris, attorney, developed the testimony.

The undesignated Blinebry zone was ruled out when it tested salt water. The Glorieta, topped at 5980 feet (-2030) and bottomed at 6247 feet (-2287), was perforated selectively from 6097 to 6120. A drill stem test in the interval from 6095 to 6145 recovered 5460 feet of gas cut oil, and 180 feet of mud cut oil, no water.

The Abo was perforated selectively from 8705 to 8905 feet. Perforations from 8858 to 8905 were bridged off when testing showed water production. Open perforations are from 8705 to 8812 feet.

Cost of a dual well would be \$147,130, a saving of \$48,555 over a single completion.

LEA COUNTY

Shell Unit Agreement (Case 2850)

LEA COUNTY

Shell Waterflood Project (Case 2851)

These applications of Shell Oil Company for approval of the East Pearl-Queen Unit Area, Lea County, and for authority to institute a waterflood in the unit area were combined for presentation of testimony only. George E. Carnahan, senior reservoir engineer, Roswell, and Dick Morris, attorney, developed the testimony.

The unit area comprises 2440 acres of State and Fee lands: W/2 SW/4 Sec. 15; E/2, SW/4 SE/4, SE/4 SW/4 Sec. 21; NE/4 NE/4, NE/4 SE/4 Sec. 28; NW/4 SW/4 Sec. 23; NW/4 SW/4 Sec. 26; NW/4 SW/4 Sec. 35; Secs. 34, 27, and all of 22 except the NE/4 NE/4, T-19-S, R-35-E, Lea County.

Of the working interest, 93 per cent are committed. Preliminary approval has been given by the State and approval has been given by the royalty interests on the Fee lands. State lands are 46 per cent, or 1120 acres, Fee lands are 54 per cent, or 1320 acres.

Initially, Shell called a meeting of the field operators to discuss secondary recovery with the result that the field was divided into four areas for study. The east and west areas were in the latter stages of production and approaching stripper-type production. The south and northeast were just developing and the majority of the wells were top allowable.

The producing formation is the Queen which has four main and two sub zones. There is a Zone V but it is not in the unit area.

Reservoir characteristics: porosity 15.1 per cent, permeability 12 mds. (range from one to 140), producing mechanism solution gas drive, formation volume factor at original conditions 1.176, mobile oil saturation would be 44 per cent with resulting residual oil saturation after waterflood 21 per cent, lack of field wide pressure data is attributed to the fact most of the wells were pumping completions, available pressure data indicates the original reservoir pressure was 1776 psi with bubble point approximately 1400 psi at reservoir temperature of 100 degrees F.

The water level at 1064 subsea provides the down-dip productive limits of Zone I. The water level at 1125 subsea serves the same purpose for Zone IV. The water levels of the other zones are not within the unit area.

The average per well production for May, 1963 was 10.8 barrels.

Shell Unit Agreement and Waterflood Project (Cases 2850 and 2851)(Continued)

There will be 31 injection wells and 28 producing wells within the project area. An 80-acre five-spot pattern has been established. Some dual injection wells will be used, mainly in Zone I which is the largest productive zone, being 38 per cent of the producing reservoir volume in the unit area.

Gulf is developing a project for the west area. If it is not completed by the time Shell plans to start injection, then Shell's project will be started on a limited basis in the N/2 of the unit, covering about 1000 acres, and it will be expanded when agreements are reached with Gulf. The limited area will be in Secs. 15, 21, 22, 23, 27, and 28.

Rate of injection within this limited area will be 3000 barrels per day into 10 injection wells under 1800 to 1900 psi. A closed system will be used. The full scale flood will be approximately at the rate of 10,000 barrels per day through 31 injection wells. Total water requirement for the full scale flood will be 50 million barrels of which 20 million or 40 per cent will have to be make-up water. Sixty per cent will be recycled produced water.

There are two possible sources of injection water, the Capitan Reef about 20 miles southwest of the unit area, or the Ogallal fresh water sand located nearby the unit area.

Original oil in place 21,565,000 stock tank barrels. Estimated primary production 2,192,000 barrels. Secondary recovery is estimated at 4,588,000 barrels, or total ultimate recovery after flood 6,780,000 barrels.

BASIN-DAKOTA GAS POOL

J. Gregory Merrion Compulsory Pooling (Case 2870)

J. Gregory Merrion and Associates asked for an order force-pooling all mineral interests in the Basin-Dakota Gas Pool underlying the S/2 Sec. 34, T-25-N, R-6-W, Rio Arriba County, at a hearing Wednesday, and Mr. Merrion testified under questioning by Wm. J. Cooley, attorney.

The problem of unitizing results from a working interest in a 280-acre Federal held by E. P. Campbell Estate, the only one not committed. Halliburton Company and The Youngstown Sheet & Tube Company, Continental-Emsco Company Division, hold a mortgage on the Campbell Estate interest which is in default and in process of being foreclosed. A receiver has been appointed.

Kay Kimbell owns the majority interest in the 280-acre Federal lease and under his agreement with the other owners, he has the option to proceed with the drilling of a well and can carry the interests of the other owners and be reimbursed. Kimbell has agreed to join the Merrion interests and a Dakota test well is to be drilled. The estimated cost of the well is \$80,000. Producing wells offset the proposed unit.

* * * * *

INCIDENTAL INFORMATION - MARSHALL SMITH

Controversy between American Automobile Association and New Mexico State Police can be quite harmful to the State. AAA has more than eight million members, goin' on nine, and that's a sizable hunk of tourist trade being warned about the Land of "Entrapment".

Both organizations seem anchored to their positions with AAA insisting speed traps exist in the State to raise revenue while State police point out that strict enforcement reduces accidents. Governor Campbell has publicly thrown his support behind the police with announcement that AAA should encourage tourists to come through New Mexico in view of the decreased highway death rate. "I have no information which justifies a blanket complaint against New Mexico's handling of traffic cases," the Governor said.

State police say that flagrant violators are indeed given tickets, but that many motorists receive only warnings. Sometimes a driver may be questioned as to how long he has been on the road, and it may be suggested that he stop and get some rest....

And speaking of traffic accidents, State police indicate that an uncomfortably large percentage is caused by minor mechanical defects. These include dim or missing tail lights, stoplights not working, brakes pulling to one side, one headlight out and so forth. They point out these defects can occur right after car is put through test for safety sticker....

Utah public school teachers have imposed sanctions, and this seems to worry many a New Mexican citizen interested in education. By-laws of New Mexico Education Association, however, make no provision for sanctions, loosely defined as a teachers' strike. Concern stems from fact that school teachers in New Mexico didn't get the salary increase they sought in recent legislative session. But this doesn't mean that the Association won't rock with the punch and come back slugging in the next round. It's even possible that by-laws could be amended. Teacher salaries, however, are only one of the Association's many concerns.

The Association also conducts research studies aimed at upgrading public school instruction. It makes investigations to protect the public from incompetent or unethical teachers, and makes recommendations to promote improvement of the teaching profession, among many other activities. One purpose is, "To study and investigate problems of faculty or community friction which have disrupted or threatened to disrupt the educational program of a school district".

In Springer, N. M., for example, a situation of this type has simmered and then boiled. Eight members out of 14 of the high school faculty have resigned in protest.

Charles H. Wood, executive secretary of the Association, said about the Springer situation, "On the basis of preliminary investigation... by the NMEA Committee and an investigation by the North Central Association Committee, there are strong indications that there have been serious departures from established personnel policies and regulations... we believe these indications of the existing conditions are of such serious nature as to obligate us to caution members of the profession who are considering positions in the Springer schools that they should make themselves fully aware of the existing conditions before accepting employment".

Springer's unfortunate experience could be duplicated in almost any community....

In the State capitol, staff members of the Department of Education seem well pleased with their new boss, Leonard J. DeLayo, who was recently appointed State Superintendent of Public Instruction.

DeLayo was born in New York, February 14, 1921. He is married and has three children. He attended high school in New York, received a B. S. degree from the University of New Mexico, an M. A. from Teachers College, Columbia University, plus 60 hours in which he completed the sixth and seventh year program in educational administration.

Honor societies to which he belongs include Who's Who in American Education, Who's Who in New Mexico, Who's Who in the West, Who's Who in the East, Phi Delta Kappa at UNM, and Kappa Delta Pi at Columbia.

DeLayo served three years with the Marines in the Pacific, and has had wide professional experience, both in New Mexico and outside the State. The listing of his professional and civic activities covers more than a single spaced typewritten page.

Soon to be announced will be reorganization of the State Department of Education, presumably more to DeLayo's liking.....

Governor's Conference on Vocational Education will be held at UNM October 6, 7, & 8, as a joint venture between State Planning Office and State Department of Education. It's anticipated that Willard Wirtz, Secretary of Labor, will attend.....

Featured in the Division of Fine Arts, Museum of New Mexico, until August 28 are "1963 Contemporary Indian Art" and "Paintings by William Penhallow Henderson".....

Drastic action seems needed to get the interstate highway building program going again. The State's by-pass law, so far, is said to have postponed more than \$13 million worth of road projects in New Mexico. Harold W. Adkinson, Bureau of Public Roads division engineer, reports a serious disruption in the schedule for meeting the goal of 50 per cent completion in 1964. Adkinson said that the by-pass law makes it possible for very small communities to exert influence far beyond that community's significance....

Want to getaway from it all into lonely and beautiful wilderness area? A little known but well-worth-the-effort area lies within 30 miles of Santa Fe. Recently completed and therefore uncrowded, it includes three stocked fish ponds and about 12 miles of stocked stream. There are plenty of deer and wild turkey as well as occasional bear and elk. Timber includes aspen, spruce, and fir. Among facilities are picnic tables, fire places, toilets, and shelters. A ranger is also on duty if needed. Present road is good and will soon be paved.

This unspoiled area is the Santa Clara Indian Reservation. Economy of the Indians is based on timber, livestock, and recreation. Some highly interesting ruins in the area still have blood-and-clay floors and weaving hooks still visible in floors and walls. To get there, travel south from Espanola (24 miles north of Santa Fe on 285) on Los Alamos highway for about a mile and a half. Turn right on the Santa Clara Cayon Road, and you're on your way. There's a token charge for each car.....

Both political parties in New Mexico seem convinced that the way to a voter's heart is through his stomach. Republican barbecue at Riverside Park near Espanola recently attracted some 12,000 hungry people. State Democrats seem to think voters may indeed judge a candidate by the quality and quantity of free food. They will hold their barbecue August 18. Riverside Park in honor of U. S. Congressman Joe Montoya. Caravans of cars will tour the State in coming weekends to advertise the big feed. Either Vice President Johnson or Senator Ted Kennedy will be the main attraction, other than food. If nothing else occurs, beef producers should stand to benefit.

* * * * *

EXAMINER HEARING SET - AUGUST 7 - SANTA FE

Elvis A. Utz - Daniel S. Nutter - Examiners

RIO ARRIBA COUNTY

Bolack-Greer, Inc., Unit Agreement (Case 2871)

Application of Bolack-Greer, Inc., for approval of the Canada Ojitos Unit Area comprising 35,829.84 acres of Federal and Fee lands in T-25 and 26-N, R-1-E and R-1-W, Rio Arriba County.

EDDY COUNTY

Texaco, Inc., Unit Agreement (Case 2872)

Application of Texaco, Inc., for approval of the Woolley Unit Area comprising 2080 acres of State and Federal lands in T-17-S, R-30-E, Eddy County.

LEA COUNTY

Texaco, Inc., Unit Agreement (Case 2873)

Application of Texaco, Inc., for approval of the Barry Unit Area comprising 2427.24 acres of State land in T-21-S, R-33 and 34-E, Lea County.

EDDY COUNTY

Murphy H. Baxter Unit Agreement (Case 2874)

Application of Murphy H. Baxter for approval of the East Rocky Arroyo Unit Area comprising 2560 acres of Federal, State and Fee lands in T-21-S, R-25-E, Eddy County.

LUSK-MORROW GAS POOL

Perry R. Bass Unorthodox Location (Case 2875)

Application of Perry R. Bass for permission to drill a gas well at an unorthodox location 1980 feet from the S line and 660 feet from the W line of Sec. 21, T-19-S, R-32-E, Lusk-Morrow Gas Pool, Lea County.

BLANCO-MESAVERDE POOL

Consolidated Oil & Gas, Inc., Unorthodox Location (Case 2876)

Application of Consolidated Oil & Gas, Inc., for permission to recompleate its No. 4-8 Jicarilla Well at an unorthodox Blanco-Mesaverde Pool location 1550 feet from the N line and 890 feet from the W line of Sec. 8, T-26-N, R-5-W, Rio Arriba County.

OIL CENTER-BLINEBRY POOL

Continental Extension of Order R-2476 (Case 2877)

Application of Continental Oil Company for an extension of the provisions of Order No. R-2476 which authorized interference tests and transfer of allowables between wells during the tests in the Oil Center-Blinebry Pool, Lea County.

BLUITT-WOLFCAMP GAS POOL

Commission-called to Review Rules (Case 2355 - Reopened)

Commission-called to reopen Case 2355 to review the rules approved in Order No. R-2051-A which extended the temporary 320-acre proration units for the Bluit-Wolfcamp Gas Pool, Roosevelt County, for one year. Interested parties may appear and show cause why the pool should not be developed on 160-acre units.

INBE-PENNSYLVANIAN OIL POOL

Commission-called to Review Rules (Case 2635 - Reopened)

Commission-called to reopen Case 2635 to review the rules approved in Order No. R-2325 which established temporary 80-acre proration units for the Inbe-Pennsylvanian Oil Pool, Lea County, for one year. Interested parties may appear and show cause why the pool should not be developed on 40-acre units.

LEA COUNTY

Humble Triple Completion (Case 2878)

Application of Humble Oil & Refining Company for approval of a triple completion (tubingless) of its No. 25 New Mexico State "S" Well, Unit N, Sec. 2, T-22-S, R-37-E, Lea County. Oil will be produced from the Pentose-Skelly and Wantz-Abo Pools and an undesignated Granite Wash zone through parallel strings of 2-7/8-inch casing.

LEA COUNTY

Humble Waterflood Project (Case 2879)

Application of Humble Oil & Refining Company for authority to institute a waterflood project on its State "M" lease in Secs. 19, 20, 29, 30, and 31, T-22-S, R-37-E, Lea County. Initial injection of water will be into the Queen formation of the Langlie-Mattix and Eumont Pools through six wells in Secs. 20, 29, and 30. Also sought will be the contraction of the Eumont Pool by the deletion of all of Sec. 19 and the S/2 SW/4 and NE/4 SW/4 Sec. 20, T-22-S, R-37-E, and the extension of the Langlie-Mattix Pool to include this acreage.

EDDY COUNTY

Marathon Unit Agreement (Case 2880)

Application of Marathon Oil Company for approval of the Box Canyon Unit Area comprising 10,560.48 acres of State, Federal and Fee lands in T-21 and 22-S, R-21-E, Eddy County.

* * * * *

COMMISSION HEARING SET - AUGUST 14 - SANTA FE

The regular monthly allowable hearing will be held as usual in Morgan Hall, State Land Office Building, Santa Fe, on Wednesday, August 14. In addition to the nomenclature considerations, the following case will be heard:

RIO ARRIBA COUNTY

Benson-Montin-Greer Spacing, Interference Tests (Case 2881)

Application of Benson-Montin-Greer Drilling Corporation for 160-acre spacing for three years for oil wells completed in the Gallup formation underlying T-25, 26, and 27-N, R-1-E and R-1-W, Rio Arriba County, and for authority to conduct interference tests and to transfer allowables during the temporary period.

* * * * *

NORTHWESTERN NEW MEXICO

<u>Operator & Well No.</u>	<u>Location</u>	<u>County</u>	<u>Remarks</u>
<u>NEW LOCATIONS:</u>			
M. F. Abraham #1 Star Lake Unit	5-18N-5W 330/N; 330/W	McK	Wildcat, Pennsylvanian test, Elev. 6868 GL.
Southern Union Prod. #9 Nickson	14-26N-8W 830/N; 815/W	SJ	Basin Pool, Dakota test, Elev. 7040 GL.
Pan American Pet. #1 McGrady Gas Unit	14-27N-12W 790/N; 990/W	SJ	Basin Pool, Dakota test, Elev. not given.
Bennett & Foutz #1 Bennett & Foutz	18-30N-1E 790/S; 330/E	RA	Wildcat, Gallup test, Elev. 7616 DF.
Humble Oil & Refg. #21 Navajo "G"	1-31N-17W 1980/S; 1980/E	SJ	Undes. Pool, Gallup test, Elev. 5213 GL.
Humble Oil & Refg. #20 Navajo "G"	1-31N-17W 660/S; 1980/W	SJ	Undes. Pool, Gallup test, Elev. 5280 GL.
Skelly Oil Co. #9 Navajo "P"	35-32N-17W 1980/N; 1980/W	SJ	Undes. Pool, Gallup test, Elev. 5792 DF.
Murphy Corporation #5 Navajo "AA"	18-32N-17W 708/N; 1999/E	SJ	Undes. Pool, Gallup test, Elev. 5354 GL.
<u>COMPLETIONS:</u>			
Aspen Crude Purchasing #3-9 Jicarilla	9-24N-4W 990/N; 990/E Basin-Dak.	RA	Spd. 2/17/59; Compl. 4/28/59; Elev. 6731 DF; TD 7425; <u>Old Well Plugged & Abandoned 7/9/63.</u>
Continental Oil Co. #4 N. E. Haynes	21-24N-5W 1650/N; 1020/W Otero-Gallup & Basin-Dak.	RA	OWWO; Spd. 5/4/62; Compl. 5/18/62; 2-7/8 @ 6281; SWF Perfs 5536-5757; IP after WO 94 BO/D; No work was done on Dakota - only opened Gallup Zone for production; <u>Dual.</u>
El Paso Nat. Gas Products #129 Canyon Largo Unit	8-24N-6W 1750/N; 1750/E Devils Fork	RA	Spd. 6/8/63; Compl. 6/17/63; Elev. 6711 DF; TD 5833, PB 5802; Prod Form Gallup; IP 118 BO/D; 8-5/8 @ 173 w/150; 4-1/2 @ 5832 w/250; 2-3/8 @ 5754; SOF Perfs 5769-5787; Tops: Kirtland 1857, Fruitland 2035, Pict Cliffs 2326, Cliff House 3805, Menefee 3880, Pt. Lookout 4504, Mancos 4730, Gallup 5565.
El Paso Nat. Gas Products #119 Canyon Largo Unit	15-24N-6W 1790/N; 890/W Devils Fork	RA	Spd. 5/7/63; Compl. 5/18/63; Elev. 6714 GL; TD 5850, PB 5804; Prod Form Gallup; IP 138 BO/D; 9-5/8 @ 302 w/200; 4-1/2 @ 5844 w/335; 2-3/8 @ 5734; SOF Perfs 5750-5764; Tops: Kirtland 1845, Fruitland 2066, Pict Cliffs 2318, Cliff House 3790, Menefee 3869, Pt. Lookout 4505, Mancos 4718, Gallup 5553.
El Paso Nat. Gas Co. #2 Jackson-Hall	15-25N-3W 1690/S; 1100/W Undes - PC	RA	Spd. 8/26/56; Compl. 10/3/56; TD 3855; <u>Plugged & Abandoned 7/9/63.</u>
Shell Oil Co. #14-17 Carson Unit	17-25N-11W 660/S; 660/W Bisti	SJ	<u>OWWO; Compl. 8/8/57; Re-Compl. 7/15/63;</u> Elev. 6423 GL; Re-SOF Perfs 4904-5015; IP after WO 160 BO/D.
Shell Oil Co. #34-17 Carson Unit	17-25N-11W 660/S; 1942/E Bisti	SJ	<u>OWWO; Compl. 6/11/57; Re-Compl. 7/15/63;</u> Elev. 6370 GL; Re-SOF Perfs 4886-4994; IP after WO 68 BO/D.

NORTHWESTERN NEW MEXICO, continued:

<u>Operator & Well No.</u>	<u>Location</u>	<u>County</u>	<u>Remarks</u>
<u>COMPLETIONS, continued:</u>			
Compass Exploration #2-9 Lindrith	9-26N-7W 1450/N; 1450/W Basin	RA	Spd. 4/30/63; Compl. 5/25/63; Elev. 6061 GL; TD 6973, PB 6923; Prod Form Dakota; IP 1360 MCF/D; AOF 1425; SICP 2282; 8-5/8 @ 331 w/325; 4-1/2 @ 6956 w/520; 1-1/2 @ 6520; SWF Perfs 6518-6666; Tops: Pict Cliffs 2145, Mesaverde 3773, Mancos 4605, Gallup 5571, Greenhorn 6399, Dakota 6517.
Austral Oil Co. #4-2 Huerfano Unit	2-26N-9W 1450/N; 1450/E Basin	SJ	Spd. 5/28/63; Compl. 6/19/63; Elev. 6275 GL; TD 6769; Prod Form Dakota; IP 3140 MCF/D; AOF 4070; SICP 2081; 8-5/8 @ 339 w/250; 4-1/2 @ 6763 w/480; SWF Perfs 6414- 6692; Tops: Fruitland 1923, Pict Cliffs 2034, Cliff House 3600, Menefee 3710, Pt. Lookout 4332, Mancos 4463, Gallup 5586, Greenhorn 6333, Dakota 6492.
Pan American Pet. #1 Navajo "P"	8-26N-18W 790/S; 790/W Wildcat-Devonian	SJ	Spd. 5/1/63; Compl. 7/7/63; Elev. 5820 DF; TD 7148; 8-5/8 @ 1527 w/350; Tops: Chinle 2860, Cutler 4360, Hermosa 4837; Ismay 5703, Barker Creek 6192, Mississippian 6603, Devonian 6783, Cambrian 7129; <u>Plugged & Abandoned 6/12/63.</u>
Benson-Montin-Greer #19 Picarilla "P"	19-27N-1E 660/S; 660/E Puerto Chiquito	RA	Spd. 4/28/63; Compl. 5/30/63; Elev. 7050 DF; TD 3130, PB 3066; Prod Form Gallup; IP 3750/D; 10-3/4 @ 192 w/60; 7 @ 2443 w/100; 5-1/2" Liner 2188-3130 w/50; Tbg @ 2042; SOF Perfs 2496-3018; Tops: Mesaverde 864, Pt. Lookout 1129, Mancos 1342, Gallup 2195.
Southern Union Production #1 Nordhaus	13-31N-9W 990/S; 1650/W Blanco-MV	SJ	<u>OWWO</u> ; Spd. 10/8/52; Compl. 1/28/53; Re- Spd. 6/14/63; Elev. 6514 DF; 3-1/2 @ 6058 w/450; 1-1/4 @ 5874; SWF Perfs 5236-6018; IP after WO 1697 MCF/D; AOF 6328; SICP 750#.
Pan American Pet. #1 Natoni	7-31N-19W 830/N; 1980/W Wildcat-Miss.	SJ	Spd. 5/2/63; Compl. 6/4/63; Elev. 4991 GL; TD 7400, PB 6600; 13-3/8 @ 239 w/250; 8-5/8 @ 4250 w/285; Acidized; Perfs 6511- 6522 (Paradox); Tops: Morrison 607, DeChelly 3490, Organ Rock 3755, Hermosa 5240, Boundary Butte 6045, Ismay 6125, Desert Creek 6165, Molas 7000, Mississippian 7080, Devonian 7346; <u>Plugged & Abandoned 6/30/63.</u>

SUMMARY:

Wells Drilling -----	89	(oil & gas)
Locations not Spd. -----	87	"
New Locations -----	8	"
Completed Producers -----	6	"

* * *

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

November 7, 1962

RESERVOIR FLUID DIVISION

Benson-Montin-Greer Drilling Corporation
158 Petroleum Center Building
Farmington, New Mexico

Attention: Mr. Virgil Stoabs

Subject: Reservoir Fluid Study
Bolack No. 2 Well
Wildcat
Rio Arriba County, New Mexico
Our File Number: RFL 2302

Gentlemen:

Subsurface fluid samples were collected from the subject well by a representative of Core Laboratories, Inc. on October 2, 1962, and transported to our Dallas laboratory, where they arrived on October 15, 1962. Presented in this report are the results of a reservoir fluid study performed using these samples.

The saturation pressure of the fluid was measured to be 1524 psig at the reservoir temperature of 152° F. The reservoir pressure at the sampling depth was measured to be 1631 psig.

During differential pressure depletion the fluid evolved 481 standard cubic feet of gas per barrel of residual oil. The associated formation volume factor was measured to be 1.292 barrels of saturated fluid per barrel of residual oil. Under similar depletion conditions the viscosity of the fluid varied from a minimum of 0.625 centipoise at the saturation pressure to a maximum of 1.750 centipoises at atmospheric pressure.

Separator tests were performed at four operating pressures and atmospheric temperature to determine the effect of changes in surface

Benson-Montin-Greer Drilling Corporation
Bolack No. 2 Well

Page Two

separation pressure upon the produced fluid. These tests indicate that the optimum separator pressure is approximately 90 psig; however, near optimum recovery will be obtained at pressures as low as 40 psig.

It was a pleasure to perform this study for you. If you have any questions or if we may assist you further, please do not hesitate to contact us.

Very truly yours,

Core Laboratories, Inc.
Reservoir Fluid Division
P. L. Moses

A. C. Carnes, Jr.

A. C. Carnes, Jr.
Senior Engineer

ACC:dc
7 cc. - Addressee

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 1 of 11

File RFL 2302

Company Benson-Montin-Greer
Drilling Corporation Date Sampled October 2, 1962
Well Bolack No. 2 County Rio Arriba
Field Wildcat State New Mexico

FORMATION CHARACTERISTICS

Formation Name Gallup
Date First Well Completed August 15, 1962
Original Reservoir Pressure 1631 PSIG @ 5957 Ft.
Original Produced Gas-Oil Ratio SCF/Bbl
Production Rate Bbl Day
Separator Pressure and Temperature PSIG, °F.
Oil Gravity at 60° F. °API
Datum Ft. Subsea
Original Gas Cap

WELL CHARACTERISTICS

Elevation 7100 KB Ft.
Total Depth 6022 Ft.
Producing Interval 4900-6022 OH Ft.
Tubing Size and Depth 2-3/8 In. to 6003 Ft.
Productivity Index Bbl D/PSI @ Bbl/Day
Last Reservoir Pressure 1631 PSIG @ 5975 Ft.
Date October 2, 1962
Reservoir Temperature 152 °F. @ 5975 Ft.
Status of Well Shut in
Pressure Gauge Amerada (DO)
Normal Production Rate Bbl Day
Gas-Oil Ratio SCF/Bbl
Separator Pressure and Temperature PSIG, °F.
Base Pressure PSIA
Well Making Water % Cut

SAMPLING CONDITIONS

Sampled at 5975 Ft.
Status of Well Shut in
Gas-Oil Ratio SCF/Bbl
Separator Pressure and Temperature PSIG, °F.
Tubing Pressure 0 PSIG
Casing Pressure PSIG
Core Laboratories Engineer NT
Type Sampler Perco

REMARKS:

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

Page 2 of 11
 File RFL 2302
 Well Bolack No. 2

VOLUMETRIC DATA OF Reservoir Fluid SAMPLE

1. Saturation pressure (bubble-point pressure) 1524 PSIG @ 152 °F.
2. Thermal expansion of saturated oil @ 5000 PSI = $\frac{V @ 152 \text{ °F}}{V @ 73 \text{ °F}} = \underline{1.04245}$
3. Compressibility of saturated oil @ reservoir temperature: Vol/Vol/PSI:
 - From 5000 PSI to 3500 PSI = $\underline{7.92 \times 10^{-6}}$
 - From 3500 PSI to 2500 PSI = $\underline{8.93 \times 10^{-6}}$
 - From 2500 PSI to 1524 PSI = $\underline{10.34 \times 10^{-6}}$
4. Specific volume at saturation pressure: ft³/lb 0.02223 @ 152 °F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 3 of 11
 File RFL 2302
 Well Bolack No. 2

Reservoir Fluid **SAMPLE TABULAR DATA**

PRESSURE PSI GAUGE	PRESSURE-VOLUME RELATION @ 152 °F. RELATIVE VOLUME OF OIL AND GAS, V/V _{BAT} .	VISCOSITY OF OIL @ 152 °F. CENTIPOISES	DIFFERENTIAL LIBERATION @ 152 °F.		
			GAS/OIL RATIO LIBERATED PER BARREL OF RESIDUAL OIL	GAS/OIL RATIO IN SOLUTION PER BARREL OF RESIDUAL OIL	RELATIVE OIL VOLUME, V/V _B
5000	0.9694	0.845			1.252
4500	0.9732	0.818			1.257
4005		0.787			
4000	0.9770				1.262
3500	0.9811	0.758			1.268
3000	0.9854	0.726			1.273
2505		0.691			
2500	0.9899				1.279
2100	0.9938				1.284
2000	0.9947	0.661			1.285
1900	0.9957				1.286
1800	0.9969				1.288
1700	0.9980	0.635			1.289
1600	0.9991				1.291
1524	1.0000	0.625	0	481	1.292
1516	1.0020				
1508	1.0041				
1483	1.0102				
1447	1.0204				
1400		0.631			
1381	1.0407				
1376			37	444	1.277
1299	1.0698				
1250		0.682			
1221			75	406	1.261
1201	1.1121				
1123			100	381	1.251
1100		0.720			
1090	1.1734				
971	1.2552				
968			139	342	1.235
950		0.760			
850	1.3679				
818			176	305	1.220

v = Volume at given pressure

v_{SAT} = Volume at saturation pressure and the specified temperature.

v_R = Residual oil volume at 14.7 PSI absolute and 60° F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 4 of 11

File RFL 2302

Well Bolack No. 2

Reservoir Fluid SAMPLE TABULAR DATA

PRESSURE PSI GAUGE	PRESSURE-VOLUME RELATION @ 152 °F. RELATIVE VOLUME OF OIL AND GAS, V/V _{BAT} .	VISCOSITY OF OIL @ 152 °F., CENTIPOISES	DIFFERENTIAL LIBERATION @ 152 °F.		
			GAS/OIL RATIO LIBERATED PER BARREL OF RESIDUAL OIL	GAS/OIL RATIO IN SOLUTION PER BARREL OF RESIDUAL OIL	RELATIVE OIL VOLUME, V/V _R
800	1.5320	0.802			
728					
669					
650	1.7783	0.858	213	268	1.204
600					
518					
500	2.1799	0.912	251	230	1.188
469					
365					
354	2.7950		290	191	1.170
350					
258					
223	3.8098	0.977			
200					
112			332	149	1.151
0		1.083			
		1.750	371	110	1.130
			481	0	1.044
				@ 60° F. = 1.000	

Gravity of residual oil = 38.6° API @ 60° F.

- V = Volume at given pressure
V_{BAT} = Volume at saturation pressure and the specified temperature.
V_R = Residual oil volume at 14.7 PSI absolute and 60° F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 5 of 11

File RFL 2302

Well Bolack No. 2

Differential Pressure Depletion at 152° F.

<u>Pressure</u> <u>PSIG</u>	<u>Oil Density</u> <u>Gms/Cc</u>	<u>Gas</u> <u>Gravity</u>	<u>Deviation Factor</u> <u>Z</u>
1524	0.7206		
1376	0.7246	0.693	0.869
1221	0.7290	0.694	0.879
1123	0.7319	0.696	0.886
968	0.7367	0.699	0.895
818	0.7413	0.708	0.909
669	0.7462	0.720	0.920
518	0.7512	0.739	0.932
365	0.7566	0.783	0.945
223	0.7627	0.856	0.965
112	0.7688	1.014	
0	0.7957	1.589	

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 6 of 11

File RFL 2302

Well Bolack No. 2

SEPARATOR TESTS OF Reservoir Fluid SAMPLE

SEPARATOR PRESSURE, PSI GAUGE	SEPARATOR TEMPERATURE, ° F.	SEPARATOR GAS/OIL RATIO See Foot Note (1)	STOCK TANK GAS/OIL RATIO See Foot Note (1)	STOCK TANK GRAVITY, ° API @ 60° F.	SHRINKAGE FACTOR, V _R /V _{SAT.} See Foot Note (2)	FORMATION VOLUME FACTOR, V _{SAT.} /V _R See Foot Note (3)	SPECIFIC GRAVITY OF FLASHED GAS
0	79	503		38.4	0.7645	1.308	0.997
40	77	414	32	39.7	0.7924	1.262	
80	76	371	61	39.9	0.7994	1.251	
160	77	328	117	39.7	0.7930	1.261	

- (1) Separator and Stock Tank Gas/Oil Ratio in cubic feet of gas @ 60° F. and 14.7 PSI absolute per barrel of stock tank oil @ 60° F.
- (2) Shrinkage Factor: $V_R/V_{SAT.}$ is barrels of stock tank oil @ 60° F. per barrel of saturated oil @ 1524 PSI gauge and 152° F.
- (3) Formation Volume Factor: $V_{SAT.}/V_R$ is barrels of saturated oil @ 1524 PSI gauge and 152° F. per barrel of stock tank oil @ 60° F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 7 of 11

File RFL 2302

Company Benson-Montin-Greer
Drilling Corporation Formation Gallup
 Well Bolack No. 2 County Rio Arriba
 Field Wildcat State New Mexico

HYDROCARBON ANALYSIS OF Reservoir Fluid SAMPLE

COMPONENT	WEIGHT PER CENT	MOL PER CENT	DENSITY @ 60° F. GRAMS PER CUBIC CENTIMETER	* API @ 60° F.	MOLECULAR WEIGHT
Hydrogen Sulfide					
Carbon Dioxide	0.05	0.14			
Nitrogen	0.04	0.16			
Methane	3.68	26.38			
Ethane	1.70	6.48			
Propane	2.45	6.39			
iso-Butane	0.50	1.00			
n-Butane	2.23	4.41			
iso-Pentane	1.16	1.86			
n-Pentane	1.53	2.44			
Hexanes	3.33	4.45			
Heptanes plus	83.33	46.29	0.8449	35.8	207
	100.00	100.00			

Core Laboratories, Inc.
 Reservoir Fluid Division

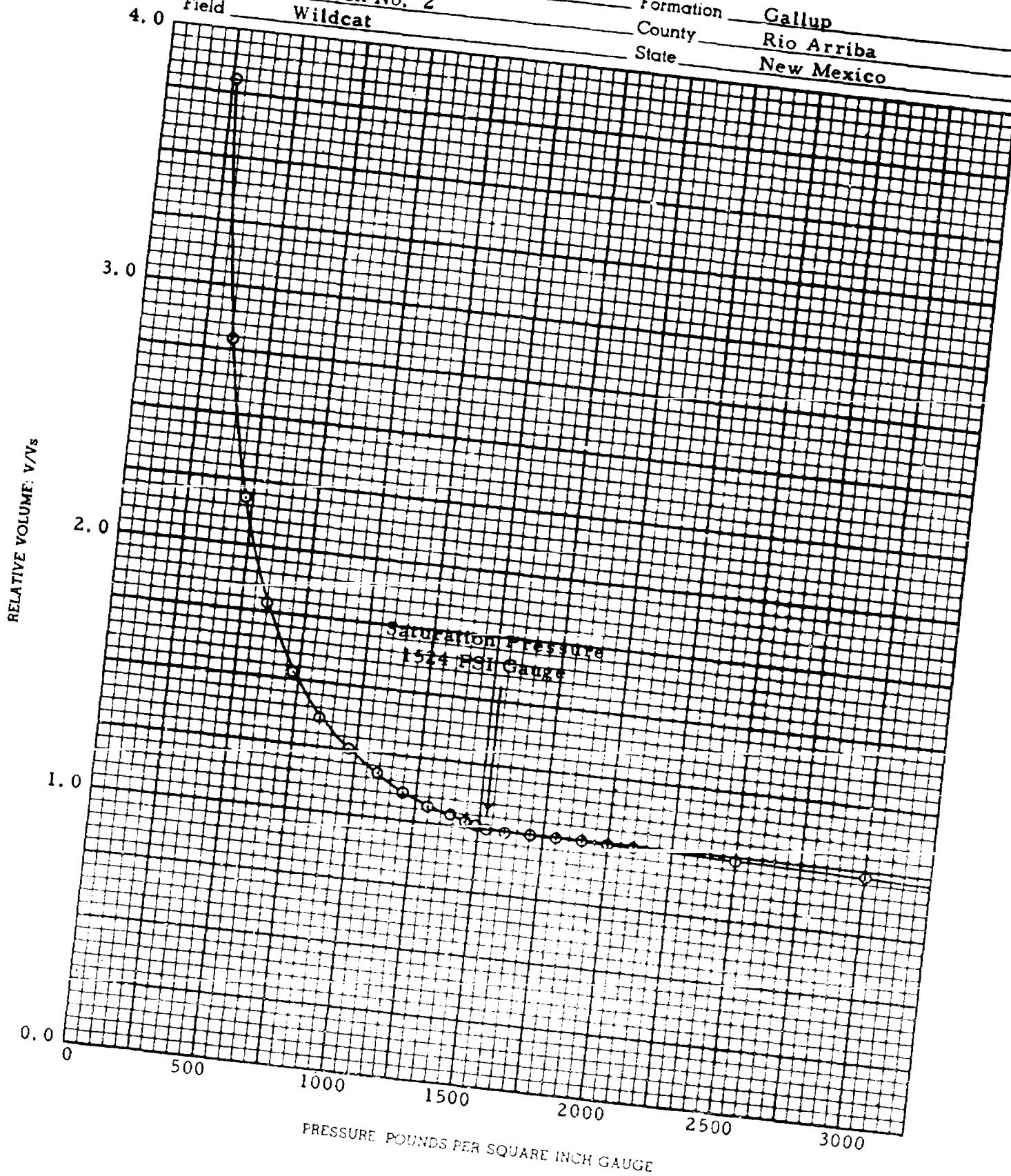
A. C. Carnes, Jr.

A. C. Carnes, Jr.
 Senior Engineer

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all error and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

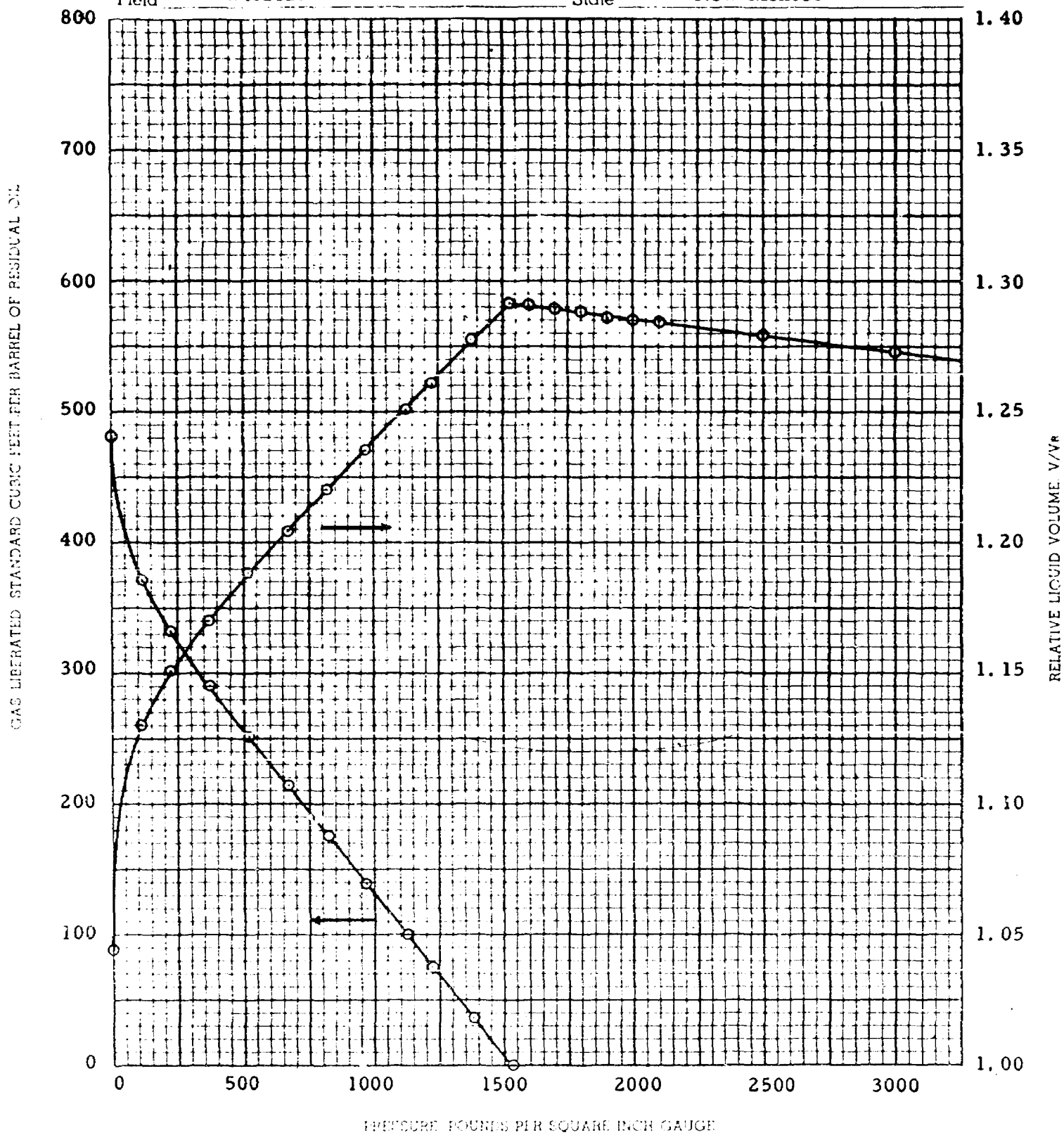
PRESSURE-VOLUME RELATIONS OF RESERVOIR FLUID

Company Benson-Montin-Greer
Well Bolack No. 2
Field Wildcat
Formation Gallup
County Rio Arriba
State New Mexico



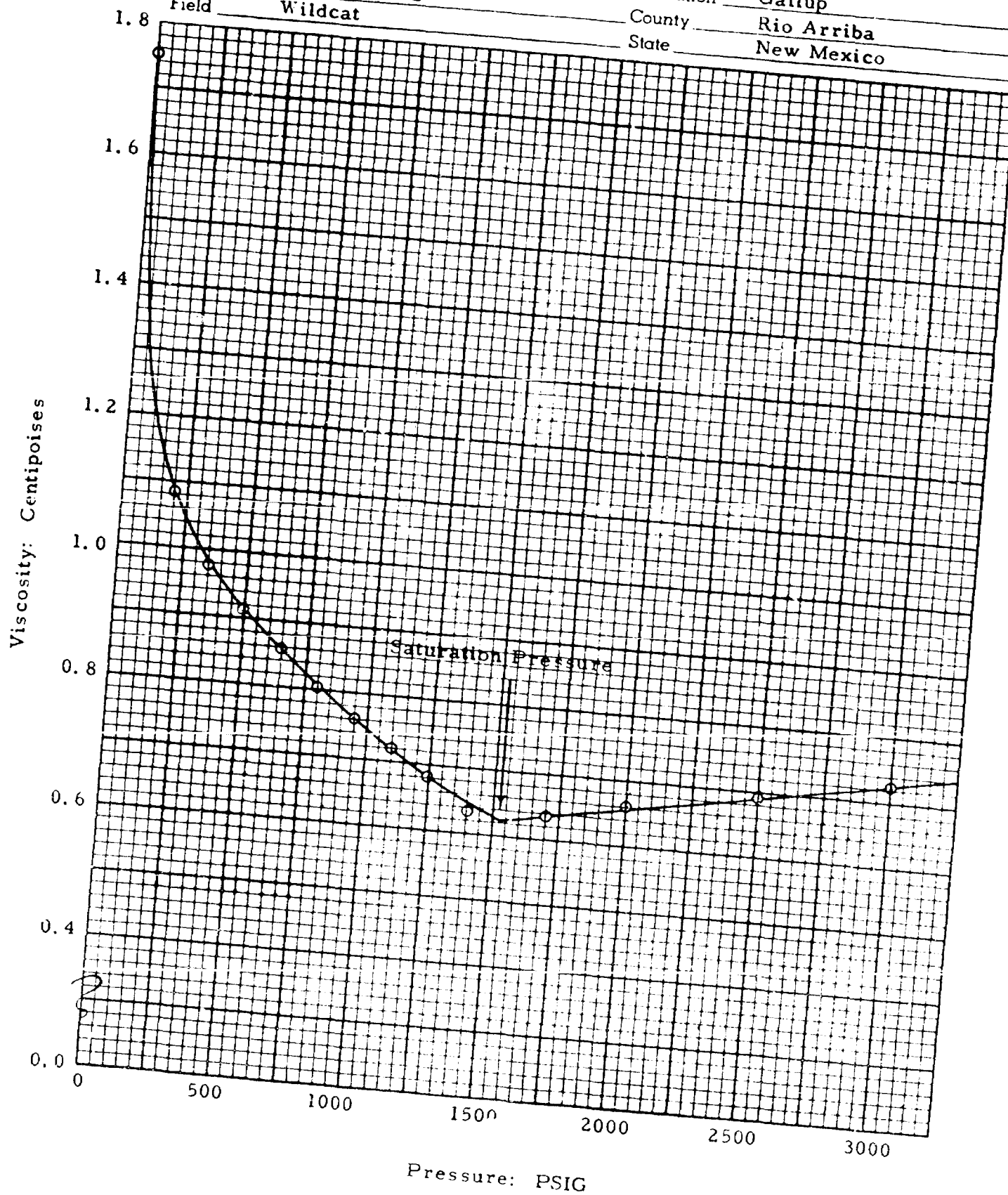
POTENTIAL VAPORIZATION OF RESERVOIR FLUID

Company	Benson-Montin-Greer	Formation	Gallup
Well	Bolack No. 2	County	Rio Arriba
Field	Wildcat	State	New Mexico

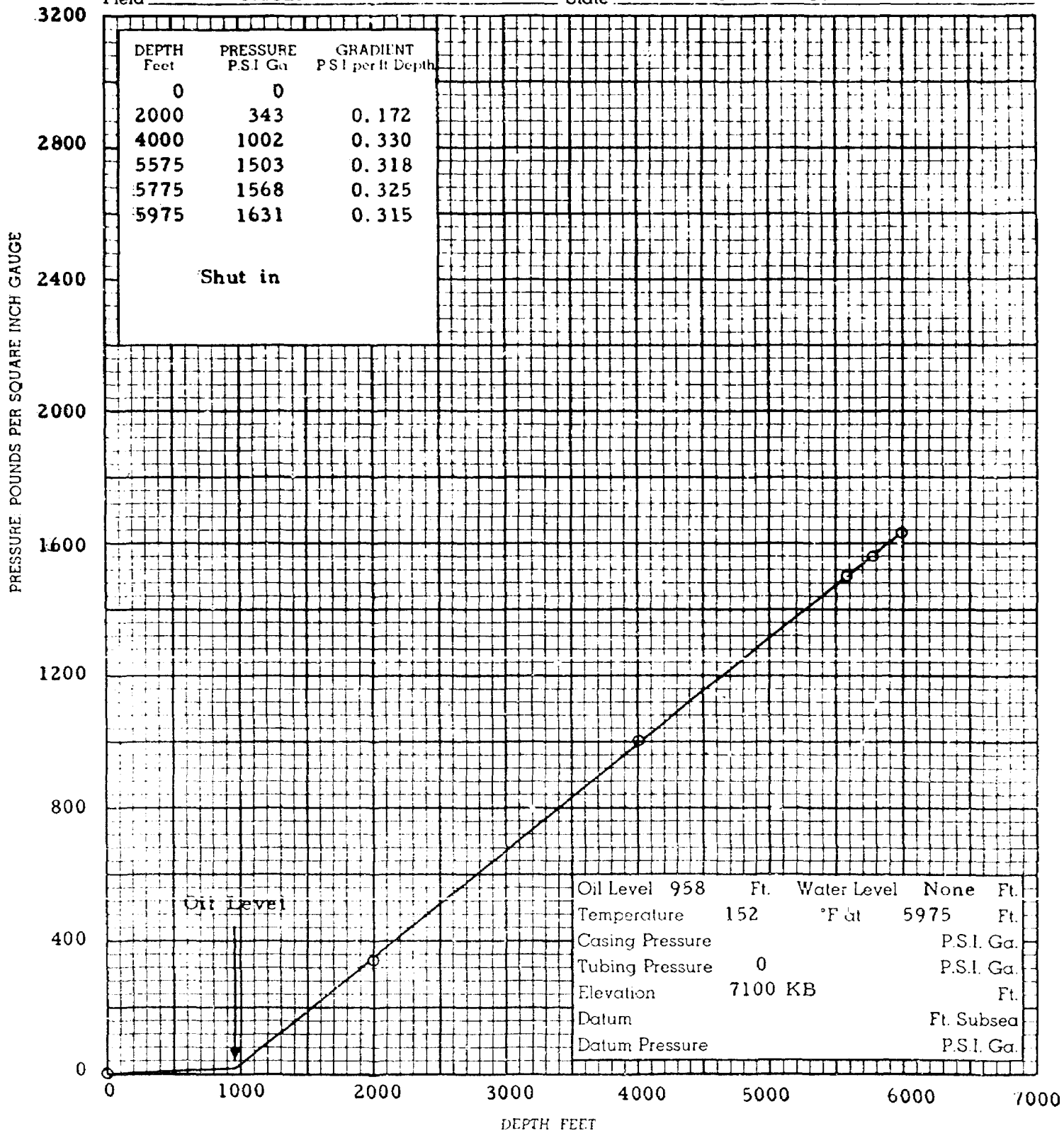


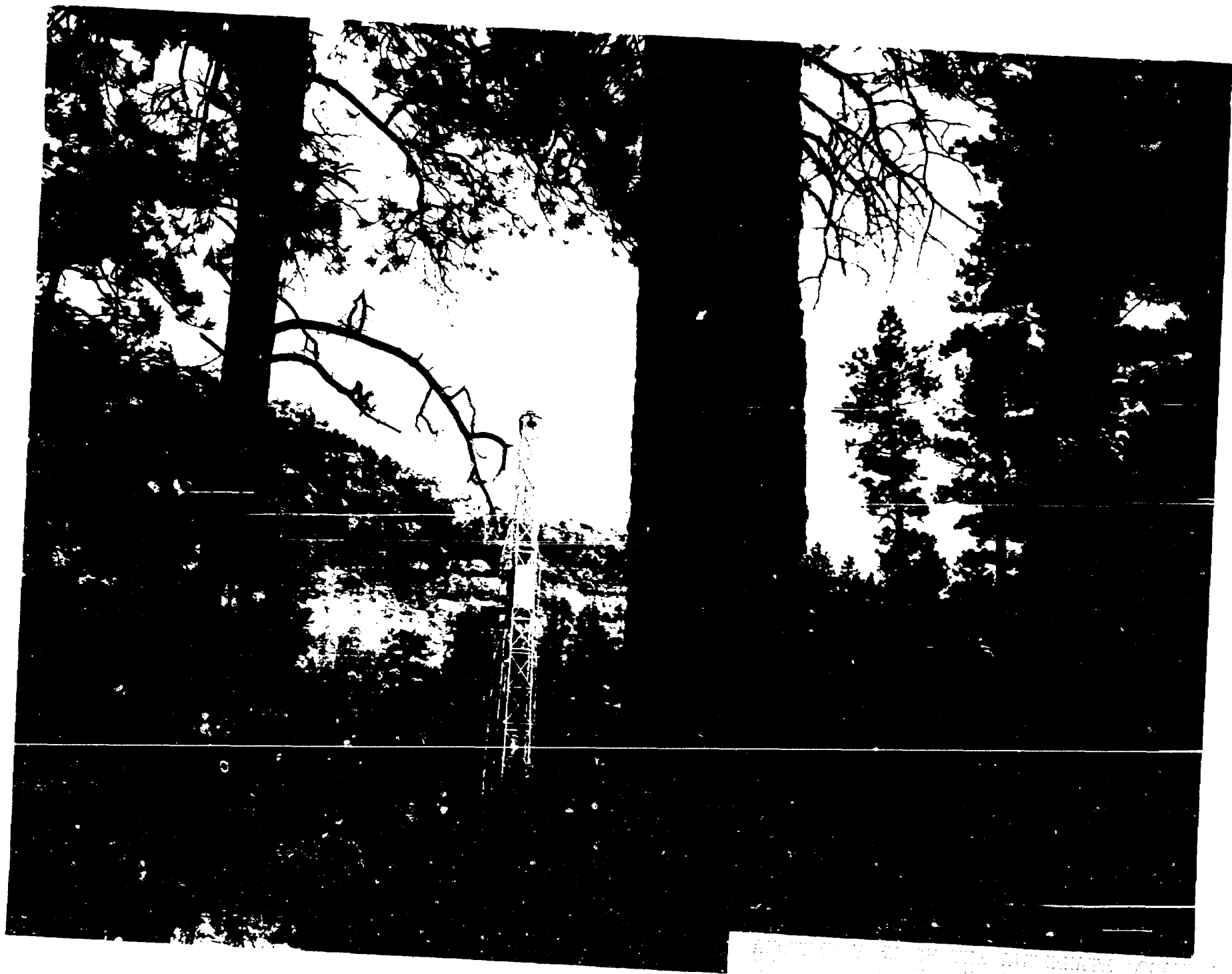
Viscosity of Reservoir Fluid

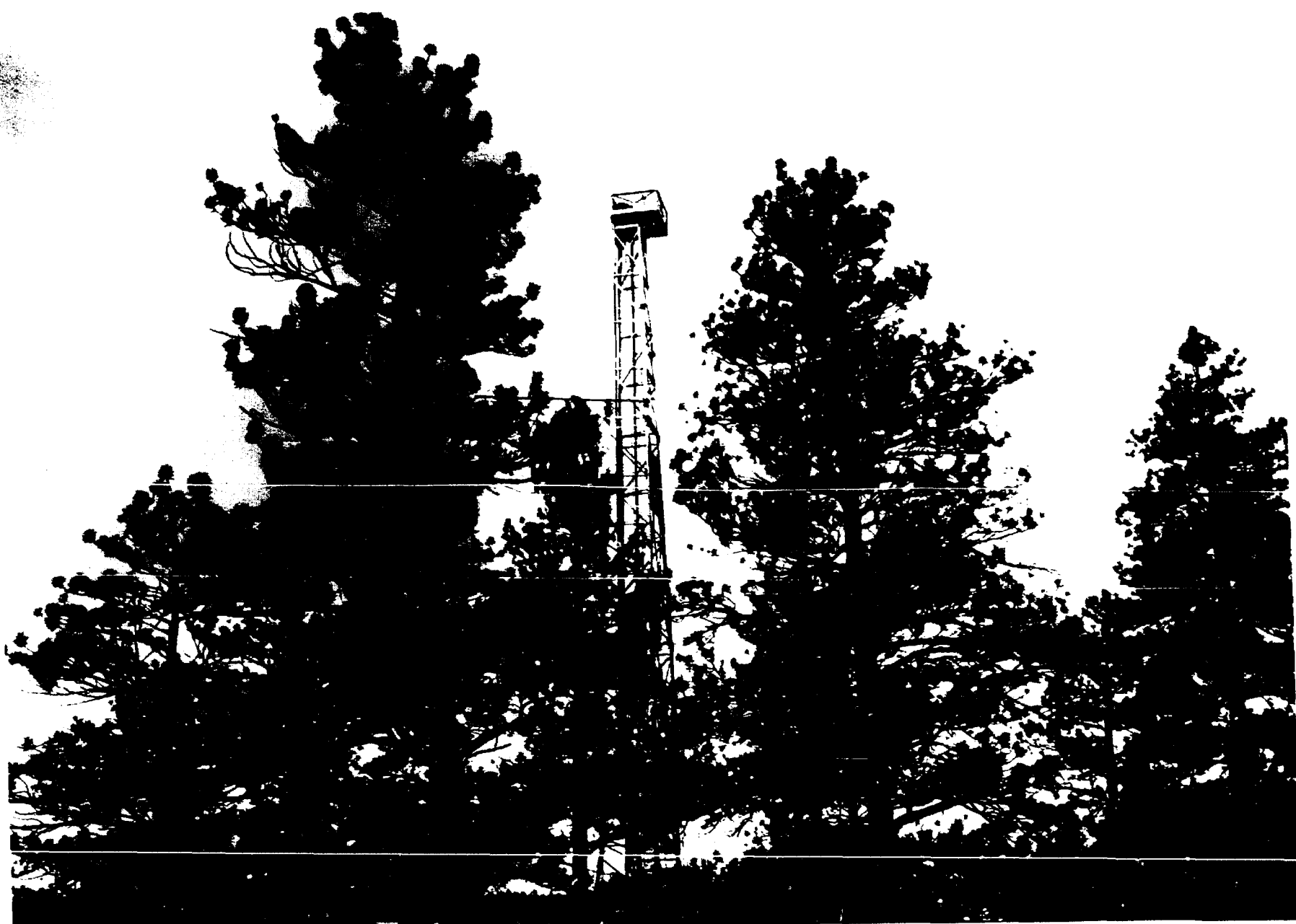
Company	Benson-Montin-Greer	Formation	Gallup
Well	Drilling Corporation	County	Rio Arriba
	Bolack No. 2	State	New Mexico
Field	Wildcat		



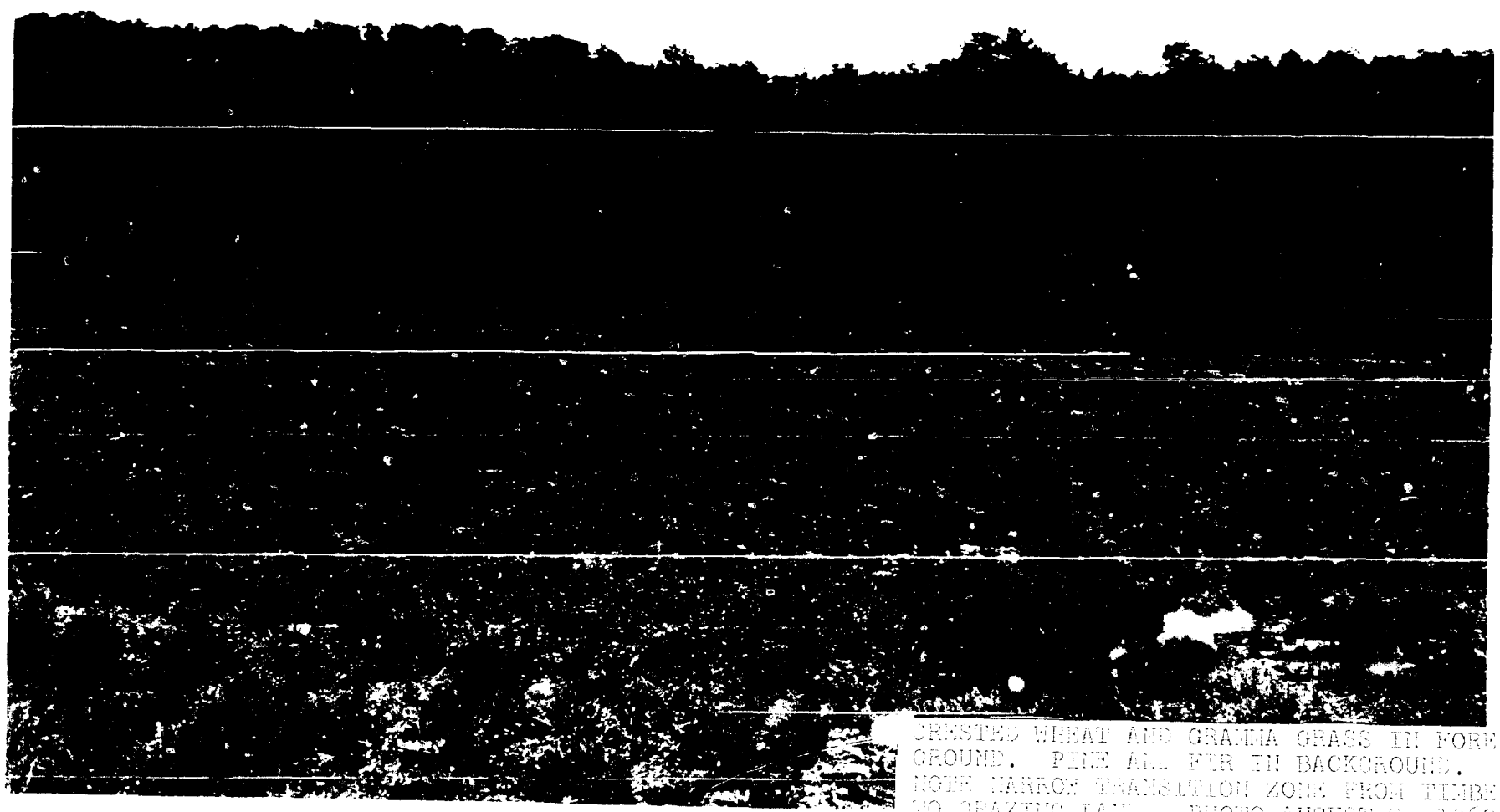
Company Benson-Montin-Greer Drilling Corporation Formation Gallup
Well Bolack No. 2 County Rio Arriba
Field Wildcat State New Mexico



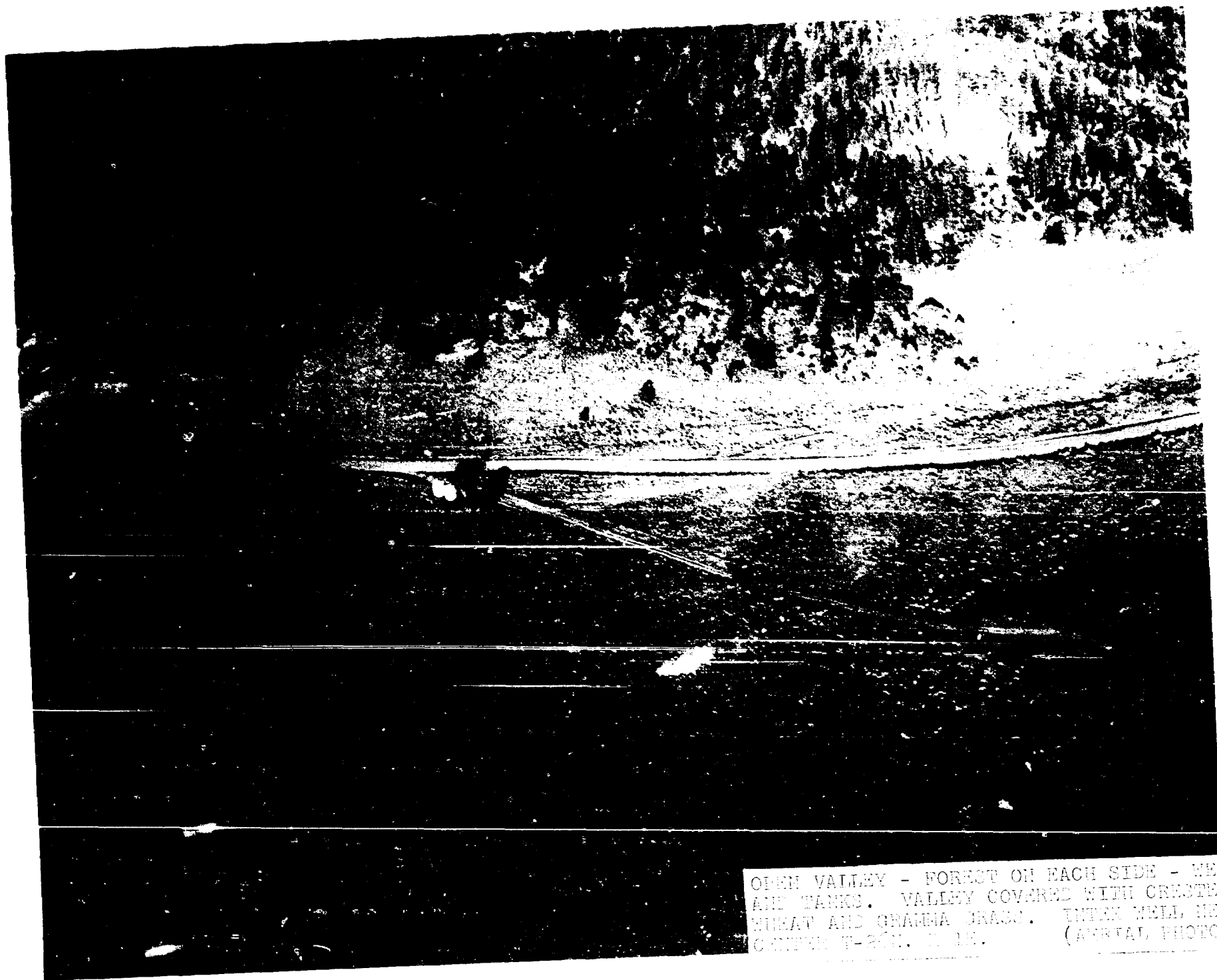
[illegible]



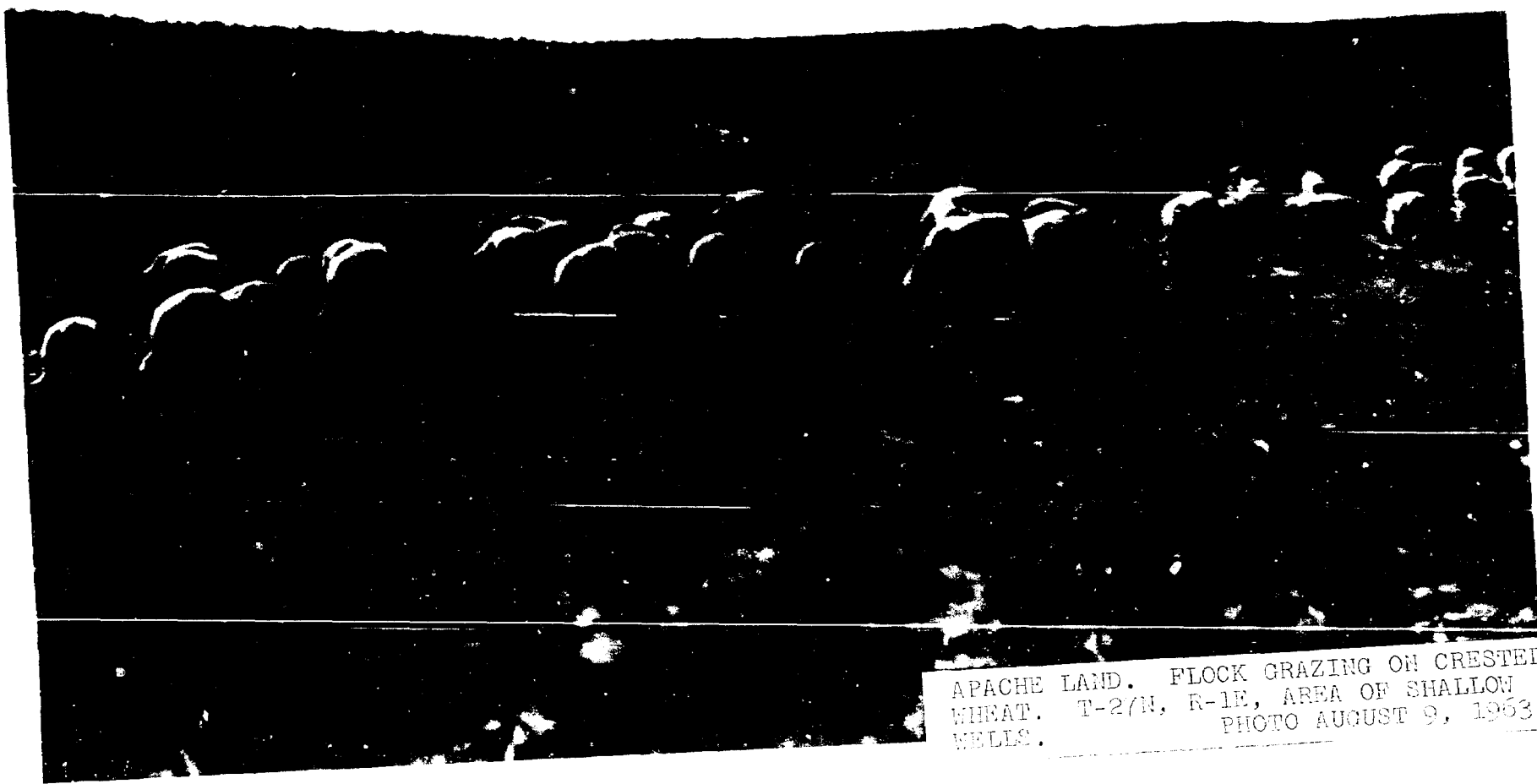
P-11 CANADA OJITOS UNIT DRILLING, SEC.
11, T-25N, R-1W. A NUMBER OF HEALTHY
TREES LOST HERE.



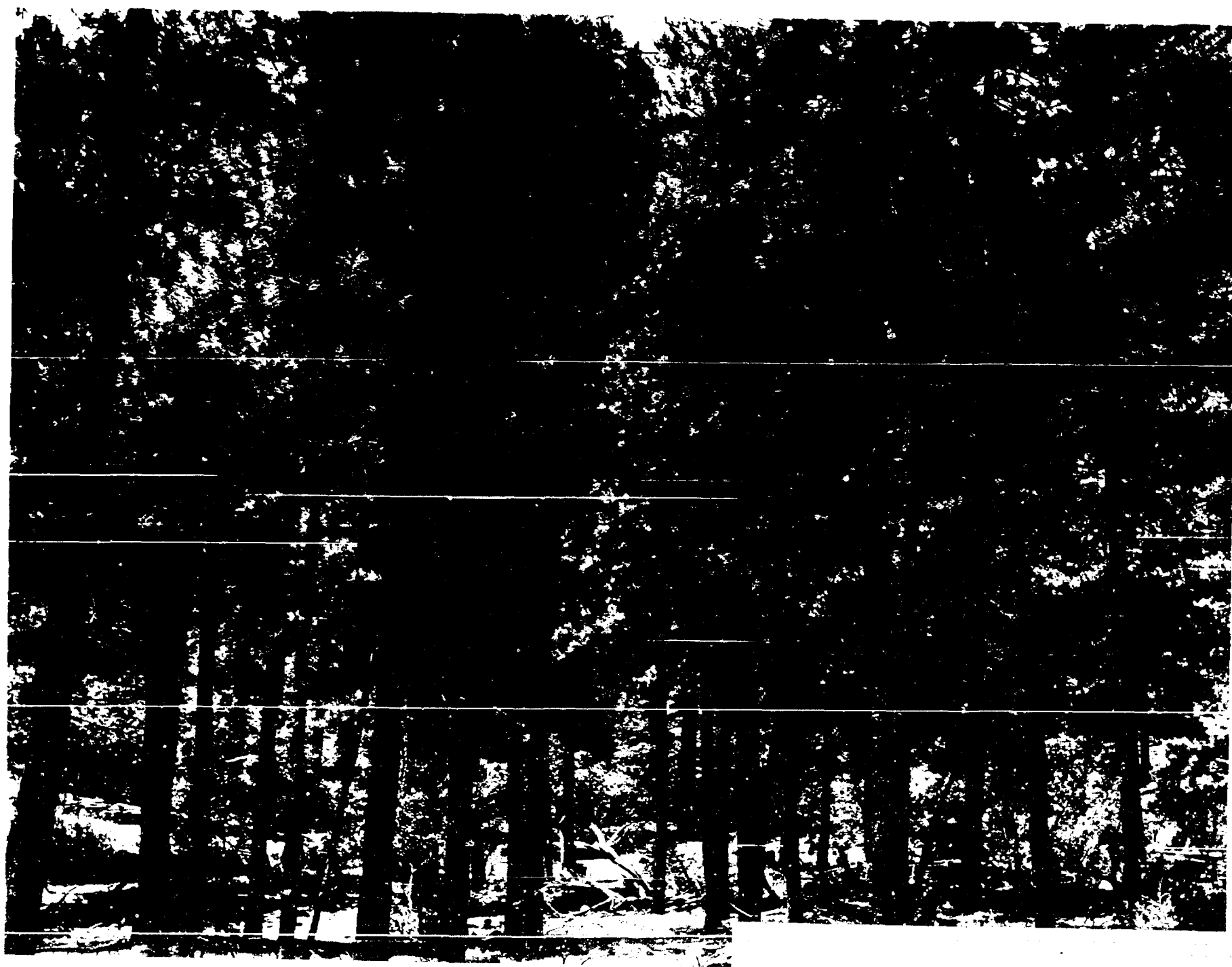
CRESTED WHEAT AND GRAMA GRASS IN FORE-
GROUND. PINE AND FIR IN BACKGROUND.
NOTE NARROW TRANSITION ZONE FROM TIMBER
TO GRAZING LAND. PHOTO AUGUST 9, 1963.



OPEN VALLEY - FOREST ON EACH SIDE - WELL
AND TANKS. VALLEY COVERED WITH CRESTED
WHEAT AND GRAMA GRASS. INTER WELL NEAR
CATTLE T-20N. 2. 12. (AERIAL PHOTO)

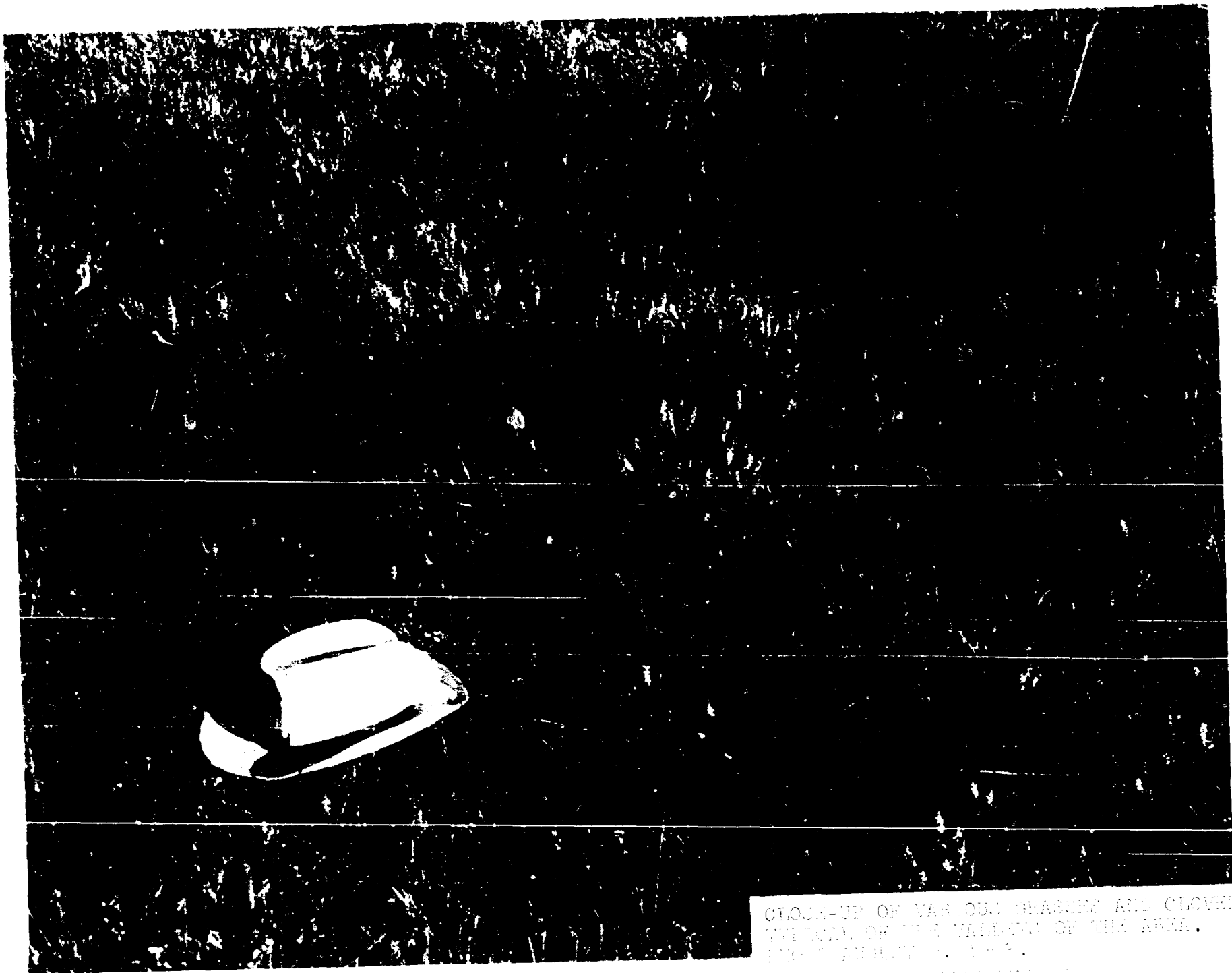


APACHE LAND. FLOCK GRAZING ON CRESTED
WHEAT. T-27N, R-1E, AREA OF SHALLOW
WELLS. PHOTO AUGUST 9, 1963.





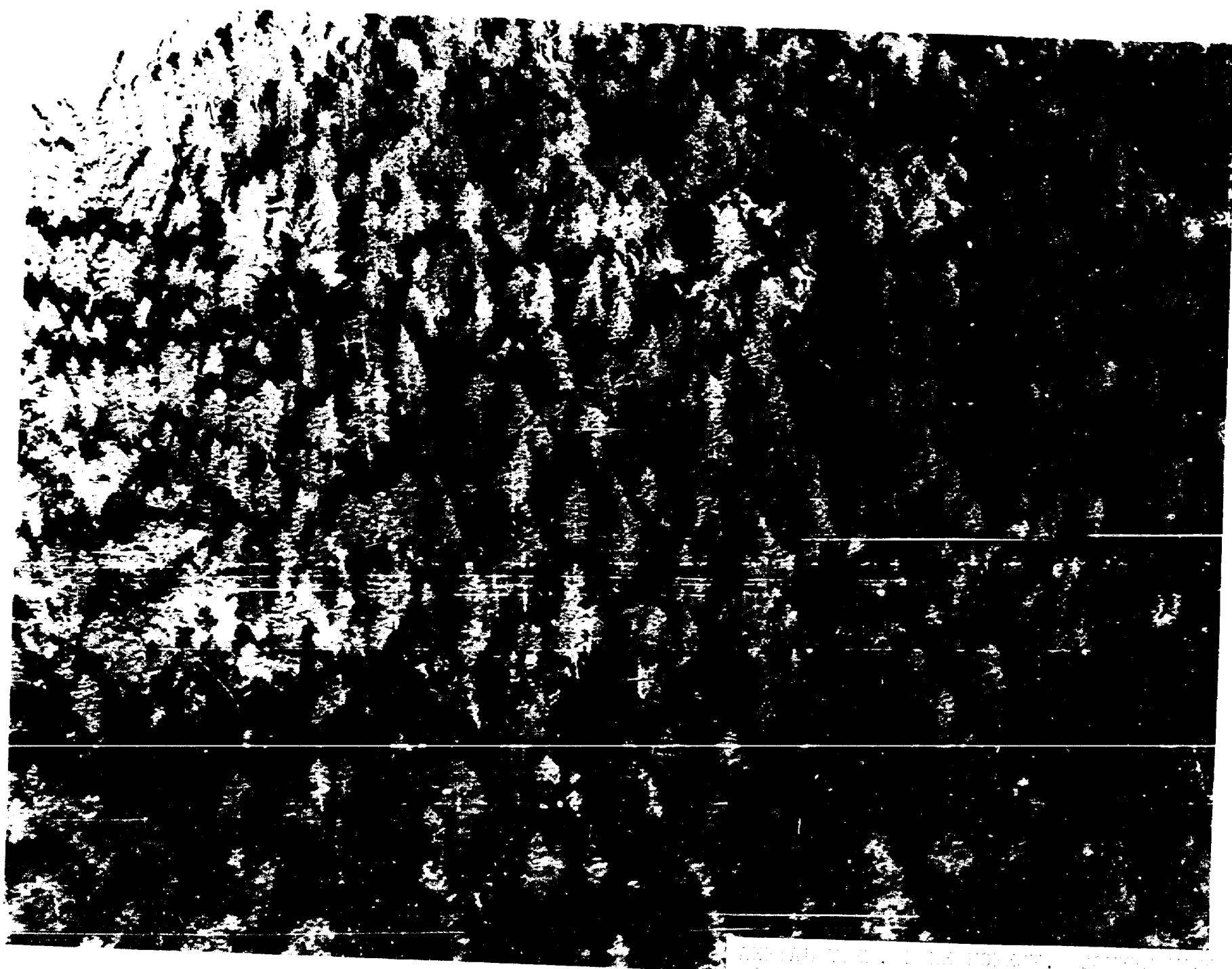
VIEW OF THE FOREST, THE HILLS, AND THE
RIVER, (40-10-10-1117).



CLOSE-UP OF VARIOUS GRASSES AND CLOVER,
TYPICAL OF THE VEGETATION OF THE AREA.
EAST AFRICA, 1962.



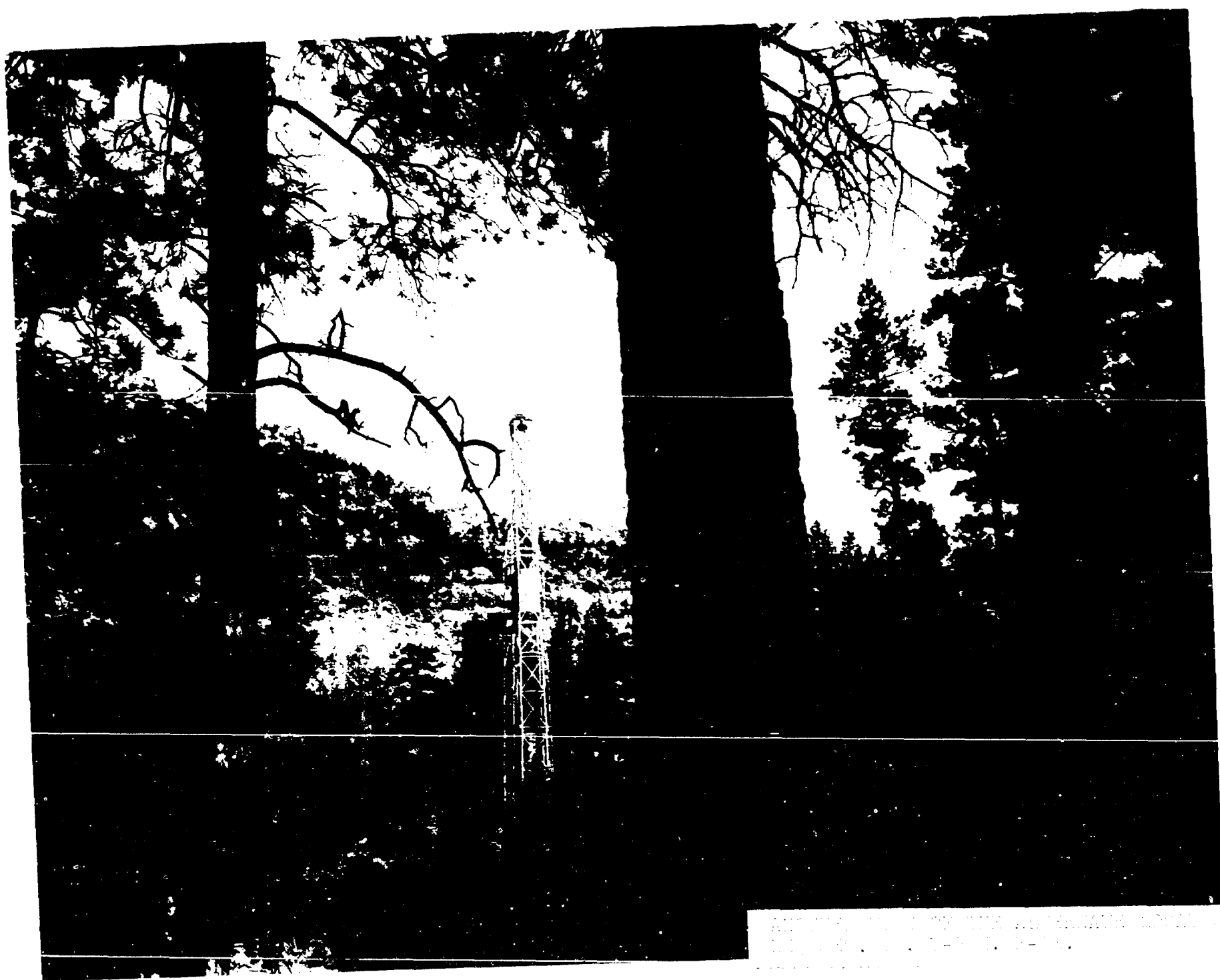
CLOSE-UP OF NATURAL CRATER LIGHT.
LIGHT SOURCE ON RIGHT.



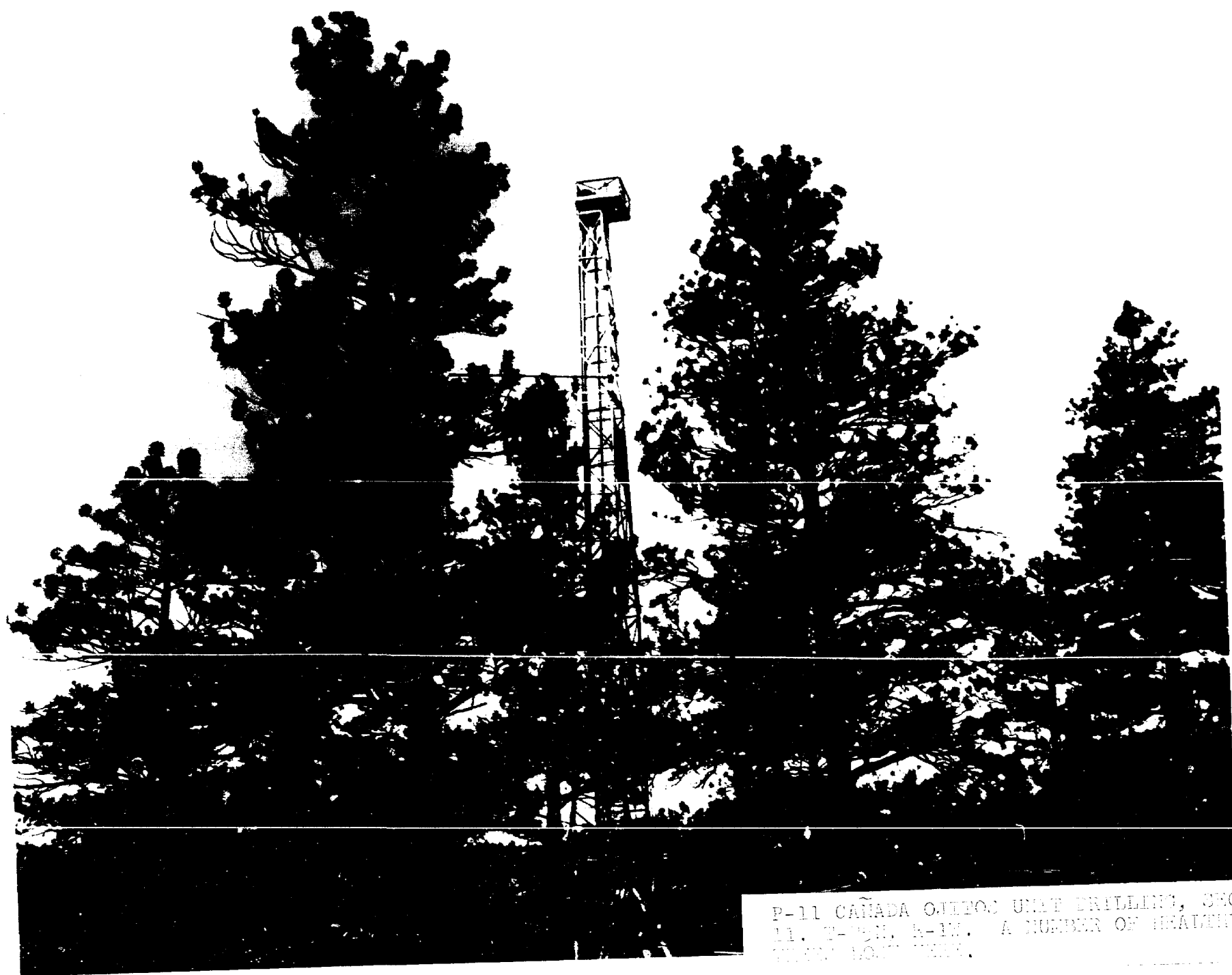
100-443887-1000



LONE APACHE HERD HIS FLOCK ON THE
LUSH GRASSY MOUNTAIN AND GRASSY GRASS.
FOREGROUND - AREA OF SHALLOW WELLS.
BACKGROUND - AREA OF DEEP WELLS.



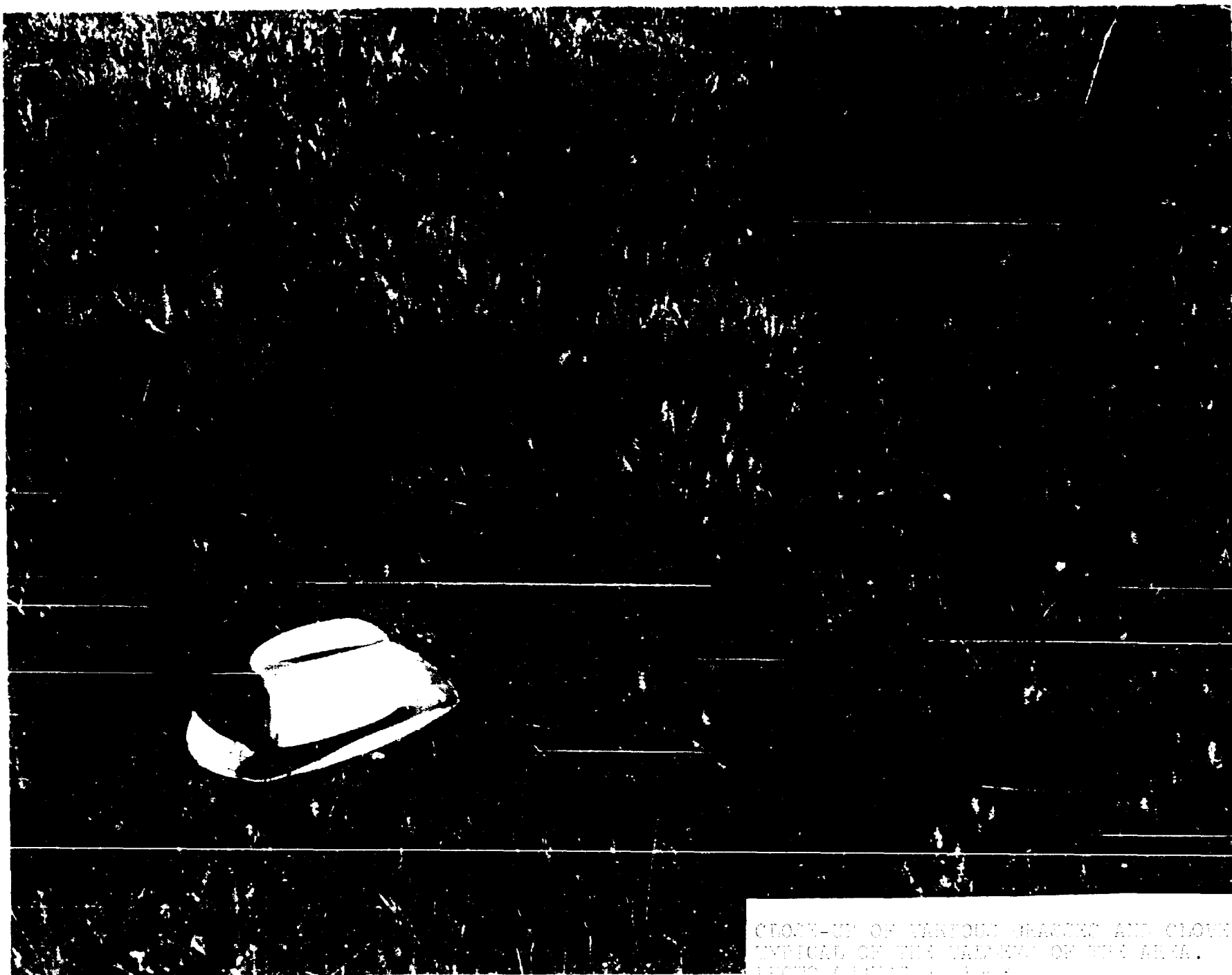
Radio tower in the forest, near the entrance to the park, looking north.



P-11 CANADA OJIBOS UNIT DRILLING, SEC.
11. T-10N. A-1W. A NUMBER OF HEAVY
TREES WERE HERE.



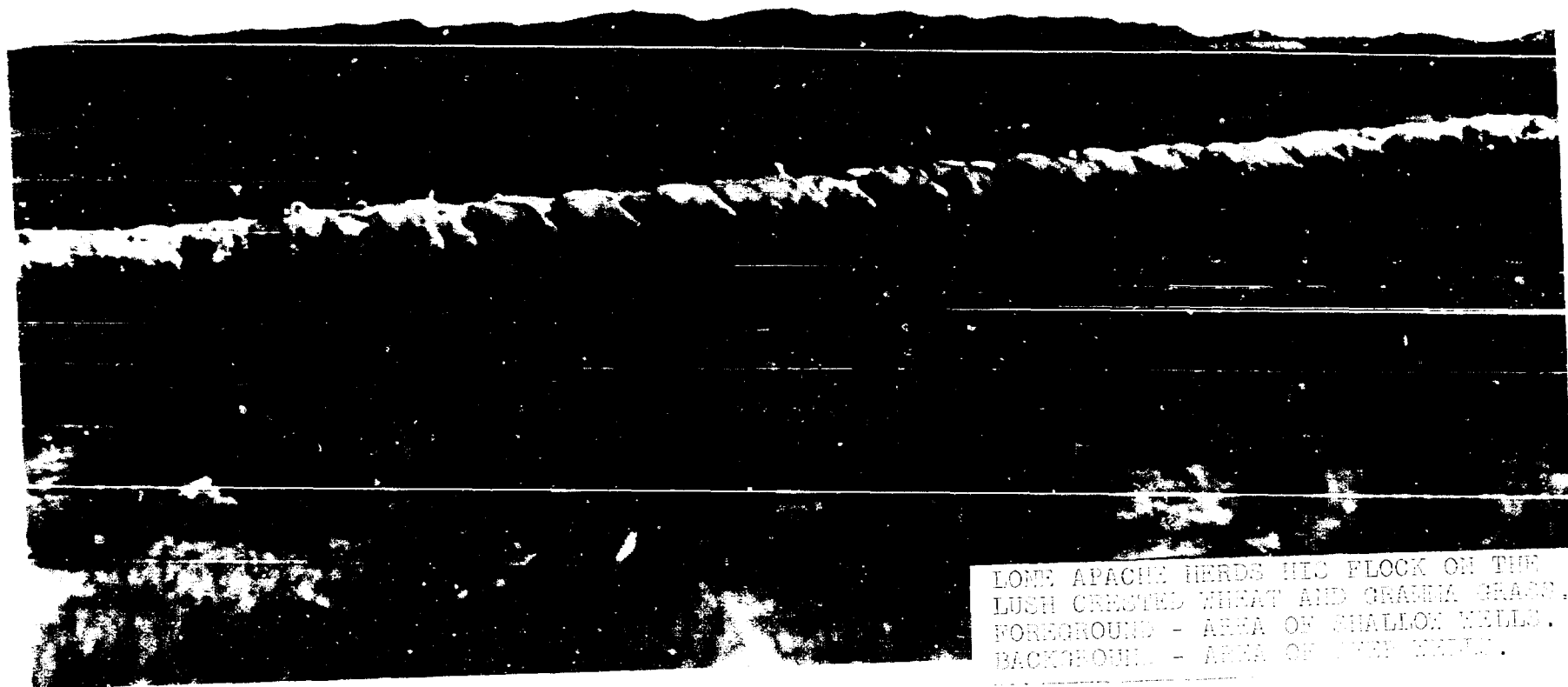
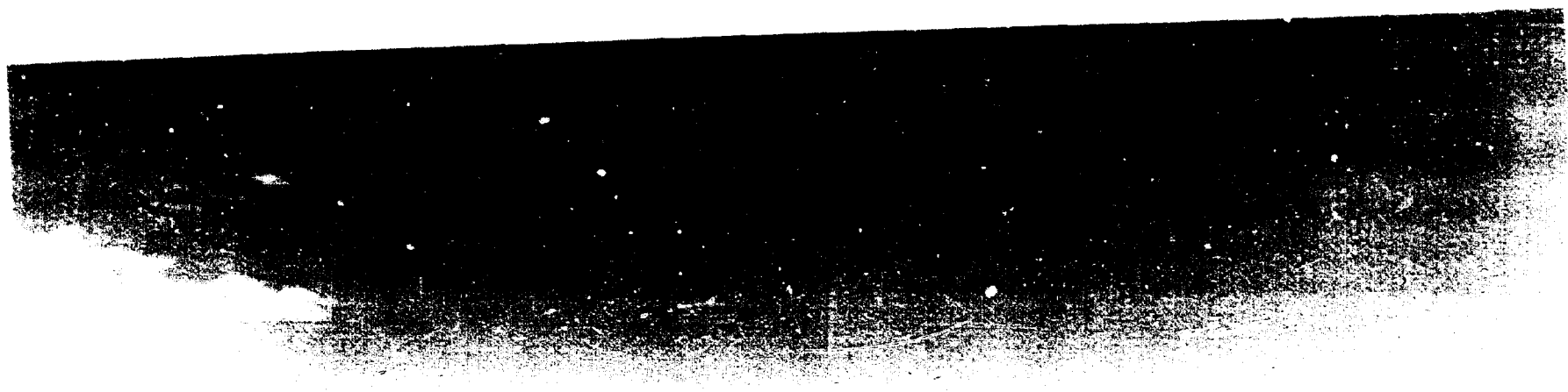
VIEW OF STANLEY FOREST, looking N. from the
18.75-20.00-18. (18.75-20.00-18.75)
CRATER OF MOUNT STANLEY.



CLOSE-UP OF HATBOX, BRACKET AND CLOVER,
TYPICAL OF THE VARIETY OF THE AREA.
PHOTO BY J. J. J. J.

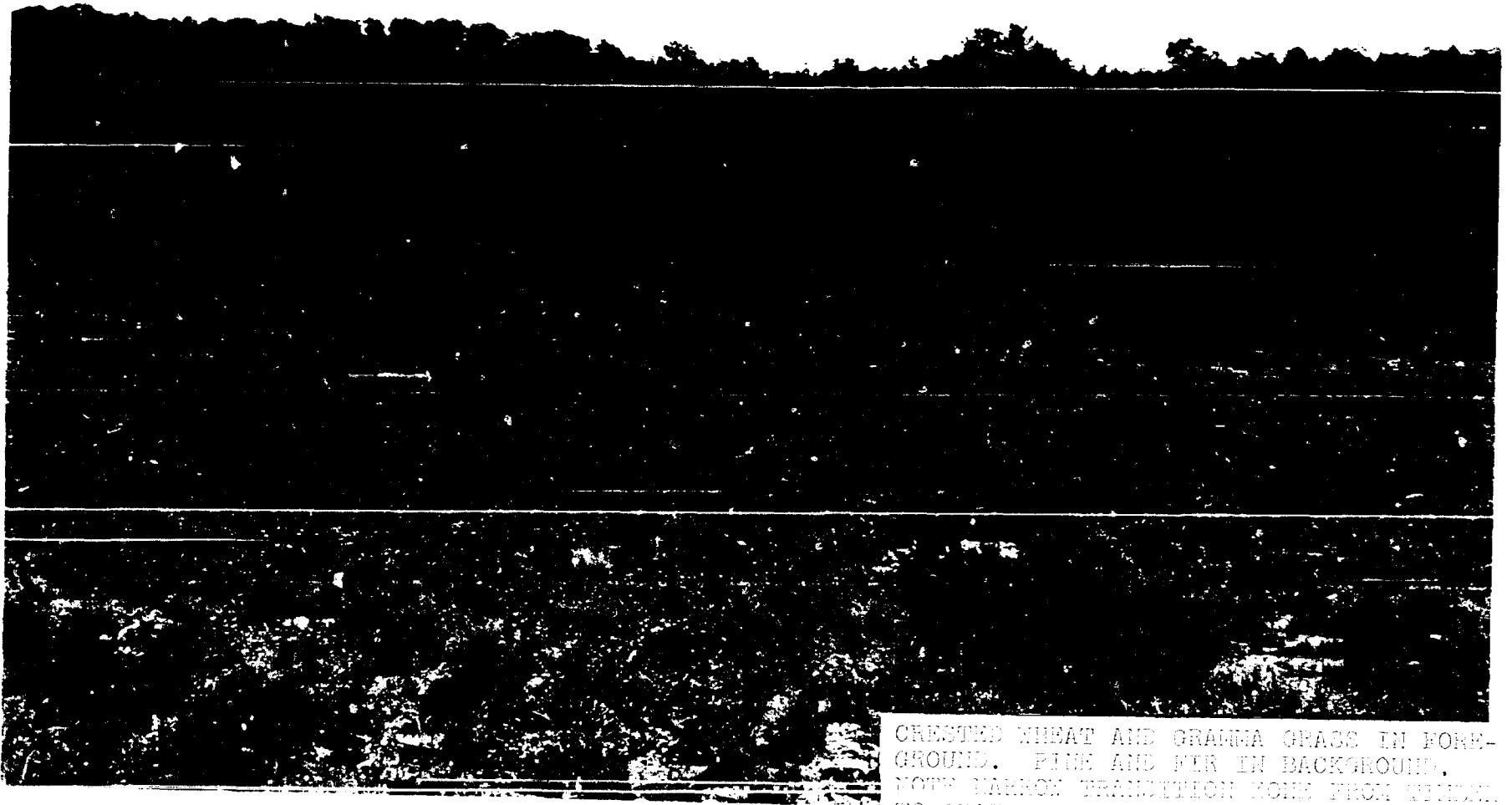


CLOSE-UP OF MATURED ORNATE GANNET.
PHOTO AUGUST 14, 1968.

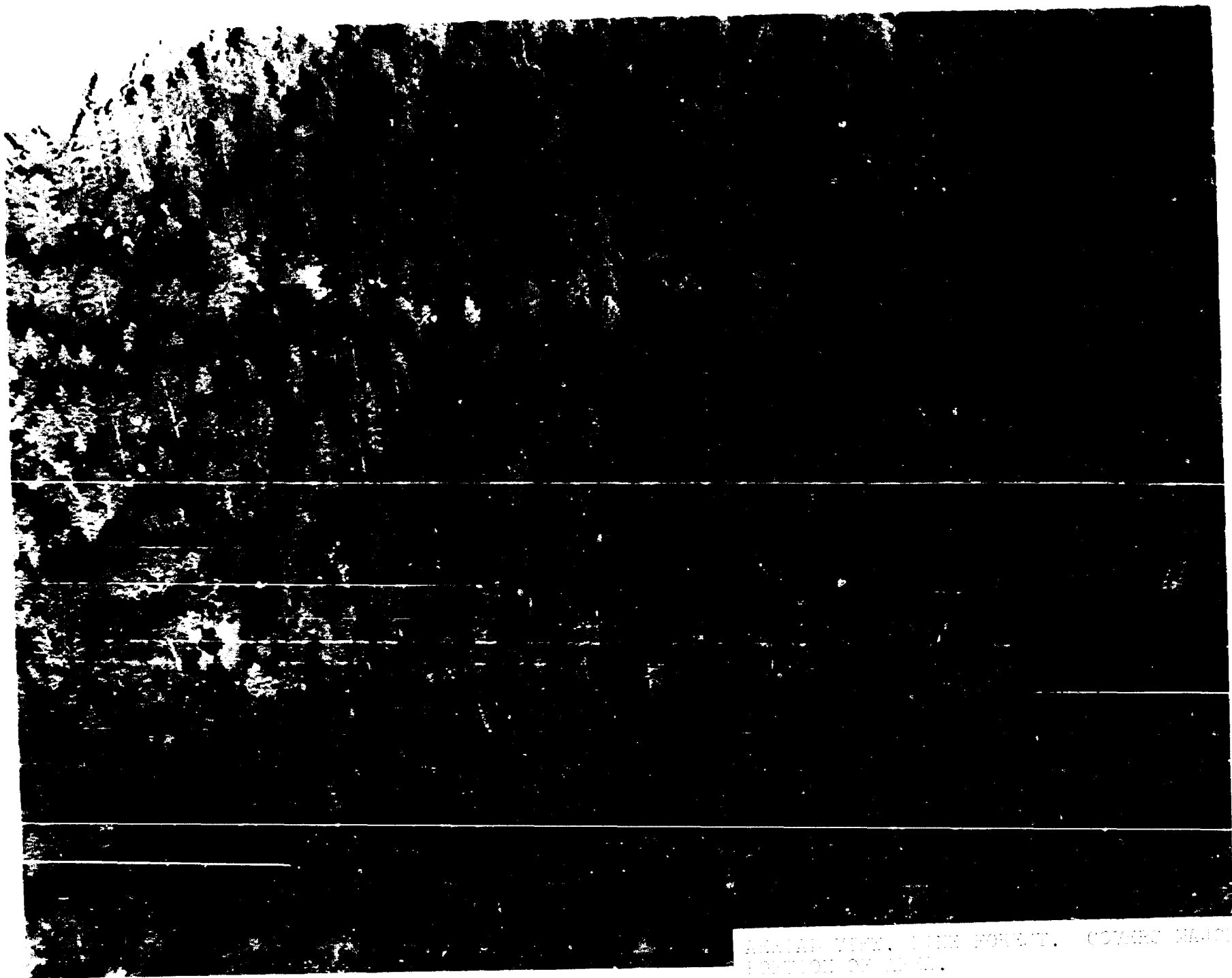


LOME APACHE HERDS HIS FLOCK ON THE
LUSH CRESTED WHEAT AND GRAMA GRASS.
FOREGROUND - AREA OF SHALLOW WELLS.
BACKGROUND - AREA OF TREE WELLS.

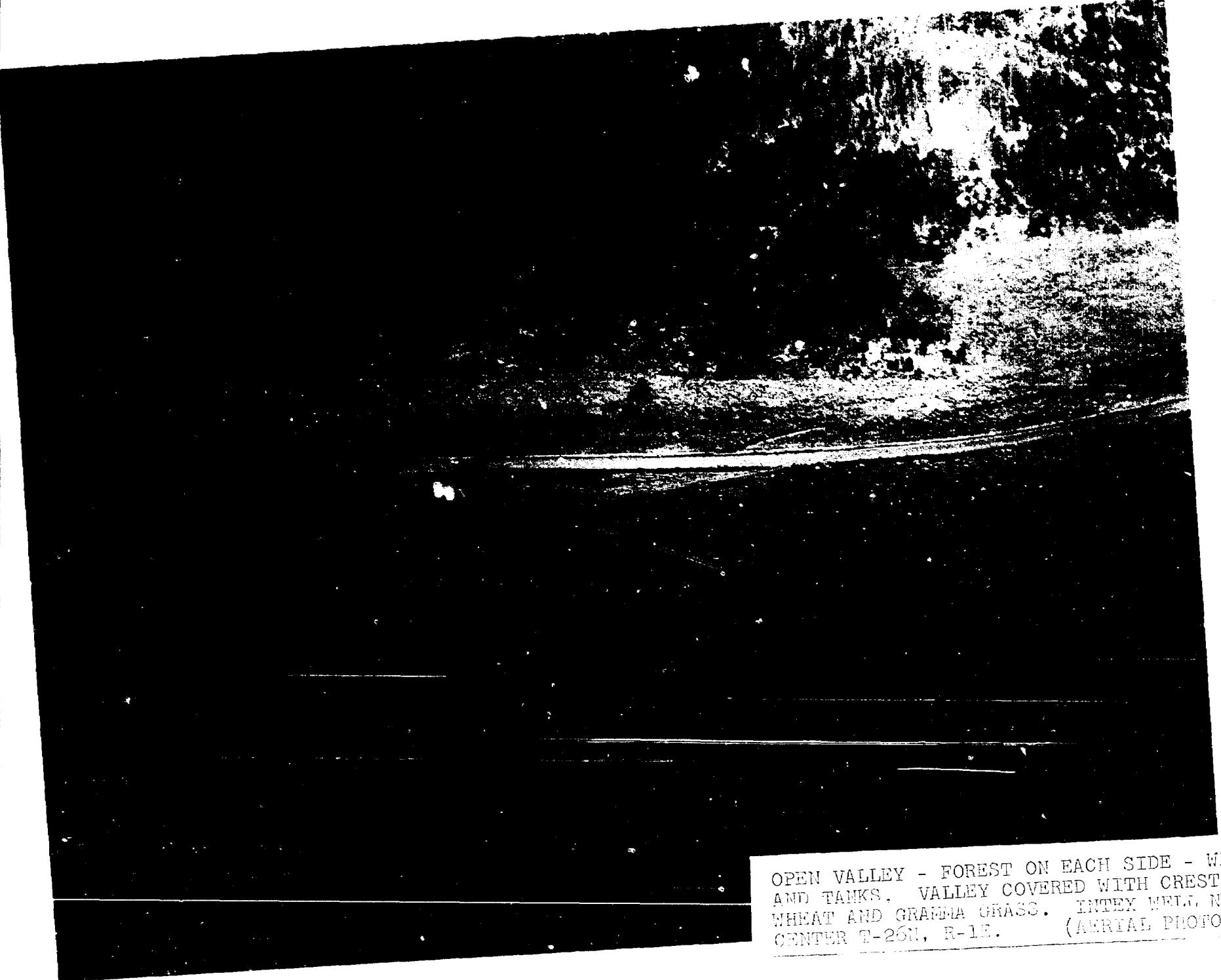




CRESTED WHEAT AND GRAMA GRASS IN FORE-
GROUND. PINE AND FIR IN BACKGROUND.
NOTE NARROW TRANSITION ZONE FROM TIMBER
TO OPENING LAND. PHOTO AUGUST 3, 1933.







OPEN VALLEY - FOREST ON EACH SIDE - WELL
AND TANKS. VALLEY COVERED WITH CRESTED
WHEAT AND GRAMA GRASS. INTEX WELL, NEAR
CENTER T-26N, R-1E. (AERIAL PHOTO)



MUCH OF AREA COVERED BY PINE FOREST.
NOTE YOUNG PINE (30 TO 40 YEARS).

DOCKET: REGULAR HEARING - WEDNESDAY - AUGUST 14, 1963

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING,
SANTA FE, NEW MEXICO

ALLOWABLE: (1) Consideration of the oil allowable for September, 1963;

(2) Consideration of the allowable production of gas for September, 1963, from ten prorated pools in Lea and Eddy Counties, New Mexico, also consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, for September, 1963.

CASE 2881: Application of Benson-Montin-Greer Drilling Corporation for 160-acre spacing, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks temporary 160-acre spacing for a period of three years for oil wells completed in the Gallup formation underlying Townships 25, 26 and 27 North, Ranges 1 East and 1 West, Rio Arriba County, New Mexico, and for authority to conduct interference tests and to transfer allowables during said temporary period.

CASE 2882: Southeastern New Mexico nomenclature case calling for an order for the creation, contraction and extension of certain pools in Chaves, Eddy, and Lea Counties, New Mexico.

(a) Create a new pool in Eddy County, New Mexico, classified as an oil pool for San Andres production, designated as the Crow Flats-San Andres Pool, and described as:

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
SECTION 22: SE/4

(b) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production, designated as the Flying "M"-Pennsylvanian Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 33 EAST, NMPM
SECTION 15: NW/4

(c) Create a new pool in Lea County, New Mexico, classified as an oil pool for Devonian production, designated as the Jenkins-Devonian Pool, and described as:

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM
SECTION 30: NE/4

(d) Create a new pool in Chaves County, New Mexico, classified as an oil pool for San Andres production, designated as the L. E. Ranch-San Andres Pool, and described as:

TOWNSHIP 10 SOUTH, RANGE 28 EAST, NMPM

SECTION 21: SW/4

SECTION 28: NW/4

SECTION 29: NE/4

(e) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production, designated as the Maljamar-Pennsylvanian Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM

SECTION 5: NW/4

(f) Create a new pool in Lea County, New Mexico, classified as an oil pool for Granite Wash production, designated as the Wantz-Granite Wash Pool, and described as:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM

SECTION 2: SE/4

(g) Create a new pool in Lea County, New Mexico, classified as an oil pool for Yates production, designated as the West Wilson-Yates Pool, and described as:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM

SECTION 2: SW/4

(h) Contract the Red Lake Pool in Eddy County, New Mexico, by the deletion of the following area:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM

SECTION 29: S/2 SE/4

(i) Extend the Artesia Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM

SECTION 25: SW/4 SW/4

SECTION 29: S/2 SE/4

(j) Extend the Atoka-Pennsylvanian Gas Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM

SECTION 30: NE/4 and E/2 NW/4

(k) Extend the North Benson Queen-Grayburg Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM

SECTION 28: S/2 SW/4

SECTION 29: S/2

- (l) Extend the Bronco-Siluro Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 13 SOUTH, RANGE 38 EAST, NMPM
SECTION 2: E/2

- (m) Extend the South Brunson-Ellenburger Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 38 EAST, NMPM
SECTION 31: NW/4

- (n) Extend the Chisum-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 28 EAST, NMPM
SECTION 7: E/2 W/2
SECTION 18: N/2 NW/4

- (o) Extend the North Hackberry-Yates Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 19: SW/4
SECTION 30: NW/4 NW/4

- (p) Extend the Inbe-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 34 EAST, NMPM
SECTION 18: SE/4

- (q) Extend the Lea-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
SECTION 13: NW/4

- (r) Extend the West Lusk-Yates Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM
SECTION 22: NE/4 NW/4

- (s) Extend the East Millman-Seven Rivers Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
SECTION 29: SE/4 NW/4 and NE/4 SW/4

Docket No. 23-63

- (t) Extend the Oil Center-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
SECTION 3: SW/4

- (u) Extend the East Red Lake-Queen Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 1: NW/4 SW/4

- (v) That the vertical limits of the East Red Lake-Queen Pool be extended to include the Grayburg formation and rename the East Red Lake-Queen Pool to East Red Lake Queen-Grayburg Pool;

- (w) Extend the Turkey Track Queen-Grayburg Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM
SECTION 29: SE/4 SE/4
SECTION 33: NE/4 NW/4

- (x) Extend the Vacuum-Abo Reef Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
SECTION 8: SW/4
SECTION 17: NW/4

- (y) Extend the Vacuum-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 36: SW/4

- (z) Extend the Vacuum-Glorieta Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: SW/4
SECTION 36: NW/4

- (aa) Extend the Vacuum-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
SECTION 25: W/2
SECTION 36: W/2

- (bb) Extend the Vandagriff-Keyes Gas Pool in Eddy County, New Mexico, to include therein:

-5-

Docket No. 23-63

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
SECTION 33: SW/4

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
SECTION 11: NW/4

(cc) Extend the Weir-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM
SECTION 10: SW/4

(dd) Extend the Indian Hills-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 24 EAST, NMPM
SECTION 20: SE/4, S/2 NE/4, SE/4 NW/4 and E/2 SW/4
SECTION 28: NW/4, W/2 NE/4, NW/4 SE/4 and N/2 SW/4
SECTION 29: NE/4, N/2 SE/4, NE/4 SW/4 and E/2 NW/4

dag/

ALO 67
May 1963

STIPULATIONS FOR OIL AND GAS LEASES
NORTH DIVISION
KAIBAB NATIONAL FOREST
ARIZONA

BEFORE THE
OIL CONSERVATION COMMISSION

at: Fe, New Mexico

Exhibit No. 3

acc No. 3887

"Stipulation for lands under jurisdiction of Department of Agriculture,"
Form 4-216 as amended (May 1959), is attached hereto and made a part
hereof, together with additional stipulations as follows.

1. No wells will be drilled for oil or gas except pursuant to a unit agreement formulated in accordance with Title 30 CFR 226 and approved by the U.S.G.S. and containing provisions approved by the Forest Service, which will provide that drilling will be carried out by one operator representing the interests of all lessees under each unit agreement and providing further that no drilling operation will be permitted at more than one site at one time on the North Division of the Kaibab National Forest. No activities will be initiated for prospecting or drilling until authorized by a special-use permit in accordance with stipulation No. 3 below.
2. All drilling for prospecting and development purposes will be authorized on a zone basis, with first drilling limited to a zone described as the area north of an east-west line through the Jacob Lake Highway Junction (U.S. 89A and State 67).
3. No surface use of any site or occupancy by equipment may be made until a special-use permit has been issued by the Forest Service based on a properly executed application. Each special-use permit will specify the requirements for that particular use or occupancy and will conform with the stipulations herein.
4. In order to protect the wildlife resource, the Forest Service will consult the Arizona Game and Fish Commission prior to giving its approval to any unit agreement for oil and gas development or issuing any special-use permit and will afford the Commission opportunity to review and comment on such agreements and the terms of such permits.
5. Drilling of wells under approved unit agreements will be limited to one well per section unless otherwise specifically authorized in writing by the Forest Service. When the U.S.G.S. determines that more frequent sites are needed to remove the oil, spacing may be reduced, but in no event will more than one site per 160 acres be permitted. No more than one site per 640 acres will be permitted for the production of gas. More than one well may be permitted at each site.
6. The Forest Supervisor will be notified by the lessee at least ten (10) days prior to the initiation of any activities authorized under the lease or special-use permit issued in connection therewith.
7. No drill sites will be located in the open parks of the ponderosa-pine or mixed-conifer timber types.
8. No drill sites will be located within visible distance of U.S. Highway 89A and State Highway 67.
9. No special-use permits will be issued for any surface developments in the areas known as V-T Park, Pleasant Valley, Little Pleasant Valley, Crane Lake or other parks visible from State Highway 67.
10. No drill sites will be authorized within $\frac{1}{2}$ mile of present or proposed recreation areas, Forest Service administrative sites,

or any residence, lodge, or camp having permanent buildings.

11. No drill sites will be authorized within $\frac{1}{2}$ mile of any existing permanent waters, including springs, stock tanks and wildlife water catchments.
12. A map will be furnished the lessee by the Forest Service showing the general areas where no drilling will be authorized. This in no way relieves the lessee from the responsibility of obtaining special-use permits.
13. The lessee will use the present road system so far as possible, and all Forest Service roads so used by the lessee will be maintained and improved by the lessee in a condition satisfactory to the Forest Supervisor. Improvements of any existing road must be authorized by special-use permit, and will be to Forest Service standards attached to and made a part of that permit. Such improvements include grading, draining, surfacing, revegetation of roadsides and installation of cattle guards or signs. Roads constructed or improved by the lessee shall be open to passage by the public according to rules and regulations of the Forest Service.
14. No road location work involving disturbance of either soil or vegetation will be authorized except by special-use permit. The final location of all new roads must be authorized by special-use permit and construction will be according to standards prescribed by the Forest Service and made a part of said permit.
15. Maintenance of roads used jointly by oil and lumber companies will be shared by such companies in accordance with cooperative maintenance agreements approved by the Forest Supervisor.
16. All permanent pipelines away from the actual drilling pad or sites will be buried to a depth of not less than 12 inches below the surface. All pipelines away from actual drilling sites will follow within existing roadway clearings wherever practical.
17. Water surplus to the lessee's needs will be disposed of in a manner satisfactory to the Forest officer in charge and such water may be used at the discretion of the Forest Service.
18. Upon abandonment of water wells by the lessee, the casing therein will be left in place and will become the property of the U.S. Government subject to jurisdiction of the Forest Service. Prior to abandonment, wherever possible during the lessee's operations water will be supplied from these wells for wildlife and livestock and any other use authorized by the Forest Service.
19. Timber cut in connection with any authorized activity will be disposed of as directed by the Forest officer in charge under regular sales agreement. Commercial species and sizes will be utilized and not wasted. All slash will be disposed of by piling and burning under the direction of the Forest officer in charge.
20. The use of flammable gas will not be permitted in the actual underground drilling operations or for drilling purposes other than to operate machines, pumps, or above-ground equipment.
21. Drill sites will not occupy more than one acre each in area, including drilling pads and reserve pits. After drilling operations are completed, the pads will be reseeded, except for an area 40 feet by 15 feet for each pad when needed for

producing wells and pumping equipment. Steel tanks will be used for the mixing of mud and chemicals, and the reserve pit will be fenced with 8 foot chain link woven wire. After completion of drilling operations such tanks will be removed, the reserve pit filled, and the surface thereof reseeded and mulched within sixty (60) days, unless because of weather conditions additional time is authorized by the Forest officer in charge.

22. Not more than one tank battery will be authorized to each noncontiguous section. Where the lease covers contiguous sections, not more than one tank battery will be authorized to each group of such contiguous sections. No tank batteries will be permitted on known deer migration routes.
23. Flowlines may be constructed along roads except U.S. Highway 89A and State Highway 67.
24. Where approved by the U.S.G.S., lease automatic-custody-transfer system may be installed.
25. All soil disturbed areas, including pipeline, rights-of-way, road banks, cut and fill slopes, and all similarly disturbed areas, will be reseeded and/or mulched when and as prescribed by the Forest officer in charge.
26. Within sixty (60) days after cessation of use on any site, such site will be restored as nearly as possible to the original condition by seeding, mulching, reforestation or whatever is needed, as prescribed by the Forest officer in charge. The period may be extended where necessary because of weather conditions, in the discretion of the Forest officer in charge.
27. The lessee will be required to locate all pumps underground.
28. All drilling equipment, including the drill rig, shall be removed from a given well site as soon as possible after official completion but not later than thirty (30) days after request by the Forest Supervisor.
29. Actual drilling and hauling operations at any or all locations within the North Division of Kaibab National Forest may be suspended by the Regional Forester for a period not to exceed forty-five (45) days provided that any drilling operation then in progress may be completed.
30. No gasoline plant will be located within the Kaibab National Forest.
31. Fire protection for the area in the form of foam, water, or other retardants, under pressure, will be provided in such manner as the Forest Supervisor may require. Lightning arrestor towers or other protection will be installed at each tank battery under such specifications as the Forest Supervisor may require.
32. The lessee hereby agrees to pay for all damage and suppression costs resulting from fires caused by his actions or those of his employees, contractors, sub-contractors, and their respective employees, which are performed in connection with this lease and attached stipulations.
33. No permanent living quarters or residences inside the boundaries of the North Division of the Kaibab National Forest will be authorized in connection with this lease.

34. As a guarantee of the faithful performance of the provisions of the lease, including all provisions of the foregoing stipulations, lessee shall file a bond, up to \$100,000 in amount as may be required by the Forest Service in addition to the bond required by Sec. 2a(4) of the lease. Should the sureties on any bond delivered to the Forest Service become insufficient or unsatisfactory to the Forest Service, the lessee shall, within thirty (30) days of receipt of demand, furnish a new bond with sureties solvent and satisfactory to the Forest Service. The bond of any surety company approved by the Secretary of the Treasury will be acceptable.
35. The lessee shall install and maintain storm chokes or automatic cut-off valves in all producing wells unless relieved from such requirement by the Oil and Gas Supervisor of the Geological Survey.


(Lessee)

OPENING STATEMENT IN THE BENSON-MONTIN-GREER APPLICATION
FOR TEMPORARY SPACING ORDER IN PUERTO CHIQUITA POOL

May it please the Commission:

Benson-Montin-Greer Drilling Corporation, the applicant in this case, is acutely conscious of the fact that its application is unusual in New Mexico on three counts. In the first place, we have asked for 160 acre spacing for oil production. In addition to this, we are requesting that the Commission rule that seven townships are now encompassed within a common source of supply that at present has not been fully developed; and in the third place, we are requesting the Commission to grant a temporary spacing order for a period of three years.

The stature and fine reputation of this Commission is known throughout the Interstate Oil Compact Commission and its subscribing states. This Commission has been doing a stalwart job in behalf of conserving the oil and gas resources of our state, but changes are taking place in the development of oil and gas reservoirs that require new and different concepts of conservation regulations. Some Conservation Commissions in the States, and especially in the provinces of Canada, have reflected by recent orders that they acknowledge the need of new concepts of conservation in order to stay abreast of the advance of the industry.

We should like for the Commission to be aware of the fact that outside of New Mexico, promulgation of initial orders of the nature here requested are in no wise unusual treatment. We will present to the Commission compelling evidence as to why our application in all three of its apparently unusual aspects should be granted.

For the past few years, several State Commissions, as well as those in the Provinces, have realized the necessity of making initial spacing orders extend to the extremity of the prospectively productive area. They have also recognized that the industry has improved its techniques and have learned, along with the industry, that the new techniques increase the rate of production and that, given sufficient time, even low-grade reservoirs will drain much larger areas than ever before known, thus making it possible for the industry to develop areas of low-grade reservoirs such as are encountered in the San Juan Basin. If the conservation law of a state cannot accommodate itself to the newly discovered technique and knowledge of the industry so that low-grade reservoirs can be economically developed on wide spacing, then such newly-found knowledge and newly discovered techniques are of no avail, because such low-grade reservoirs will remain beyond the opportunity of development.

Thus, we trust that by reason of these facts the Commission will not prejudge the case here being presented today and that it will acknowledge the necessity in the industry and consider the facts with regard to the ability of one well to drain 160 acres in light of the current techniques and knowledge in the industry concerning such points. With regard to the third point that applicant acknowledges is unusual within the State of New Mexico, we believe that we will show the Commission the conditions in the pool in question require that the requested temporary order extend for a three-year period in order that time be allowed to complete an accumulation of proper evidence to support the order on incontrovertible basis.

The development of oil pools on wide spacing in Canada has made the Canadian oil frontier most attractive to American dollars and it could be shown to the Commission today, if necessary, that oil industry dollars have gone from Northwestern New Mexico to Canada. If we are to keep the oil industry interested in Northwestern New Mexico, it is

absolutely imperative that the Commission recognize the necessity of wide spacing in order that the operators can develop the low-grade Gallup reservoirs encountered in the area. If they can develop these reservoirs, we believe that the economic doldrums now known in San Juan Basin can be considerably alleviated and that the Basin will once again become attractive to the exploratory and development oil dollar. This depression of the San Juan Basin is made apparent every time the newspaper prints a story about the number of drilling rigs operating in the Basin, and this Commission is probably aware of the fact that there are now only 37 active drilling rigs compared with 100 a few years ago.

The problem that Northwestern New Mexico is facing is that the oil explorer cannot expect to find another Hobbs Pool, which started producing over 30 years ago and is still producing with many wells making top allowables. On the contrary, the principal producing oil formation that explorers are likely to find and must develop in the San Juan Basin is a low-grade reservoir in the Gallup formation. Their primary recoveries in the average case are less than 1,000 bbls. per acre.

When applicant discovered the Cha Cha Gallup Pool in 1959, the first wells were drilled under the state-wide 40 acre spacing order. Irrespective of such spacing order, this applicant realized the necessity of wider spacing in order to make the pool economic, and voluntarily developed the early wells in the Southeastern end of the pool on 80 acre spacing. By September of 1960, upon this applicant's request, the Commission granted a temporary 80 acre spacing order, which, in October of 1961, was made permanent. The Cha Cha Gallup Pool was later extended to cover the entire area of production from the Pool and the Northwestern portion of the Pool was voluntarily developed on 160 acres, irrespective of the 80 acre order and the 80 acre development on the Southeastern portion of this same common source of supply. We now know that the entire Pool should have been developed on 160 acres and that a vast amount of oil has been left in the ground in the Southeastern portion of the pool because it was developed on 80 acre spacing rather than 160. Also, millions of cubic feet of gas were flared from the Pool which could have been conserved if the entire area had been developed on 160 acres. We hope to prevent the recurrence of such a tragedy in the Puerto Chiquita area. The Commission I am sure will remember the repeated continuances the producers urged upon it with regard to the operation of its no-flare order. Our evidence will show to the Commission that the necessity for these extensions was directly related to the fact that the Southeastern portion of the Pool was being developed upon 80 rather than 160 acre spacing. The Commission was certainly in no way at fault with regard to the spacing established for the Cha Cha Gallup Pool, as it granted the widest spacing requested. We earnestly hope the Commission will allow this applicant and the industry to profit from its experience at Cha Cha Gallup and grant the order here requested.

The Verde Gallup Pool, which was a fractured shale closely similar to the one before the Commission for consideration today, was discovered a scant seven years ago. Yet, we find that today it is practically depleted. It was developed under a 40 acre order, although some of the producers only developed the Pool on 80 acres and a few on 160 acres. The Pool as a whole has proven to be an unprofitable or marginal venture.

It was only four years ago that the Cha Cha Gallup Pool, which I previously referred to in some detail, was discovered. Yet today, the 80 acre portion of the Pool is depleted so far as primary oil is concerned.

We are informed that the recent application heard by this Commission with regard to the Boulder Gallup Pool to the North of the one here under consideration, asked for 80 acre spacing and that the proof presented to the Commission was that, on 80 acre spacing, operators can expect to recover through the total life of the Pool, only 110% of the amount of money required to drill and complete a producing well, which we are sure this Commission realizes does not justify continued development.

The facts and evidence that will today be presented to the Commission with regard to the Puerto Chiquita Pool are somewhat similar with regard to recoveries to those presented to the Commission on the Boulder Pool. But we certainly are not going to form a part of the conspiracy of ignorance that resulted in the tragedy of Cha Cha Gallup and ask this Commission to promulgate an 80 acre order. We are to the contrary doing the only thing that we believe is intelligent and will permit development in asking this Commission to enter a temporary 160 acre order, effective over the entire extremities of what is now believed will be productive limits of the Puerto Chiquita Gallup producing area.

With the exception of the applicant and Humble Oil & Refining Company, practically all of the companies holding leases in the seven-township area under consideration today, have declined to expend exploratory dollars and have farmed out or released their acreage. Whereas, the applicant has, in the last twelve months, expended \$1,000,000 in exploration and development of the area. This expenditure was made upon the conviction and faith that the area can be economically developed on wider spacing than is customarily approved by the New Mexico Commission, but the applicant is acutely conscious of the new techniques previously alluded to and the fact that it has been positively demonstrated in the San Juan Basin that oil can be drained on wider spacing than 80 acres, and therefore low-grade reservoirs developed which cannot be economically produced on 80 acres or narrower spacing. If this Commission will acknowledge the requirements of the development of this area, we earnestly believe it will result in the development of the Puerto Chiquita area with the greatest possible recovery of oil and that this, in turn, will stimulate other exploration in the San Juan Basin.

This brings us to the place where we hope that the Commission will be able to see the necessity of making the order effective over the entire prospective producing area and promulgate a temporary order for a period of three years. As just observed, the application for the Boulder Pool was only for 80 acres, although the evidence demonstrated that it could not be profitably developed on 80 acres. But the producers of the Boulder Pool are already hung on the petard of having the area developed on 80 acres before apprehending the knowledge that they needed wider spacing in order to realize a profit. Thus, we see that if Puerto Chiquita is not to find itself in the same deplorable condition, it is necessary that the Commission extend its temporary order to the entire outlines of what the best present geological evidence is as to its eventual productive limits.

The conditions are two-fold which require that a temporary order must extend for a period of three years, and we expect to develop detailed and convincing evidence to this effect.

Our evidence today will show to the Commission that on the average, a recovery of only 500 barrels per acre can be anticipated from the Puerto Chiquita Pool and that one well will drain an area in excess of 160 acres. Our method of proof today will be of exactly the same nature as that which proved reliable in predicting drainage in the Cha Cha spacing hearing.

Our initial application here is made early in the life of the Pool as was the Cha Cha application and must be based upon the limited preliminary information available at such point of development, and for this reason, we only make application for temporary spacing; but if we wait to make the application until all facts have been conclusively developed, then any order of the Commission would be too late to serve a useful purpose and the only thing that can be proved is what ought to have been done. The Commission is fully aware of the fact that if it grants this application based on the limited information now available, and later development under temporary order should prove that the Pool should be developed on closer spacing, then the temporary order can be amended at that time and nothing will have been lost and no oil will have been wasted, for it is always a simple matter to drill

additional development wells; while it is, of course, impossible to undrill unnecessary wells. Applicant is aware of the fact that a few wells in the area have been drilled closer than 160 acre spacing. Considerable thought has been given to this fact and negotiations with the affected owners have resulted in solution to all problems that are presented with regard to change in spacing. How these problems have been resolved will be developed in our testimony.

At the present time, all oil being produced in the Puerto Chiquita area must be trucked to the pipeline at a cost of from 60¢ to 80¢ per barrel. This added cost of production is a further deterrent to development in the area. From past experience of Gallup fields being developed on close spacing, no pipeline company is willing to build a line into this area, but the applicant is today authorized by Llaves Pipeline Co. to represent to the Commission that if it will grant the application of Benson-Montin-Greer, it will immediately commence construction of a pipeline from El Paso Natural Gas Products Company's Apache Station into the Puerto Chiquita area, and that it can, if it is given an immediate starting date, complete said line prior to winter weather making construction impossible.

In conclusion, we believe that our evidence will show to the Commission that every aspect of this application should be granted. That it is necessary that such application be granted in order to insure orderly development, protect correlative rights and prevent waste in this Pool. We also believe that by the granting of such order, the entire San Juan Basin will be advantaged and exploration increased.

Respectfully submitted,

BENSON-MONTIN-GREER DRILLING CORP.

By _____

Albert R. Greer

OPENING STATEMENT IN THE BENSON-MONTIN-GREER APPLICATION
FOR TEMPORARY SPACING ORDER IN PUERTO CHIQUITA POOL

May it please the Commission:

Benson-Montin-Greer Drilling Corporation, the applicant in this case, is acutely conscious of the fact that its application is unusual in New Mexico on three counts. In the first place, we have asked for 160 acre spacing for oil production. In addition to this, we are requesting that the Commission rule that seven townships are now encompassed within a common source of supply that at present has not been fully developed; and in the third place, we are requesting the Commission to grant a temporary spacing order for a period of three years.

The stature and fine reputation of this Commission is known throughout the Interstate Oil Compact Commission and its subscribing states. This Commission has been doing a stalwart job in behalf of conserving the oil and gas resources of our state, but changes are taking place in the development of oil and gas reservoirs that require new and different concepts of conservation regulations. Some Conservation Commissions in the States, and especially in the provinces of Canada, have reflected by recent orders that they acknowledge the need of new concepts of conservation in order to stay abreast of the advance of the industry.

We should like for the Commission to be aware of the fact that outside of New Mexico, promulgation of initial orders of the nature here requested are in no wise unusual treatment. We will present to the Commission compelling evidence as to why our application in all three of its apparently unusual aspects should be granted.

For the past few years, several State Commissions, as well as those in the Provinces, have realized the necessity of making initial spacing orders extend to the extremity of the prospectively productive area. They have also recognized that the industry has improved its techniques and have learned, along with the industry, that the new techniques increase the rate of production and that, given sufficient time, even low-grade reservoirs will drain much larger areas than ever before known, thus making it possible for the industry to develop areas of low-grade reservoirs such as are encountered in the San Juan Basin. If the conservation law of a state cannot accommodate itself to the newly discovered technique and knowledge of the industry so that low-grade reservoirs can be economically developed on wide spacing, then such newly-found knowledge and newly discovered techniques are of no avail, because such low-grade reservoirs will remain beyond the opportunity of development.

Thus, we trust that by reason of these facts the Commission will not prejudge the case here being presented today and that it will acknowledge the necessity in the industry and consider the facts with regard to the ability of one well to drain 160 acres in light of the current techniques and knowledge in the industry concerning such points. With regard to the third point that applicant acknowledges is unusual within the State of New Mexico, we believe that we will show the Commission the conditions in the pool in question require that the requested temporary order extend for a three-year period in order that time be allowed to complete an accumulation of proper evidence to support the order on incontrovertible basis.

The development of oil pools on wide spacing in Canada has made the Canadian oil frontier most attractive to American dollars and it could be shown to the Commission today, if necessary, that oil industry dollars have gone from Northwestern New Mexico to Canada. If we are to keep the oil industry interested in Northwestern New Mexico, it is

absolutely imperative that the Commission recognize the necessity of wide spacing in order that the operators can develop the low-grade Gallup reservoirs encountered in the area. If they can develop these reservoirs, we believe that the economic doldrums now known in San Juan Basin can be considerably alleviated and that the Basin will once again become attractive to the exploratory and development oil dollar. This depression of the San Juan Basin is made apparent every time the newspaper prints a story about the number of drilling rigs operating in the Basin, and this Commission is probably aware of the fact that there are now only 37 active drilling rigs compared with 100 a few years ago.

The problem that Northwestern New Mexico is facing is that the oil explorer cannot expect to find another Hobbs Pool, which started producing over 30 years ago and is still producing with many wells making top allowables. On the contrary, the principal producing oil formation that explorers are likely to find and must develop in the San Juan Basin is a low-grade reservoir in the Gallup formation. Their primary recoveries in the average case are less than 1,000 bbls. per acre.

When applicant discovered the Cha Cha Gallup Pool in 1959, the first wells were drilled under the state-wide 40 acre spacing order. Irrespective of such spacing order, this applicant realized the necessity of wider spacing in order to make the pool economic, and voluntarily developed the early wells in the Southeastern end of the pool on 80 acre spacing. By September of 1960, upon this applicant's request, the Commission granted a temporary 80 acre spacing order, which, in October of 1961, was made permanent. The Cha Cha Gallup Pool was later extended to cover the entire area of production from the Pool and the Northwestern portion of the Pool was voluntarily developed on 160 acres, irrespective of the 80 acre order and the 80 acre development on the Southeastern portion of this same common source of supply. We now know that the entire Pool should have been developed on 160 acres and that a vast amount of oil has been left in the ground in the Southeastern portion of the pool because it was developed on 80 acre spacing rather than 160. Also, millions of cubic feet of gas were flared from the Pool which could have been conserved if the entire area had been developed on 160 acres. We hope to prevent the recurrence of such a tragedy in the Puerto Chiquita area. The Commission I am sure will remember the repeated continuances the producers urged upon it with regard to the operation of its no-flare order. Our evidence will show to the Commission that the necessity for these extensions was directly related to the fact that the Southeastern portion of the Pool was being developed upon 80 rather than 160 acre spacing. The Commission was certainly in no way at fault with regard to the spacing established for the Cha Cha Gallup Pool, as it granted the widest spacing requested. We earnestly hope the Commission will allow this applicant and the industry to profit from its experience at Cha Cha Gallup and grant the order here requested.

The Verde Gallup Pool, which was a fractured shale closely similar to the one before the Commission for consideration today, was discovered a scant seven years ago. Yet, we find that today it is practically depleted. It was developed under a 40 acre order, although some of the producers only developed the Pool on 80 acres and a few on 160 acres. The Pool as a whole has proven to be an unprofitable or marginal venture.

It was only four years ago that the Cha Cha Gallup Pool, which I previously referred to in some detail, was discovered. Yet today, the 80 acre portion of the Pool is depleted so far as primary oil is concerned.

We are informed that the recent application heard by this Commission with regard to the Boulder Gallup Pool to the North of the one here under consideration, asked for 80 acre spacing and that the proof presented to the Commission was that, on 80 acre spacing, operators can expect to recover through the total life of the Pool, only 110% of the amount of money required to drill and complete a producing well, which we are sure this Commission realizes does not justify continued development.

The facts and evidence that will today be presented to the Commission with regard to the Puerto Chiquita Pool are somewhat similar with regard to recoveries to those presented to the Commission on the Boulder Pool. But we certainly are not going to form a part of the conspiracy of ignorance that resulted in the tragedy of Cha Cha Gallup and ask this Commission to promulgate an 80 acre order. We are to the contrary doing the only thing that we believe is intelligent and will permit development in asking this Commission to enter a temporary 160 acre order, effective over the entire extremities of what is now believed will be productive limits of the Puerto Chiquita Gallup producing area.

With the exception of the applicant and Humble Oil & Refining Company, practically all of the companies holding leases in the seven-township area under consideration today, have declined to expend exploratory dollars and have farmed out or released their acreage. Whereas, the applicant has, in the last twelve months, expended \$1,000,000 in exploration and development of the area. This expenditure was made upon the conviction and faith that the area can be economically developed on wider spacing than is customarily approved by the New Mexico Commission, but the applicant is acutely conscious of the new techniques previously alluded to and the fact that it has been positively demonstrated in the San Juan Basin that oil can be drained on wider spacing than 80 acres, and therefore low-grade reservoirs developed which cannot be economically produced on 80 acres or narrower spacing. If this Commission will acknowledge the requirements of the development of this area, we earnestly believe it will result in the development of the Puerto Chiquita area with the greatest possible recovery of oil and that this, in turn, will stimulate other exploration in the San Juan Basin.

This brings us to the place where we hope that the Commission will be able to see the necessity of making the order effective over the entire prospective producing area and promulgate a temporary order for a period of three years. As just observed, the application for the Boulder Pool was only for 80 acres, although the evidence demonstrated that it could not be profitably developed on 80 acres. But the producers of the Boulder Pool are already hung on the petard of having the area developed on 80 acres before apprehending the knowledge that they needed wider spacing in order to realize a profit. Thus, we see that if Puerto Chiquita is not to find itself in the same deplorable condition, it is necessary that the Commission extend its temporary order to the entire outlines of what the best present geological evidence is as to its eventual productive limits.

The conditions are two-fold which require that a temporary order must extend for a period of three years, and we expect to develop detailed and convincing evidence to this effect.

Our evidence today will show to the Commission that on the average, a recovery of only 500 barrels per acre can be anticipated from the Puerto Chiquita Pool and that one well will drain an area in excess of 160 acres. Our method of proof today will be of exactly the same nature as that which proved reliable in predicting drainage in the Cha Cha spacing hearing.

Our initial application here is made early in the life of the Pool as was the Cha Cha application and must be based upon the limited preliminary information available at such point of development, and for this reason, we only make application for temporary spacing; but if we wait to make the application until all facts have been conclusively developed, then any order of the Commission would be too late to serve a useful purpose and the only thing that can be proved is what ought to have been done. The Commission is fully aware of the fact that if it grants this application based on the limited information now available, and later development under temporary order should prove that the Pool should be developed on closer spacing, then the temporary order can be amended at that time and nothing will have been lost and no oil will have been wasted, for it is always a simple matter to drill

additional development wells; while it is, of course, impossible to undrill unnecessary wells. Applicant is aware of the fact that a few wells in the area have been drilled closer than 160 acre spacing. Considerable thought has been given to this fact and negotiations with the affected owners have resulted in solution to all problems that are presented with regard to change in spacing. How these problems have been resolved will be developed in our testimony.

At the present time, all oil being produced in the Puerto Chiquita area must be trucked to the pipeline at a cost of from 60¢ to 80¢ per barrel. This added cost of production is a further deterrent to development in the area. From past experience of Gallup fields being developed on close spacing, no pipeline company is willing to build a line into this area, but the applicant is today authorized by Llaves Pipeline Co. to represent to the Commission that if it will grant the application of Benson-Montin-Greer, it will immediately commence construction of a pipeline from El Paso Natural Gas Products Company's Apache Station into the Puerto Chiquita area, and that it can, if it is given an immediate starting date, complete said line prior to winter weather making construction impossible.

In conclusion, we believe that our evidence will show to the Commission that every aspect of this application should be granted. That it is necessary that such application be granted in order to insure orderly development, protect correlative rights and prevent waste in this Pool. We also believe that by the granting of such order, the entire San Juan Basin will be advantaged and exploration increased.

Respectfully submitted,

BENSON-MONTIN-GREER DRILLING CORP.

By _____

Albert R. Greer

R. L. BAYLESS

DAVIS 5-0673

P. O. BOX 1541

FARMINGTON, NEW MEXICO

July 29, 1963

New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Re: APPLICATION FOR 160-ACRE
SPACING, PUERTO CHIQUITO OIL
POOL, RIO ARRIBA COUNTY

Gentlemen:

I am advised that Benson-Montin-Greer Drilling Corp. has filed an application requesting 160-acre spacing for production from the Gallup Formation in the Puerto Chiquito Pool and surrounding area.

I have drilled and am the operator of the following described wells:

Township 27 North, Range 1 East, N.M.P.M.

Section 29: Betsy No. 1
Betsy No. 2
Betsy No. 3
Betsy No. 4
Betsy No. 5
Betsy No. 6

As you will notice, these wells have been drilled on approximately 80-acre spacing, and I voluntarily limited the development to this wide spacing, although regulations would have permitted me to drill a well on every 40 acres. However, from the information that I have obtained in producing these wells, and from other information obtained in other development in the area, I am now convinced that the Gallup Formation in this area should be developed on 160-acre spacing, by reason of the fact that one well will drain 160 acres, and the low per acre recovery of the Gallup Formation makes it economically imperative that it be produced on a wide pattern.

In addition to the above described wells, I have drilled and am the operator of the No. 1 Bernie, located on a 40-acre tract being the SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 6, Twp. 26N, Rge. 1E. This well was drilled on a 40-acre tract, having been the first well that I drilled in the entire area. Since then I have made arrangements to obtain the balance of the northeast quarter of said Section 6, in order that I can dedicate the entire quarter section to the well if the Commission enters a 160-acre spacing order.

Further, I am the operator of an undivided one half interest in the following wells, identified as E. L. Fundingsland

R. L. BAYLESS
DAVIS 5-0673
P. O. BOX 1541
FARMINGTON, NEW MEXICO

New Mexico Oil Conservation Commission

Page No. 2
July 29, 1963

No. 11 Jicarilla in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 21, Twp. 27N, Rge. 1E, and the E. L. Fundingsland No. 12 Jicarilla in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 28, Twp. 27N, Rge. 1E. The group which I represent is entitled to earn all of Sections 21, 22, 27 and 28 by drilling wells thereon. As such operator I am convinced that these lands should be developed on 160 acres per well.

As previously pointed out, the first group of wells described above have been developed on approximately 80 acre spacing. If the Commission enters a 160-acre spacing order, proper exception should be allowed so that such wells can be produced with a proper allowable for the area covered by them.

Yours very truly,



R. L. Bayless

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION TELEGRAM

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

LA115 DC202
D HSA525 PD=FAX HOUSTON TEX 12 218P CST= 1965 AUG 12 PM 2:46
NEW MEXICO OIL CONSERVATION COMMISSION=
SANZA FE NMEX=
ATTENTION MR. A. L. PORTER, JR. STANDARD OIL COMPANY
OF TEXAS, AN OPERATOR IN THE PUERTO CHIQUITO AREA,
RIO ARriba COUNTY, NEW MEXICO, HAS NO OBJECTION TO THE
APPLICATION OF BENSON-MONTIN-GREER DRILLING CORPORATION
FOR A TEMPORARY ORDER SPACING THE GALLUP FORMATION
UNDERLYING PORTIONS OF T-24, 25, 26 AND 27 N, R-1-E AND
R-1-W FOR 160 ACRE DRILLING AND SPACING UNITS=
STANDARD OIL COMPANY OF TEXAS C N SEGNA
CHIEF ENGINEER==
THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 480, Farmington, New Mexico
August 9, 1963

File: N-596-986.510.1

Subject: Case 2881
Regular Hearing Docket
For August 14, 1963

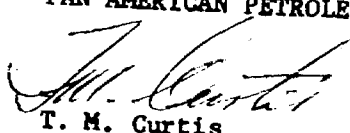
Mr. A. L. Porter, Jr.
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Sir:

Case 2881 on the Regular Hearing docket for August 14, 1963, is the application of Benson-Montin-Greer Drilling Corporation for 160-acre spacing in a six township area in Rio Arriba County, New Mexico. Pan American Petroleum Corporation, as a working interest owner in the area covered by this application, supports the adoption of the spacing rules as proposed by the application. We therefore urge that the Commission grant the application as stated by Benson-Montin-Greer Drilling Corporation.

Yours very truly,

PAN AMERICAN PETROLEUM CORPORATION


T. M. Curtis
District Superintendent

GWE:en

cc: Mr. Albert R. Greer
Benson-Montin-Greer Drilling Corporation
Farmington, New Mexico

VERITY, BURR, COOLEY & JONES

ATTORNEYS AND COUNSELORS AT LAW

SUITE 152 PETROLEUM CENTER BUILDING

FARMINGTON, NEW MEXICO

July 23, 1963

GEO. L. VERITY
JOEL B. BURR, JR.
WM. J. COOLEY
RAY B. JONES

TELEPHONE 325-1702

New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

In Re: Application of Benson-Montin-
Greer Drilling Corp., for
Temporary Spacing Order on
Puerto-Chiquito Pool and
extended area

Gentlemen:

Enclosed herewith is original and two copies of an application for temporary spacing order on the Puerto-Chiquito field and extended area. We believe that it would be advisable for this application to be heard by the Commission and request that it be set on the next Commission hearing. As you will observe, the application covers a very wide area and asks for 160 acre spacing for oil. Due to the wide area covered and therefore large number of producers involved and also the fact that this involves a wide spacing application, we believe it is advisable that it be heard by the entire Commission initially.

Very truly yours,

VERITY, BURR, COOLEY & JONES

By

Geo. L. Verity

GLV-gp
Encls.

DOCKET MAILED

7-31-63

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



P. O. BOX 871
SANTA FE

LAND COMMISSIONER
C. E. JOHNNY WALKER
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

September 10, 1963

Re: Case No. 2981
Order No. R-2565
Applicant:

Mr. George L. Verity,
Verity, Burr, Cooley & Jones
Attorneys at Law
Suite 152 Petroleum Center Building
Farmington, New Mexico

Benson-Montin-Greer Drilling Corp.

Dear Sir:

Enclosed herewith are two copies of the above-referenced
Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

12/

Carbon copy of order also sent to:

Hobbs OCC X

Artesia OCC

Antec OCC X

OTHER

All appearances made at the August 14, 1963 hearing.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

September 10, 1963

Mr. A. R. Kendrick
New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Dear Al:

In accordance with your letter of recent date, I am mailing a copy of Order No. R-2565 entered in Case No. 2881 to Mr. Bruce Miller, Intex Oil Company, P. O. Box 1411, Bakersfield, California.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

cc: Mr. Bruce Miller

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

September 10, 1963

C
O
P
Y

Mr. A. R. Kendrick
New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Dear Al:

In accordance with your letter of recent date, I am mailing a copy of Order No. R-2565 entered in Case No. 2881 to Mr. Bruce Miller, Intex Oil Company, P. O. Box 1411, Bakersfield, California.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/1r

cc: Mr. Bruce Miller

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

September 11, 1963

C
O
P
Y

Benson-Montin-Greer Drilling Corp.
158 Petroleum Center Building
Farmington, New Mexico

Attention: Mr. Albert R. Greer

Re: Case No. 2881
Order No. R-2565

Gentlemen:

Thank you for your letter of August 31, 1963.

We have today forwarded a copy of the above order to Intex Oil Company. As of this date we have not been contacted by Intex or any other party expressing dissatisfaction with the above case or order. We will advise you if any party does contact us within the 20 days in which an application for rehearing may be filed.

Very truly yours,

J. M. DURRETT, Jr.
Attorney

JMD/esr

BENSON-MONTIN-GREER DRILLING CORP.

GENERAL OFFICE:
1390 FIRST NATIONAL BLDG.
OKLAHOMA CITY 2, OKLAHOMA
PHONE CENTRAL 5-0546

158 PETROLEUM CENTER BUILDING
FARMINGTON, NEW MEXICO
PHONE DAVIS 5-8874

August 31, 1963

Mr. A. L. Porter, Jr.
New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Re: Case No. 2881

Dear Mr. Porter:

We have discussed with representatives of Intex Oil Company, Bakersfield, California, the fact that Intex's home office was not aware of our application under Case No. 2881. We attempted to contact all the working interest owners, and I believe we did contact all the working interest owners who appeared to be active in the area, prior to the hearing. The position of Intex and some of its partners is not as a working interest but as an overriding royalty interest owner. Even so, we did advise Intex's representative in Denver of the application, and that we would attempt to go over the matter with the Intex people in Bakersfield if we had time prior to the hearing.

As a matter of fact, Intex's position has not only been reduced to that of an overriding royalty owner, but it is our understanding that Intex and its partners had decided to drop all of their interests in the Puerto Chiquito area last spring, and it was only through our efforts and agreement to take over the Puerto Chiquito Unit that they decided to maintain their overriding royalty position. Of course, actually if Intex et al are interested in what is going on in New Mexico, they need only avail themselves of the official methods of notice and communication. We would not, however, deliberately avoid notifying them of our application.

Accordingly, we have made arrangements to meet with the Intex people in Bakersfield in September, to review our application and give them an opportunity to see the situation in the same light as we do. If they do not, of course, they will have the same right as any other party to ask for a re-hearing or a new hearing. At this point we are not concerned over the matter, but feel that they will likely accept the position we have taken as being a logical one.

We would like to be advised by your office if you have received word from any other parties who might have felt slighted in that we failed personally to contact them prior to the hearing.

Yours very truly,
BENSON-MONTIN-GREER DRILLING CORP.

BY: Albert J. Greer

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. B. JOHNNY WALKER
MEMBER

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO
August 27, 1963

case file

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

Mr. A. L. Porter, Jr.
Oil Conservation Commission
Box 871
Santa Fe, New Mexico

Re: Case No. 2881, Benson-Montin-Greer
for 160-acre oil spacing in Rio Arriba
County

Dear Mr. Porter:

Mr. Bruce Miller of the Intex Oil Company phoned yesterday relative to subject case. He said that they were not notified of the hearing, that they are an operator in the area, and that they would like to enter an objection to the application.

I advised him of the legal notice procedure and of the provisions of Rule 1222, Rehearings. He requested that a copy of the order be sent to them as soon as possible. I do not find a copy of the order here.

Please send a copy of the order to:

Intex Oil Company
P.O. Box 1411
Bakersfield, California
Attn: Mr. Bruce Miller

Yours very truly

A. R. Kendrick
A. R. Kendrick
Engineer, District #3

ARK:ks



STANDARD OIL COMPANY OF TEXAS

1963 NOV 4 AM 9:01

Drawer "S"
Monahans, Texas
October 22, 1963

Case 2881

FEDERAL 17-32 WELL NO. 1
SECTION 32, T-25N, R-1E
PUERTO CHIQUITO-GALLUP POOL
Rio Arriba County, New Mexico

New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Gentlemen:

Submitted herewith are Forms C-128 (Plats), C-116 (Productivity Test), C-127 (Request for Allowable Change) and notification letter of well name and location. The Standard Oil Company of Texas, A Division of California Oil Company, respectfully requests that an allowable increase be assigned to the subject well on the basis of the attached productivity test and one hundred and sixty (160) acre dedication to the well.

Yours very truly,

S. J. Mathews, Jr.
S. J. Mathews, Jr. *SAK*
District Superintendent

GBV:jd

Attachments



STANDARD OIL COMPANY OF TEXAS

1963 NOV 4 AM 9:01

Drawer "S"
Monahans, Texas
October 22, 1963

NOTIFICATION LETTER
WELL NAME AND LOCATION
FEDERAL 17-32 WELL NO. 1

New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Gentlemen:

The Standard Oil Company of Texas, A Division of California
Oil Company hereby submits notification of the name and
location of the Federal 17-32 No. 1 well for which an increase
in allowable is being requested.

WELL NAME: Federal 17-32 No. 1

WELL LOCATION: 660' FSL, 1650' FWL; Unit N; Section 32;
T-25N, R-1E; Puerto Chiquito-Gallup Pool;
Rio Arriba County, New Mexico.

Very truly yours,

S. J. Mathews, Jr.
S. J. Mathews, Jr.
District Superintendent

CBV:jd



GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
C. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

July 8, 1964

Mr. Jack Cooley
Burr & Cooley
Attorneys at Law
152 Petroleum Center Building
Farmington, New Mexico

Re: Case No. 2881
Order No. R-2565-A
Applicant:
Benson-Montin-Greer

Dear Sir:

Enclosed herewith are two copies of the above-referenced
Commission order recently entered in the subject case.

Very truly yours,

A handwritten signature in cursive script, reading "A. L. Porter, Jr.", is written over the typed name.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC X

Artesia OCC

Antec OCC X

OTHER

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CASE No. 2881
Order No. R-2563-A

IN THE MATTER OF THE APPLICATION OF
BENSON-MONTIN-GREER DRILLING CORPORA-
TION FOR 160-ACRE SPACING, RIO ARriba
COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE COMMISSION:

It appearing to the Commission that due to clerical error
and inadvertence, Order No. R-2565, dated September 9, 1963, does
not correctly state the intended order of the Commission,

IT IS THEREFORE ORDERED:

(1) That the following-described non-standard units are
hereby stricken from Order No. R-2565:

TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM

Section 5:	E/2 NW/4	80.00 acres
Section 5:	W/2 NW/4	80.00 acres

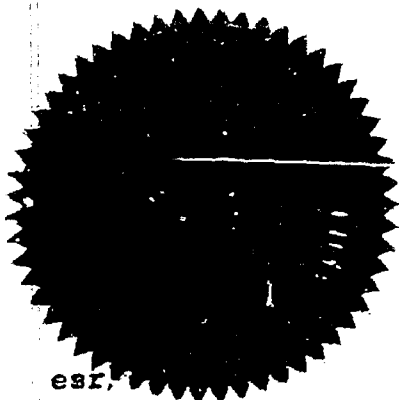
(2) That the following-described non-standard units are
hereby interlineated in lieu of the above-described non-standard
units:

TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM

Section 5:	N/2 NW/4	80 acres
Section 5:	S/2 NW/4	80 acres

(3) That this order shall be effective nunc pro tunc as of
September 9, 1963.

DONE at Santa Fe, New Mexico, on this 8th day of July,
1964.



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 14, 1963

REGULAR HEARING

IN THE MATTER OF:

Application of Benson-Montin-Greer
Drilling Corporation for 160-acre spacing,
Rio Arriba County, New Mexico. Applicant,
in the above-styled cause, seeks tempor-
ary 160-acre spacing for a period of three
years for oil wells completed in the
Gallup formation underlying Townships 25,
26 and 27 North, Ranges 1 East and 1 West,
Rio Arriba County, New Mexico, and for
authority to conduct interference tests
and to transfer allowables during said
temporary period.

Case No. 2881

BEFORE: Honorable Jack M. Campbell, Governor
E. S. (Johnnie) Walker, Land Commissioner
A. L. (Pete) Porter, Secretary-Director

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

SANTA FE, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY, MEIER, WILKINS and CROWNOVER

General Court Reporting Service

Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

I N D E X

WITNESS

PAGE

ALBERT R. GREER

Direct Examination by Mr. Verity 15

Cross Examination by Mr. Nutter 86

Cross Examination by Mr. Arnold 106

Cross Examination by Mr. Utz 107

Redirect Examination by Mr. Verity 108

ROBERT D. LATI MORE

Direct Examination by Mr. Verity 110

Cross Examination by Mr. Durrett 115

Cross Examination by Mr. Nutter 116

JOHN MASON

Direct Examination by Mr. Spann 117

EXHIBITS

NUMBER

MARKED FOR
IDENTIFICATION

RECEIVED IN
EVIDENCE

Applicant's Exhibit No. 1 16 86

Applicant's Exhibit No. 2 112 116

Applicant's Exhibit No. 3 113 116



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

MR. PORTER: We will proceed to Case 2881.

MR. DURRETT: Application of Benson-Montin-Greer Drilling Corporation for 160-acre spacing, Rio Arriba County, New Mexico.

MR. PORTER: I would like to call for appearances.

MR. VERITY: George L. Verity and Jack Cooley of Verity, Burr, Cooley and Jones, for the Applicant.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, appearing for R. L. Bayless.

MR. SELINGER: George W. Selinger, representing Skelly Oil Company and concurring in the application.

MR. BRATTON: Howard Bratton and John Knodell, Humble Oil and Refining.

MR. SPANN: Charles Spann, Grantham, Spann, and Sanchez, appearing for El Paso Natural Gas Products Company.

MR. PORTER: Mr. Verity.

MR. VERITY: May it please the Commission, Benson-Montin-Greer Drilling Corporation in this application not only represents itself but Albert R. Greer, William V. Montin, William Harbert, Jack London, Jr., Stanley J. Stanley, Cliff Shervee, Tom Polack, Virgil L. Crooks, Richard Bradlette, Greer Polack, Inc., Montin Harbert Pipe Line Company.

If it please the Commission, I have a statement with regard to this matter that I would like to make. It's in some detail, but I feel that under the circumstances of this case, it



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SALT LAKE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6611

PAGE 3

is required and indicated.

Benson-Montin-Greer is acutely conscious of the fact that this application is unusual. In the first place, we acknowledge that we are requiring and asking the Commission to grant 160-acre spacing on production above 10,000 feet. We acknowledge that the Commission initially spaced an area of seven townships and that we're asking for a three-year temporary spacing order.

The stature and position of this Commission is known and recognized throughout the Oil Interstate Compact Commission and its subscribing states. Its reputation for protecting and conserving the oil and gas resources of the State is well known, but the situation is such in the oil industry today that development in the industry requires that the Commission stay abreast of new techniques and new-found knowledge with regard to drainage and production of oil pools; and that its orders keep abreast of these things.

We should like for this Commission to be aware of the fact that, although we acknowledge that these orders may be unusual in New Mexico, we do not think that the application we have filed and the order we have requested is in any wise unusual in the industry elsewhere.

For the past several years, the State Commissions out of New Mexico, and especially those in the river states, have realized the necessity of making initial spacing orders extend to the extremity of prospective producing areas. They have also



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

recognized that the industry has improved its techniques and have learned along with the industry that the new techniques increase the rate of production; and that given sufficient time, even low-grade reservoirs will drain much larger areas than ever before known possible, thus making it possible for the industry to develop an area such as the San Juan Basin. If the conservation law of the State cannot accommodate itself to the newly discovered techniques and knowledge of the industry so that low-grade reservoirs can be economically developed on wide spacing, then such newly-found knowledge and newly discovered techniques are of no avail, because such low-grade reservoirs are beyond the opportunity of development.

Thus, we trust that by reason of these facts this Commission will not prejudge the case that is here before it today, but that it will acknowledge the necessity in the industry to consider the facts with regard to the ability of one well to drain 160 acres in light of the current techniques and knowledge in the industry concerning such points.

With regard to the third point that we acknowledge is somewhat unusual in New Mexico, we believe that we will present to this Commission compelling and convincing evidence that three years is needed in this preliminary order in order that we can come back and definitely prove to the Commission that we will have 160 acres efficiently drained.

The development of oil pools on wide spacing in Canada



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

has already taken oil investment and exploratory dollars from New Mexico, and it can be shown to this Commission today, if you desire, that it has taken dollars. If we are to keep these dollars in Northwestern New Mexico, it is absolutely imperative that the Commission recognize the necessity of wide spacing in order that the low-grade reservoirs that we have largely up there can be developed. If they can develop these reservoirs, then we feel that the economic doldrums that our Northwestern New Mexico is now going through can be alleviated and we believe that once again we will have more rigs in the area. This depression is made apparent every time a newspaper prints a story about the number of rigs in the area. As you may have observed, I have written up this statement which I'm going to give to you afterwards. At the time this was printed on Monday, the last release was 37 drilling rigs in the Basin as compared to 100 a few years ago. Monday afternoon of this week the paper carried a story from the Scout Report and they learned there are now only 31 rigs in the Basin. This situation has to be alleviated if the prosperity that has been known in Northwestern New Mexico is to continue.

The problem that we are facing is that the oil explorer cannot expect to find another Hobbs Pool, or is not likely to do so in the Northwest area. Instead, we are looking at Gallup reservoirs and these reservoirs are going to give us on the average considerably less than 1,000 barrels per acre. This



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1162

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 6

cannot be developed on narrow spacing.

When the applicant discovered the Cha Cha-Gallup Pool in 1959, it was developed initially under the State-wide 40-acre spacing order. By September of 1960, this same applicant, Benson, Montin and Greer, filed with this Commission a request that it be spaced temporarily for one year on 80 acres, and that temporary application was granted. A year later, or approximately a year later, in October of 1961, that order was made permanent on the 80 acres. The balance of the pool -- and eventually the order was made to extend to the entire Cha Cha-Gallup Pool, the northwest area of the pool was voluntarily developed on 160 acres, irrespective of the 80-acre order and irrespective of the fact that at the southeast part of the same common source of supply the area was developed on 80 acres.

We know now that the entire pool should have been developed on 160 and that there are many, many barrels of oil in the ground in the southeast area because it was developed on 80 acres instead of developed on 160 acres. I'm sure that this Commission will recall its order endeavoring to stop the flaring of gas in the Cha Cha-Gallup Pool and how the industry repeatedly made request that it have further extensions of the effect of the non-flare order. The fact that these extensions were required and continuously requested is directly related to the fact that the southeast was spaced on 80 acres, and we believe that in our evidence we will show this fact and show you if at that time we



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

could have come to this Commission and asked for a 160-acre spacing order to extend to what was then believed to be the limits of the pool, that we would have saved thousands and thousands of barrels of oil in New Mexico and that we could have obviated the necessity of flaring hundreds of thousands of dollars.

The Verde-Gallup Pool, which was a fractured shale and is very similar to the pool here for consideration before the Commission today, was discovered a scant seven years ago. Yet, we find that today it is practically depleted. It was developed under a 40-acre order, although some of the producers voluntarily developed on 80 and some on 160. Needless to say, the Verde-Gallup Pool as a whole was an unprofitable and a marginal venture.

It was only four years ago that the Cha Cha-Gallup Pool that I referred to -- five years ago, when it was initially discovered, yet today the southeast portion, which was developed on 80 acres, has already been depleted so far as primary oil is concerned.

We are informed that the recent application before this Commission with regard to the Boulder Gallup Pool, which is somewhat to the north of this, asked for 80-acre spacing and that the proof presented to the Commission in that application was to the effect that, taken to depletion, a well on 80 acres could only be expected to produce 110 percent of the amount of money it cost to develop, complete, and operate. This Commission is



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3371

ALBUQUERQUE, N. M.
PHONE 243-1691

PAGE 8

certainly aware of the fact that an area cannot be developed on 110 percent recovery.

The facts and evidence that will be presented to the Commission today with regard to the Puerto Chiquito Pool are somewhat similar with regard to recoveries to those presented to the Commission on the Boulder Pool. But we are certainly not going to form a part of the conspiracy of ignorance that resulted in the tragedy of the Cha Cha-Gallup and ask this Commission to promulgate an 80-acre order. To the contrary, we are asking that this Commission promulgate a 160-acre order and that it extend to the entirety of the pool that that development can proceed and so that the tragedy of Cha Cha-Gallup can be averted by our more enlightened position.

We readily acknowledge, and would not otherwise imply, this Commission was not responsible in any way for Cha Cha-Gallup, because you granted the widest spacing order that was requested at that time. But what we earnestly hope and sincerely believe is that this Commission will consider our evidence and realize that now we know that a Gallup Pool in the San Juan Basin can be drained efficiently and that it is absolutely imperative to the economy of the Basin and to the development of this and other pools that we go to 160 acres and protect the producers so that they can develop the area.

With the exception of the applicant and Humble Oil and Refining Company, I believe that all, or at least practically



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243 6691

all companies and producers in this general area of the eastern edge of the Basin have farmed out their acreage. They have not believed that it is possible under present concepts to profitably produce the area. Irrespective of this fact, Benson, Montin, and Greer and the group of associates that we are representing here today have within the last twelve months spent a million dollars in developing this area. They have done this realizing possibly that there has only been 80-acre spacing theretofore in the Basin, but they have done it with the conviction and the faith that the newly-found techniques in the industry and the new knowledge that one well will drain an area far wider than ever before believed, and the demonstration in the Basin that one well will drain in excess of 160 makes this a venture that they can go into and makes it possible for them to develop this area and spend this money when otherwise they could not.

We have faith to believe that this Commission will accommodate itself to these facts and to these developments and that they will see the wisdom of granting the order here requested.

This brings us to the place where we hope that the Commission will be able to see the necessity of making the order effective over the entire prospective area and promulgate a temporary order for three years. As just observed, the application of Standard of Texas for 80 acres on the Boulder Pool to the north, in their own proof they showed they could not profitably produce it, but their problem was that they were hung up on the



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

petard that the pool was already developed on 80 acres and this was all they could ask for. We don't want to repeat that error and have to come back again to the Commission at a later date and ask for an order when it's already been developed on 80 acres. At that time the application is of no consequence and the proof that it can drain 160 acres is of no avail; it just makes so much record. We need to space the entire area before the wells are drilled.

Our evidence today will show to the Commission that on the average, a recovery of only 500 barrels per acre can be anticipated from the Puerto Chiquito Pool and that one well will drain an area in excess of 160 acres. Our method of proof today will be of exactly the same nature as that which proved reliable with regard to anticipating and predicting drainage in the Cha Cha-Gallup Pool.

Our initial application here is made early in the life of the pool, as was the Cha Cha-Gallup application, and must be based upon the limited preliminary information available at such point of development, and for this reason, we only make application for temporary seaming; but if we wait to make the application until all facts have been conclusively developed, then any order of the Commission would be too late to serve a useful purpose and the only thing that can be proved is what ought to have been done. This Commission is fully aware of the fact that if it grants this application based upon the limited information now



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 11

available, and later development under temporary order should prove that the Pool should be developed on closer spacing, then the temporary order can be amended at that time and nothing will have been lost and no oil will have been wasted, for it is always a simple matter to drill additional wells; while, of course, it is impossible to undrill wells that were unnecessary in the first place.

Applicant is aware of the fact that a few wells in the area have been drilled closer than 160-acre spacing. Considerable thought has been given to this fact and negotiations with the affected owners have resulted in a solution of all the problems that have arisen from it. Now these problems have been resolved will be developed.

At the present time, all oil being produced in the Puerto Chiquito Pool is being trucked to the pipeline at a cost of from 60 to 80 cents a barrel. This is partly due to the fact that the pipeline companies or any party that might be interested in building a pipeline is aware of the fact that we may be facing 80-acre spacing, but I'm today authorized and my client is authorized to represent to this Commission in behalf of Elaves Pipeline Company that if this Commission consents to grant this 160-acre spacing application, it can immediately, and as soon as the Commission can permit it to do so, can start construction of a pipeline into the Puerto Chiquito area.

In conclusion, we believe that our evidence will show



to the Commission that every aspect of this application should be granted; that it is necessary that such application be granted in order to insure orderly development, to protect the correlative rights of the parties, and to prevent waste in the Pool. In addition to this, we believe that the granting of this order will aid and assist the entire San Juan Basin, and that it will be to the advantage and that further exploration and development in the area will take place because this order has been granted.

MR. SELINGER: I would like to make a few general remarks.

MR. PORTER: Did you say gentle or general?

MR. SELINGER: Not gentle, general. At the outset, if the Commission please, when I made my appearance I indicated our concurrence in this application. I am not sure whether all of the members of the Commission, but I know two have at various times heard me praise two states loud and clear before the Interstate Oil Compact Commission. Those two states were North Dakota and New Mexico.

The reason for my praise for those two states over all regulatory agencies was the fact that you have established unit allowables. These unit allowables enable you to allow yourself the wisdom of establishing many years back what I call elbow room for development purposes in allowables. That is, you permit yourselves to have enough allowable to enable your oil wells to live.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6601

SANTA FE, N. M.
PHONE 983-3171

FARMINGTON, N. M.
PHONE 325-1182



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

Now this State is as close to my heart as my own home State of Oklahoma. I pass on to you the ordeal by fire and the agony that these other states went through to reach the dilemma that they're in at this time, and I am particularly referring to Texas, Oklahoma, and Kansas, where true. Under the circumstances of the last thirty years they probably had no choice, but could have avoided a great deal of their problems today of the drilling of so many wells in which they lack elbow room for allowable purposes; and they are suffering now because of that.

This State some time back, back in the 30's, exercised wisdom and statesmanship in allowing yourself this elbow room and becoming cognizant, as North Dakota did, of the advantages of wide spacing. It's a step in the right direction. The granting of this application is a step of continued wisdom and statesmanship in which so many other states fail.

Mr. Verity indicated the Provinces of Canada having wide spacing. The area west of the fifth meridian is on 160, and east of the fifth meridian on shallow stuff, it's on 80 acres. But he failed to tell you also that North Dakota, 90 percent of the fields in North Dakota are on spacing of 80 acres, 160, and 320; and in one case 640. My own home State of Oklahoma, the Commission is prohibited by statute from establishing greater than 80 acres above a depth of 9990. Yet the exigencies of the economics of the industry demand wider spacing, so now we have a hundred instances in Oklahoma where they have gone out and



DEARNLEY-MEIER REPORTING SERVICE, Inc.
 FARMINGTON, N. M.
 PHONE 325-1182
 SANTA FE, N. M.
 PHONE 983-3971
 ALBUQUERQUE, N. M.
 PHONE 243-6691

voluntarily secured 160 acres and gotten the increased allowable, even despite the fact that the legislature of my own state is still far behind the wisdom of other states.

This reservoir is a tilting reservoir, and I would like to urge you to enable the same equal allowables for all wells from this common reservoir, to prevent drainage. That is, it tilts from 1,000 feet on down. We handled this same problem in two other states, of a tilting reservoir. In one state, particularly, where we have 72 percent of the production, it tilts from 2200 feet down to a depth of 7200 feet, but we maintain the same allowables in order to protect the operators and prevent drainage due to the fact of irregular rates of withdrawal. We enable them to have the same rates of withdrawal.

So as I say, gentlemen, the granting of this application on 160 acres is a step for the continuation of the wisdom shown by this Commission and its predecessors. To my way of thinking, to be able to point a finger of pride at a healthy and vigorous industry is probably the highest tribute that can be made to a public official. I would say that the granting of this application, if you do you'll never regret it.

MR. VERITY: We would like to call Mr. Albert R. Greer.

MR. FORTHE: Mr. Greer, would you come forward and be sworn, please? Before you swear this witness, is there anyone else going to present testimony? Mr. Kellahan?

MR. KELLAHAN: No, we will have no testimony.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 883-3871

FARMINGTON, N. M.
PHONE 325-1182

PAGE 15

MR. PORTER: Mr. Verity, you will have more witnesses?

MR. VERITY: We will.

MR. SPANN: We would like to submit a statement in behalf of El Paso and submit Mr. Mason for examination by the Staff.

MR. PORTER: You will present your witness at the end of the case?

MR. SPANN: Well, it will be in statement form, but it will be under oath and it will be subject to cross examination.

MR. BRATTON: Humble may present one witness, your Honor.

MR. PORTER: Thank you, your Honor.

MR. DURRETT: If the Commission please, in the interest of conserving as much time as possible, if all parties would have their witnesses stand, I could swear them in at one time.

MR. PORTER: Mr. Bratton, would you like to have your witness sworn, too?

MR. BRATTON: Yes.

(Witnesses sworn.)

ALBERT R. CREER

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. VERITY:

Q State your name, please.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6651

SANTA FE, N. M.
PHONE 983-3871

FARMINGTON, N. M.
PHONE 325-1182

A Albert R. Greer.

Q Mr. Greer, what is your educational background?

A I've a Bachelor of Science degree in Petroleum Engineering from New Mexico School of Mines.

Q You have testified before this Commission on numerous occasions as an expert Petroleum Engineer?

A Yes, sir, I have.

Q Mr. Greer, are you familiar with the Puerto Chiquito Pool and area and the east side of the San Juan Basin, particularly with regard to the Mancos interval?

A Yes, sir, I am.

Q Have you made a study of this particular area?

A Yes, sir. I made a detailed study of this area the last six months.

MR. VERITY: I will ask the reporter to mark Exhibit No. 1.

(Whereupon, Applicant's Exhibit No. 1 marked for identification.)

Q Mr. Greer, are you also familiar with the Basin generally and particularly all other Gallup pools that are known in the San Juan Basin?

A Yes, sir, I am generally familiar with the Gallup pools.

Q Have you made a special study of the Verde and Cha Cha Gallup Pools?

A Yes, I made a study of those two pools.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

Q We direct your attention now to the Exhibit 1 that the reporter has marked. Does this include all of the exhibits that you have prepared to introduce today? This booklet that we've marked Exhibit 1, does it include all of your exhibits?

A May I ask something off the record?

(Whereupon, a discussion off the record was held.)

A Yes, these are all the exhibits I'll testify to.

Q I believe you said with the exception of some pictures?

A Yes, sir.

Q These have been indexed A through R, I believe, is that correct?

A That is correct, and there's one other exhibit attached to the very back of the booklet which is not identified otherwise.

Q It will be referred to in your testimony with particularity at the correct time?

A Yes, sir.

Q Directing your attention now to Exhibit A, or Part A of Exhibit 1, and hereafter let's just refer to it as A, B, or whatever it is -- directing your attention to Exhibit A, will you please tell us what it is?

A Exhibit A is simply an area map of the major part of the San Juan Basin in New Mexico, showing the Gallup pools, the outline of these pools as now designated by the Oil Conservation Commission. On the right hand side of the map, or the east side of the Basin, the area enclosed by the little dashed lines shows



the area of our application in this case.

I would like to point out at this time the rather large distance from the main area of Gallup development to the east side of the Basin to this particular area that we're considering today.

Q Turning now to Exhibits B, C, and D, will you make reference to each of those exhibits and explain to us in turn what they are and how they relate to one another?

A Exhibit B is a copy of an application of Benson-Montin made about ten years ago before this Commission, asking for temporary order covering a large area. We refer to it here today because this Commission has in the past granted an order quite similar to what we're asking today; namely, to cover a temporary order covering a large area in which there are only a few wells completed at this time. I believe at the time of this application, the one in Exhibit B, we asked for an area of approximately 20,000 acres, and at that time we had completed only five or six wells within that large area.

We feel it's important to show that the Commission has in the past done exactly what we're asking for in this respect.

MR. PORTER: What pool was that, Mr. Greer?

A That was Gallegos Canyon-Pictured Cliffs, later on included in the Fulcher Ruiz Pool.

Q (By Mr. Verity) I believe you referred to the exhibit as an application. It is actually the order granted on your



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3171

ALBUQUERQUE, N. M.
PHONE 243-6691

application?

A That is right.

Q Then C?

A C is the Order of the Commission after our hearing for a permanent order on this same matter, and we wish to point out at this time that although the Commission denied the application for the permanent order on this wide spacing, which in this instance was 320 acres for Pictured Cliffs, the reason given is on page 2 of the order, Item No. 6, that the development on two different spacing patterns within one common source of supply would not be in the best interest of conservation and might impair correlative rights. It was not because we had failed to demonstrate that the wells would drain a wide area.

We did prove that they would drain wide areas. As a matter of fact, in this instance we had interference tests up to approximately 2,000 acres per well. The point we wish to make here is that we don't want to get caught in the same situation in this area and have two different parts of the same common source of supply developed on two different spacing patterns.

Q Actually, Mr. Greer, it could be said then that even though you had a wide area covered by your application, it was not wide enough because it did not encompass all of what was the common source of supply?

A That is true. Exhibit D shows a little bit more of the general area as a map; and this map, Exhibit D, covers the area



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 20

of the application. There's nothing shown on the map outside the area of the application. Colored in solid pink on this map is the outline of the Puerto Chiquito Pool as presently designated by the Commission. There are some little blue circles which indicate wells which are now in a producing status. There are little red circles which indicate wells that are in a status of drilling or completion.

The area in the red outline is the area of one unit, the Canada Ojitos Unit; and another unit, Puerto Chiquito Unit, is outlined in green. On the right-hand side of the map are two wavy-looking colored areas, one colored green and the other tan. This area is the area which we believe limits, or is the limit of possible production to the east. We'll go into more detail on that later as to how we arrived at that.

We feel that there will or can be no commercial production east of the little line or the area marked in green. For simplicity, we asked that the spacing order cover the entire area up to the township lines east of this, rather than attempt to define that irregular boundary.

I would like to point out at this time that we have definitely established production throughout this entire area. Wells are somewhat scattered, but with the exception of one township there's activity in all the townships. For instance, if we look at the north at the top of the map, some two miles and three miles north of the presently defined pool boundary are wells being



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

drilled. To the west in Township 26 North, Range 1 West, is a well in which casing has just been set. It's identified by the red circle in Section 9. It is indicated to be productive.

In the township to the south, 25 North, Range 1 West, we show one well in a producing status as of the time of this map, August 1st, when it was prepared. As of the day before yesterday we completed the offset well, and by offset I am talking now about nearly a mile to the east of this, the well in Section 13 has, after recovering load oil indicates a productivity of something in excess of 300 barrels a day. To the east of this well in the next section is another one on which we will probably give a frac treatment in the next two or three days.

Then in Township 25 North, Range 1 East, a little dot colored in yellow in Section 20 is a well which has been abandoned and which in our opinion might be productive; in fact, probably will be productive in this same zone.

It seems to us that we should not establish separate pools for each of these little discoveries when they really are one common source of supply and in time will be joined. Therefore, we ask for the application to cover this wide area.

Q Mr. Greer, before you pass from this exhibit, what is the depth variation from the eastern extremity of the pool to the western extremity -- or first tell us, what is the strike of the pool?

A The strike is north-south which we'll show in more



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6601

detail a little later.

Q Does it generally conform to the tan and green lines indicated on here?

A It does.

Q Does it dip away from those lines in one direction or the other?

A It dips down to the west.

Q What is the rate of this dip?

A The rate of dip varies from a few hundred feet per mile to as much as 2,000 feet per mile. It's rather a steep dip.

Q What is the depth on the east edge of the pool?

A Some of the shallowest wells are producing from a depth of about 1500 feet, and the deepest wells on the west edge of the pool from which we now have established production are about 6,000 feet; and the one well in 26 North, Range 1 West, will be between seven and eight thousand feet.

Q If you set the well over there in Township 26 North, Range 1 West, in a different pool from what is presently the Puerto Chiquito Pool -- 26 North, 1 East, and 27 North, 1 East, would they have the same allowable?

A Not if they're designated as to different pools, they would be given different allowables.

Q Have you requested in your application here that they be given the same allowable?

A That is one of the main points of our application, that



DEARNLEY-MEIER REPORTING SERVICE, Inc.
 FARMINGTON, N. M.
 PHONE 325-1182
 SANTA FE, N. M.
 PHONE 983-3971
 ALBUQUERQUE, N. M.
 PHONE 243-6691

the entire area be given one allowable.

Q Turning now to Exhibit E if you will, please, will you tell us what that is and explain it to us?

A Exhibit E is a contour map picked on the top of what we call Zone A in our own company, a point in the Mancos formation in the Niobrara part of the Mancos; and it shows in detail the steep of the beds in this area. The contour interval on the right is up as high as 6,000 feet on the east side of the area, and we have contoured down to about plus 1,000 feet on the west side of the area, a difference of approximately 5,000 feet in space of five or six miles.

MR. PORTER: Mr. Greer, I would like to ask you a question at this point. It has nothing to do with this part of the testimony, but how many pools have been established in this area?

A It's my understanding there's only one pool, the Puerto Chiquito Pool, and there has been no other pools established.

MR. PORTER: The Commission's records will reflect. I was just taking a shortcut. Thank you.

Q (By Mr. Verity) Are you familiar with the Boulder Pool to the north of the Puerto Chiquito area?

A Yes, I am.

Q Do you think it's separated from this production?

A I believe that there is probably a fault between this area and the Boulder Pool. That fault is shown in the north part



of Township 27 North, Range 1 West. Also the southernmost well in the Boulder Pool is one of the poorest wells. The zone appears to be deteriorating somewhat to the south. The southeastern well in the Boulder Pool turned out to be a gas well and it is at a lower depth and we're producing oil at this point. It seems reasonable at this time to believe there could be a separation between this area and the Boulder Pool.

GOVERNOR CAMPBELL: May I ask a question on that exhibit?

MR. VERITY: Sure.

GOVERNOR CAMPBELL: What is the spacing presently prescribed for the Boulder Pool?

A I believe it's 40 acres, and it's my understanding that an application was made and heard at an Examiner Hearing in July, requesting 80 acres. It's been developed voluntarily, I understand, on 80 acres, although the order is 40, State-wide order. I don't believe the Commission has acted yet on that application.

Q (By Mr. Verity) Directing your attention now to Exhibit F, will you please tell us what it is and explain it to us?

A Under Section F we have several different parts, all of which deal with continuity of the reservoirs. We have done quite a bit of work as to the continuity, and I would like to point out first the cross section at the first part of this exhibit. The location of the cross section is shown on the title

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARRINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6671

PAGE 25

map on the right-hand side, and its relation to the Puerto Chiquito Pool as now defined; and is colored in brown in this plat. The two units are identified, the heavy dashed line shows the locus of the cross section starting from the northeast part and extending generally to the south.

I would like to point out the correlation of these electric logs throughout this cross section. If you'll look, for instance, at the part colored in yellow at the top, starting at the right-hand side, we can see that the character of these logs are quite similar. The furthest well on the left, which is the last well to the south, shows the zone beginning to deteriorate. If we look at the green zone, the center one, we can see that those logs are quite similar throughout the length of the cross section and it deteriorates a little to the south well, but not as much as the other.

Again, the zone colored in brown is quite easily correlated throughout the area. Now this section of the reservoir is a part of the Mancos which is within the Niobrara member and there's no question that it occurs throughout this area, that there is continuity of formation all the way through this cross section.

Q Mr. Greer, if you had picked out any other logs in this area, would they correlate much the same as these have?

A Yes, sir. We have correlated, practically all the logs which were good representative logs had good character and they



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325.1182

SANTA FE, N. M.
PHONE 983.3971

ALBUQUERQUE, N. M.
PHONE 243.6691

PAGE 26

all correlate.

Q Why did you use these to place in this exhibit instead of taking others.

A All of the logs in this cross section are from wells which were drilled under our operation and supervision, and I'm quite familiar with the wells and the manner in which the logs were taken and I know that they show the character of the wells.

Q Does this cross section go from the northeast corner of the area across the area to the deep side and back to the shallow in the southeast?

A That is correct, and the reason that we selected the diagonal shape of the cross section, so that we could proceed from the shallow area to the deep; and I should point out at this time that this correlation is made with the points, the same points of the log on each well at approximately the same place on the page in order here to correlate them. The depth of the wells varies about 5,000 feet across the cross section.

Q Would you say that this is an unusually plain degree of correlation?

A I would say it was unusually plain. We have, or would expect to find wells not more than 40 acres apart that would have a greater variation in continuity of zone than what we find here over some 15 or 20 miles.

Q At the time that you testified in the Cha Cha-Gallup seeping application, were questions asked you then by the



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 803-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Commission with regard to correlation of the logs that you had in the relatively small area before the Commission, and the one or two wells that were then developed or drilled at the northwest edge of what is now the Cha Cha-Gallup Pool?

A Yes, sir, they were. There was a space of several miles between the two different areas, and at that time it was my opinion they would later on be proven to connect by the drilling of wells, and this did happen.

Q In contradistinction to that, was the Totah-Gallup Pool then somewhat developed at a closer point?

A That is true; it was.

Q Was there a correlation between the logs in the Cha Cha and the Totah?

A It was my opinion at that time that those two pools would not connect.

Q And this was largely from correlation of logs?

A That is true.

Q So this information proves reliable, then, in similar circumstances?

A That is correct. The Totah and Cha Cha did not connect as we believed at the time that we asked for our order.

Q There is another part, I believe, to Exhibit F?

A The rest of the sections of Exhibit F have to do now with the fact that we have established, that some of the wells as much as ten miles apart have reservoir pressures which are



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3571

ALBUQUERQUE, N. M.
PHONE 243-6691

equalized. Now when we have the continuity as shown in the previous cross section, plus the fact that the pressures are equalized, this leads us to the definite conclusion that the area is one common source of supply.

We have arrived at that through a study of that, through a study of these several exhibits, the first of which is the bottom hole pressure build-up curve on the Bolack No. 2, Section 13, Township 25 North, 1 West; that's the second well from the bottom on the cross section. We will compare that well now with the third well from the north on the cross section, that's the Benson-Montin-Greer P-19. We have information on those two wells which establish that the pressures are equalized in the reservoir between those two.

Q How far are those wells apart?

A They're approximately ten miles apart.

Q What is the relative depth of those two wells?

A One is about 2500 feet and the other is about 6,000.

The bottom hole pressure curve on Bolack No. 2, the first graph after the cross section shows how the pressure built up while the well was shut in, and leveled off at approximately 1635 pounds. This was at a datum now of plus 1195 feet above sea level. That was at a depth in the well of about 5900 feet. The next --

Q Was that a rather rapid buildup?

A Yes, sir, it was rather rapid, and the reason I believe is because we had produced very little oil from this well. We



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

wanted to get a pressure early in the life of the pool, and we had withdrawn very little oil and so it build up rather rapidly.

The next exhibit, a graph or a schedule showing bottom hole pressure buildup tests on the No. N-20 Jicarilla; this is the bottom hole pressures which we took in November, 1962, on the shallow well to the north. The next graph shows a plot of these pressures. It's identified as "Bottom Hole Pressure Buildup, Benson-Montin-Greer N-20 Jicarilla." I would like to point out one of the problems we encountered in obtaining reservoir data in a shallow oil pool was low pressure.

The well was shut in November 10th, as shown on the left-hand side of the graph. We had bad weather for a couple of days before we could get in to pull the tubing on the rods in order to run the pump, and at the point marked "A" on the exhibit is when we pulled the rods and the standing valve; and the oil in the tubing then went into the annulus in the casing and the first pressure then reflected merely the amount of oil in the hole that dumped out of the tubing. Then for the next three days the pressures decreased from point "B" to point "C". Again we had bad weather and couldn't get into the well until we were ready to frac it at the end of November, at which time we took another point.

Now this, of course, is not as reliable data as we would like to have to determine reservoir pressure, but it is certainly one indication, and I concluded from this information that



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

the pressure around the N-20, the reservoir pressure in November, 1962, was on the order of 395 pounds.

The next exhibit then is a schedule showing reservoir pressures taken on the Jicarilla i-19. This is a well one-half mile west of the one we were just looking at. This well was fracked, whereas the N-20 had not been fracked as of the time that we measured the pressures on it. We therefore had a more rapid buildup of pressure and equalization. We took this bottom hole pressure test on the P-19 at a time shortly after the frac and when very little oil had been withdrawn from the reservoir. We can see how the pressures stabilized fairly well over a period of the fourth to the seventh day after being shut-in. I might point out at this time that we had difficulty getting exact measurements of reservoir pressure. We tried to obtain a very extensive instrument bottom hole pressure bomb with an element as low as 100 pounds and 250-pound element and 500-pound element, in an effort to be able to measure very accurately these pressures and to date we have been disappointed in the instruments which are available.

We just have to realize that they're limited to an accuracy of approximately five pounds. In order to improve the measurements which we have here, we took a number of surveys. Each one of these pressures which we have indicated here in the next to the last column, on the order of 393 pounds, was determined really from as many as eight or ten measurements in the



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

same well at the same time, and we took an average of them and actually the average checks out very well when we take a number of measurements; but unfortunately we can't make one measurement and come up with a very reliable pressure.

Q You think then where you averaged seven or eight measurements you get an accuracy that has less than five pounds deviation?

A Yes, sir, I would say approximately one or two pounds. Now we checked whether the well was stabilized by what seems like a rather crude method of running a float on a wireline to the top of the oil level; and oddly enough, we found we could check that within about one or two feet, which is within three-tenths of a pound of pressure. So we cannot measure the magnitude of the pressure. We can tell if the well is building up or stabilized, by running a float on the wireline. In this instance, this well appeared from that check also to be stabilized, probably within two or three-tenths of a pound.

The next schedule shows the method, how we determined that the two parts of the reservoir are equalized. In Section A of this next exhibit, which is entitled "Determination of Reservoir Pressure Gradient" of the No. 2 Bolack, the gradient of the oil in the reservoir in terms of pounds per square inch per foot, or in other words it's the density of the oil under reservoir conditions with the gas dissolved in the oil as it exists in the reservoir when we first drill into it. We arrive at this primarily



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 32

from the information from the bottom hole sample taken in a reservoir study prepared by Core Laboratories in 1962, and a copy of that is attached to the back cover of this booklet of exhibits.

From that information we can develop that at the Bolack No. 2 in Section 13, 25 North, 1 West, the reservoir pressure gradient is .311 pounds per square inch per foot, we computed in item 1 under Section A. We check it approximately by bottom hole pressure test with bottom hole pressure bomb to within a fourth of one thousandth of the computation.

In Section B we compute the gradient of the oil in the reservoir at the N-20 some ten miles to the north and 5,000 feet higher in the reservoir. At this point we determined the gradient to be .357 pounds per square inch per foot at the N-20. The average gradient between these two wells would be very nearly the arithmetic average of these two gradients, which we arrive at .334 pounds per square inch per foot.

Then we go to the next exhibit --

Q The next portion of that same exhibit?

A The next portion, a plot which is marked "Graphic Display" of pressure equalization. We see how, just as water seeks its own level, so does oil in a continuous reservoir seek its own level. The pressures which we showed on the previous exhibits which we took at the N-20 showed a reservoir pressure of 395 pounds at a datum of 4990 feet above sea level. That is shown on the right-hand side of the exhibit at the plus 4990 feet



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325.1182

SANTA FE, N. M.
PHONE 983.3971

ALBUQUERQUE, N. M.
PHONE 243.6691

datum. At the lower left-hand part of the exhibit at a datum of plus 8995 feet, we find the reservoir pressure in Bolack No. 2 at 1635 pounds. Those are actual measured pressures in these two wells.

Q How much deeper is the 1195 feet and the 4900?

A It's approximately 1200 pounds more pressure and approximately 3700 feet deeper and we simply divide the difference in pressure by the difference in depth and arrive at the gradient of .335 pounds per square inch per foot. This checks amazingly close with our previous calculation of .334 pounds per square inch per foot, which would be the gradient if the two wells were in communication and equalized.

We therefore conclude that these two wells are equalized over a distance of some ten miles, and this, plus our cross section, leads us to the inescapable conclusion that it's one common source of supply.

Q If I understand what you are telling us, this is the same thing as what we normally call a U-tube if we had it up here on the wall, and the bottom if it went down into the basement, we cannot see it, but the level in both ends of the tube was the same, we would have a real good conclusion that it was a tube and was connected because of this level feature, is that right?

A That is correct.

Q But it doesn't actually come back up to the same level because of the difference in depth?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

A Difference of density.

Q And the difference of density, so you make these calculations to determine whether or not the pressures are equal?

A Yes.

Q And you come out with the wisdom that they are equal; by virtue of these calculations, you know they are equal?

A They are equalized, not equal.

Q They're equalized?

A Yes.

Q And that is the same effect as water in both sides of a U-tube?

A That is correct.

Q Does this indicate to you that these wells, although ten miles apart are in the same common source of supply?

A I believe they are, as a result of this.

Q And the oil in each of them is within communication of the other?

A Yes, sir.

Q I believe you have one more part to Exhibit F?

A Yes, sir. We would like to point out now how we arrived at our little green line which was shown on the Exhibit D, and we arrived at that by the simple method of determining how high the oil can raise in the reservoir. It can only raise to a certain point, and at the point, which happens to be about 6,000 feet, we can compute that from either the shallow well to the north



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

or the deep well to the south. Any formation east or at a higher elevation than plus 6,000 feet just won't have any oil in it, because it can't raise any higher. That is the reason why on our first cross section we showed the continuity as far north as the Benson-Montin-Greer Well I-3. That well is a dry hole, and the reason that it is dry is because it is above the oil level.

Q The formation continues beyond the productive point, does it?

A That is true. This is a very unusual pool. Ordinarily we find the limits of an oil pool as defined by a pinchout of porosity or a structural situation with limits as to water or fault or something like this. In this instance this formation continues practically to the outcrop. In fact, I'm afraid it continues to the outcrop.

Q Is the outcrop near this area?

A The outcrop is within a few miles of the green line shown on our Exhibit D, but east of the point at which this part of the Niobrara is above 6,000 feet it just can't have any oil in it.

Q What is in the formation, if anything?

A We judge that there's probably a small amount of gas under no pressure or very little pressure. The I-3 which we drilled showed absolutely nothing, but we didn't attempt to make very sensitive measurements, and it is my opinion that probably it has a small amount of gas which is vaporized from the oil; and



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6091

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

just like we sometimes carry 10 or 20 ounces of pressure on a tank in order to keep the oil stabilized, I have an idea that's just what we have in this pool.

Q Mr. Greer, if you are not going to get any oil out of the I-3, how are you going to pay for it?

A We hope to make enough profit on some of these other wells to pay for the I-13.

Q You couldn't have discovered this reservoir without this dry hole, could you, and had your present knowledge about it?

A We certainly couldn't have had the present knowledge without it; not only this, but we drilled several others in the same area before we realized what the mechanics of the reservoir were.

Q Is there anything further with regard to Exhibit F?

A No, sir.

MR. PORTER: Mr. Verity, may I interrupt to call a short break at this time?

(Whereupon, a short recess was taken.)

MR. PORTER: The hearing will come to order, please. Mr. Verity, will you proceed with your direct examination?

MR. VERITY: We have a man who needs to leave at noon and would like to make a statement to the Commission before the hearing is over, so I think this would be the best place.

MR. LOCAL: If I'm not stepping too far out of line, I



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

would like to make a statement for Sunray DX, concurring in the application. We do not have any acreage in this immediate area as outlined by Mr. Greer's testimony. However, we do have considerable acreage in the Basin which we hope will be developed some day.

We anticipate the same type of problems that these people have here, and we would like to commend them on the progress they are making. They are not only asking you for 160-acre spacing, but the wells they have drilled in the area so far certainly aren't on 10 acres and then come in and ask for large spacing. They have stepped up in each case and asked -- the application is for a temporary order and during the next two years, three years, whatever the time may be, certainly evidence can be developed to justify either a permanent order or reverting to a denser development.

We know that the economics in this area are such that a wide spacing is necessary. We know that the terrain and the gathering system and the pipeline systems will necessitate a rapid development to justify good economics and good conservation. So Sunray would like to concur in this application and urge the Commission to take the approach that 160 acres could be adopted here and that at a later date, if the evidence does not justify -- and this could be done in a three-year period or a two-year period, whatever the circumstances demand, another hearing could be reconsidered; if necessary, denser development made. Thank you.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

MR. PORTER: Thank you. Mr. Verity.

Q (By Mr. Verity) I believe you had just concluded with regard to your testimony concerning Exhibit 1, and that brings us to paragraph 3 of your Exhibit 1. Before you go to that, is there another pool in the San Juan Basin that has a very close similarity and relation to the Puerto Chiquito area?

A Yes, sir. We consider the Verde-Gallup Pool to be quite similar.

Q Tell us, if you will, please, why you think it is a similar reservoir.

A Both Verde-Gallup and Puerto Chiquito produce from the structure which is essentially monocline with rather steep dips. Both produce from fractured shale, actually, I believe, from probably the same member of the Mancos. They're about the same depth. The wells in Verde-Gallup varied from about 1500 feet to, I believe, around 5,000 feet, whereas in this area we go from about 1500 on past 5,000 to as much as seven.

The area of the Verde-Gallup Pool is something like two townships long and a township wide. We're asking here for about a township-and-a-half wide and about three townships long. We consider the reservoir mechanics quite similar; namely, that the oil moves to the well through primary fractures and perhaps gathers oil from little secondary fracture systems which we believe to be throughout the reservoir; and in that connection, of course, we think it's a very important point as far as development



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

and understanding of the pool is concerned, that is that these fractures are in some areas apparently very closely connected, very highly fractured zones, and in other parts of the pool it's not so highly fractured. Even in parts of the pool where we anticipate average or even better than average recoveries, it's possible to drill a well that won't make but just a few gallons of oil a day, and then through a fracture treatment connect the well with a fracture system; and in Verde-Gallup they developed wells of several hundred barrels a day after frac treatment which originally would only make a few gallons a day. This we believe may be similar in Puerto Chiquito.

As a matter of fact, one of the wells we recently completed made two gallons an hour before frac, and we're presently producing some 30, 40 barrels a day out of it. We feel that perhaps as we drill more wells and improve our technique, why, we can do even better than that, but these two pools are quite similar in this respect.

They're also similar in the respect that some wells have been drilled and actually completed as dry holes both in the Verde-Gallup Pool in the middle of it, and also in this one. Both pools are completed with wells pumping. I don't believe there's been any flowing wells in either of the pools, and none of the wells make water from the reservoir. There has been an occasion, I believe, of poor completion of water channeling from one well to another in Verde-Gallup, and I believe there was also one in



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Puerto Chiquito, but to our understanding at this time, those bad casing jobs have been repaired and the reservoir as such does not produce water. By and large, they're quite similar.

Q Do these fractures that you speak of extend vertically as well as horizontally?

A Yes, sir. Cores which we have taken indicate extensive vertical fractures as well as horizontal.

Q Proceeding now to Exhibit G, will you explain it to us?

A Exhibits G and H, now, we would like to talk about recoveries that we can expect from this pool, and we feel that the only way we can determine recovery at this time or what we can anticipate in the way of recovery is by comparison with other pools. It's absolutely impossible by direct measurement of reservoir conditions to compute recovery.

Once we have some history, pressure decline and productivity decline and such as that, then we can estimate recoveries from that, but early in the life of a pool such as this, the only thing that we can rely on is a comparison with a similar pool. Therefore, we look at Verde-Gallup as to its recoveries in order to estimate the recoveries which we can anticipate here.

Q Mr. Greer, this would be true even though you all at one time produced, say, a large number of wells, 50 or 100 wells, you still wouldn't be able to make a pore volume study that would predict the life of a pool as you do in a sand pool?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

A That is right. I believe we could drill 100 wells in this pool and core every one and still not be able to give a better estimate of recovery than we can right now with just a few wells. It's just something that is almost impossible to do.

Q Pore volume is not a possible method of calculating reserves?

A No, sir, we cannot directly take a sample of the reservoir rock and say what the pore volume is.

The first exhibit under Section G is a contour map of the Verde-Gallup Pool which shows just in general, as we saw in Puerto Chiquito, a steeply dipping reservoir. The next exhibit shows -- the next several pages show schedules and graphs of production for wells in the Verde-Gallup Pool. The first one, C. H. Carroll Lease Wells 1 and 2, this is two wells' production per well per day plotted against time; and we notice there from discovery -- I believe this Well No. 1 was the discovery well in the pool -- from the time of its discovery until its abandonment we point out is some six years. The point I would like to make here is that Verde-Gallup is far enough along in its depletion that we can now take these individual leases and compute rather accurately the total recovery.

Some of the leases are actually already plugged and abandoned and we know exactly how much oil they produced, so at this point we're not making unreliable estimates of recovery. We can make fairly accurate estimates.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6651

The next graph shows production rate versus cumulative production for the Carroll Lease Wells 1 and 2. We see that they produced about 85,000 barrels per well. The next graph is the Carroll Lease Wells No. 1 through 12. This is all 12 of the wells averaged together, and we can see that the lease as a whole is about ready to be abandoned, down to about six barrels a day, six barrels per day per well at the end of 1962.

The next graph is for the Pubco Petroleum Corporation Lease in Section 19. Pubco's lease covered two sections in this pool. This covers just Section 19, and the first graph is of the first eleven wells in the pool. We can see that they produced their allowable approximately for some four years and then rapidly depleted.

The next graph is Pubco's lease, Section 19, the first eleven wells and the cumulative production per well, which is about 49,000 barrels. The next graph is Pubco's lease, Section 19, the last four wells; and we note with interest here that whereas the first eleven wells on this lease produced for about four years before they depleted, these last four wells only produced a year and a half and they depleted at exactly the same time as the first eleven wells.

We'll go into detail later about drainage in this respect, but we can see here that our computation of recovery from the first eleven wells and from the last four wells we can do rather accurately because they have produced all the oil and



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 883-3071

ALBUQUERQUE, N. M.
PHONE 243-0691

PAGE 43

have been abandoned.

The next graph shows production rate versus cumulative production for these last four wells, showing some 26,000 barrels per well for those wells. The last graph is of the Socony Mobil Ute Lease, Wells 1 through 13. This is an average of the 13 wells. You note here that the production is declining at a less rapid rate. These wells were drilled on 80 acres, whereas the other wells we were looking at were drilled primarily on 40 acres. These wells do not deplete as fast as the others. Even so, they are still depleting at a very rapid rate. Here again, we can compute a total recovery from this lease. We can tell by extrapolating this particular line, this rate of decline, that we will not miss the future production very far; and that, plus the cumulative production, gives us an accurate estimation of the total ultimate production.

From this type of information, then, we can go to exhibit or Section H, which shows the recoveries which we can anticipate from the Verde-Gallup Pool. They've already been depleted and realized or so far along in their life that the estimate will be fairly accurate for the wells that are still producing.

Q Actually, Mr. Greer, isn't practically all except the southwestern edge of this pool that was developed on 160 acres practically already depleted?

A We can see the Mobil lease on the east side which is



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

still 80 acres is still producing. With a few exceptions, they are either abandoned or ready to be abandoned.

Q So your information actually is a matter of calculating what has been done. There's very little extrapolation in your production figures?

A Just a few of the leases we have to extrapolate a small part of what we feel would be the ultimate recovery.

Q Do you know what the average production in the Verde-Gallup is per acre?

A Well, it approximates 500 barrels per acre for all these blocks which we have set out on this Exhibit H. Actually, if we took a weighted average of the entire pool, including the poorer zones which I have not made a calculation on, it would be considerably less than 500 barrels an acre.

Q Are the zones that you did not calculate all very poor recovery zones?

A Most of them are poor recovery.

Q If you included them, it would take down the average of 500 barrels?

A That is correct.

Q So it's probably something less than that?

A Yes, sir. For the ones that I have computed, the recovery ranges from about 130 barrels per acre to a maximum of 940 barrels per acre, where we've averaged over these approximately two section tracts. I selected these tracts as they are shown



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

because they comprise parts of the field in which oil, as near as I know, was produced into one or two leases so that there is a minimum estimate of total oil produced from any one area. Sometimes when they estimate from one well to another, there can be some error, but we have eliminated that in this method of computation.

Q In passing, at this point, was the highest recovery there of 940 barrels per acre the closest spacing?

A No, sir.

Q Was it the oldest production?

A I believe it was about the same time as the lease to the east of it. I believe there's just a slight difference in the two areas.

Q It actually produced more oil on wider spacing?

A Yes, sir. We might compare, to go to a finer point in attempting to analyze a little closer, the north-south tract which shows 770 barrels per acre. That's the Pubco, the south Section 19 and the north of Section 18. They developed the south section on 40 acres and the north section on 80 acres, and unquestionably the better wells were in the south part. If we take the production only from that south part, I believe it would compare on the order of 900 to 1,000 barrels per acre with the two sections to the west of it.

Q But no better recovery?

A No better recovery, no, sir.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q Now, Mr. Greer, can you make any conclusion with regard to the ultimate recoveries to be expected in Puerto Chiquito from your studies of Verde-Gallup?

A Yes, sir. It's my opinion that we can anticipate recoveries on this same order of magnitude, from 200 to probably a maximum of 1,000 barrels per acre; and on an average I would estimate we're looking at 500 barrels per acre.

Q Is there any other, other than the Boulder Pool, which is relatively recent, is there any other Gallup Pool in the Basin which produces from fractured shale?

A Yes, sir, I believe some of the other pools have fractured shales. They are primary recoveries.

Q Would their recoveries be any better than this?

A No, it would not be.

Q As a matter of fact, even the sand pools in the San Juan Basin don't do much better, do they?

A Some of the sand pools have recoveries on this same order, less than 1,000 barrels.

Q That would be the average, the Harsashar Canyon and Bisti excepted?

A With Harsashar and Bisti excepted, I imagine that's what we are looking at.

Q And they had wide, thick sands, did they not?

A As compared to the others, yes, sir.

Q Proceeding now to Group 4 --



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

A If I might interrupt --

Q Go ahead.

A One other point I didn't make in comparing this pool with Puerto Chiquito, it's of course hard to determine in a fracture system how much better or poorer one area might be than another. Our best indicator at this time is, of course, productivities of the wells from the fractured zones. So far, the wells in Puerto Chiquito have shown lower productivities than in Verde-Gallup. As such, if there's any comparison, although we don't think -- it may not run directly in proportion, it's likely that our recoveries will be somewhat less in Puerto Chiquito unless in time we discover wells with higher productivities than we have to date.

Q Proceeding to I, which I believe is the start of your next group, that pertains to drainage, effective drainage, right?

A Yes, sir. The next section, I, J, K, and L apply to drainage; and the first section under I has to do with --

Q Before you go to that, are you in I and the next section talking about drainage in Verde-Gallup?

A Section I has to do with drainage in Verde-Gallup.

Q Do you think it's proper and safe to draw the analogy that your drainage will be the same in Puerto Chiquito because of the great similarity of the pools, as it is in Verde-Gallup?

A Yes, I do.

Q Directing your attention to Exhibit I, please tell us



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

what it is.

A Exhibit 1 is a map of the Verde-Collins field in which we have colored in red and brown the entire lease in Section 19, which we referred to earlier. The area in brown shows the area in which the first eleven wells were drilled, and the little red circles show the last four wells. On the schedule on the right-hand side of the exhibit we have the accumulated production for these wells.

Now this lease has been plugged and abandoned and completely depleted. The first eleven wells produced on an average 49,000 barrels per well. The last four wells which were drilled a year or two after the first ones produced only 25,893 barrels per well. From first production to August 31, 1959, that was the time the last four wells were completed, the first eleven had produced about half of the total oil which they ultimately produced, about 25,000 barrels. From August 31, 1959 forward to depletion, all of the wells produced practically the same amount of oil.

The first eleven wells produced an additional 23,600 barrels and the last four wells, rather than producing the whole 49,000 that you would anticipate if there had been no drainage or communication, produced only this same amount, about 24,000 barrels. If anything, the last four wells may have produced 1,000 barrels per well more than the other eleven from the time they were completed on. It's just like eleven straws in



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6591

the bottle to begin with and they they dipped four more in and from that time on they each took out the same amount.

Q Actually, if the eleven wells had been allowed to proceed for a longer date, do you think you would have had that 1,000 barrel differential?

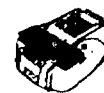
A I wouldn't be surprised that the first eleven wells could have even picked up the additional 1,000 barrels per well which might be indicated here as additional recovery, simply by producing a few more months. They depleted so rapidly it probably wouldn't have taken long to have picked up that other oil.

Q Do you know whether or not the last four wells, from the standpoint of the reservoir rock encountered and the section of productive pay, were comparable to the first eleven?

A I feel they were comparable. As can be seen on this exhibit, right through the center of the section they are scattered alternately among the other wells, and the productivities as reported to the Commission are the same order. I feel that they are quite representative.

Q Were the initial pressures and the initial producing rates comparable?

A I don't believe there's any information on pressures, but producing rates as of the same time, namely, August of '59, the wells were all making their allowable. It is very obvious to me that the initial wells had depleted these tracts just as



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-1971

ALBUQUERQUE, N. M.
PHONE 243-5691

PAGE 50

efficiently as the other wells did after they were drilled.

Q Their initial pressures were comparable?

A Well, the initial in the brown area, I'm sure at the time the first wells were drilled, would be the same as the initial pressure at the same time in the red area. However, as of the time that the last four wells were drilled, production had been taken from the reservoir, the pressure had then been depleted and all wells at that time had the depleted pressure at that stage of completion.

Q That's a further indication that there was communication?

A That is my interpretation. I think no pressures were actually made because I don't have a record of it.

Q Do you think that that showed that you had drainage across a given area at that point?

A There's no other way to interpret this information than that there was drainage.

Q How large an area does it demonstrate drainage?

A Drainage on 40-acre development such as this, or communication demonstrated on 40 acres is, of course, approximately 160-acre drainage.

Q Do you have anything further with regard to Exhibit 12?

A No.

Q Turning then to Exhibit 13, will you explain that, please?



A Exhibit J has to do with our direct measurement of drainage as we compute it in the shallow part of the Puerto Chiquito Pool. We have made two direct computations relating to drainage, one in the shallow area and one in the deep area. Section J has to do with the shallow area around our Benson-Montin-Greer N-20.

The first schedule shows the bottom hole pressures taken in July on this well, showing the pressure of 371 pounds at the datum of 4990 feet. We plotted this graphically on the graph entitled "Pressure Versus Cumulative Production, Benson-Montin-Greer N-20 Jicarilla." On this graph we show a red dot on the left-hand vertical line at a point 395 pounds; this indicates or depicts the original reservoir pressure which we believe it to be.

Q Will these figures lead you to a material balance calculation?

A This is a simplified material balance calculation.

Q And I believe that has been previously relied upon by the Commission in 160-acre spacing orders?

A I believe so, not only here but in the Cha Cha application, the same type of material balance.

Q Anything further with the first part of Exhibit J?

A No, sir.

Q That brings you to your graph?

A Yes, sir.



Q Pressure Versus Cumulative Production, Benson-Montin-Greer No. 20 Jicarilla?

A Yes, sir.

Q Will you explain that graph to us?

A The initial pressure in this area was 395 pounds, that's shown by the left-hand dot colored red on the vertical line under Pressure. The next pressure we measured is the dot colored in blue, 371 pounds, shown on the previous schedule, and that is my interpretation that the average reservoir pressure would be about two-thirds, or the pressure differential from 371 to 395, which is 387 pounds, and that's indicated by the red dot at the point 387 pounds.

We project that curve and it is, of course, as you see, it's not a straight line. We have assumed an average relative permeability ratio which will, we think, approximate production in this area, such that indicates about 140,000 barrels might be anticipated from this well if it were allowed to produce unrestricted or without interference from other wells.

If we have 500 barrels per acre recovery, we can see on the bottom line the well would drain or is draining about 280 acres, minimum.

Q How much pressure drop would you anticipate would have been shown if you were only draining 40 acres, Mr. Greer?

A If we were only draining 40 acres, the well would have an ultimate recovery of 20,000 barrels; and the pressure at this

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

time would have been about 330 pounds average reservoir pressure, and the pressure measured in the well would probably have been on the order of 320, whereas we measured 370.

Q What would it be if it was only draining 80 acres?

A If it were draining 80 acres, the cumulative production would be indicated to be 40,000 barrels, its average reservoir pressure approximately 370, and we probably would have measured about 350 instead of 370.

Q So there's a very great and marked margin between that and what it does show of over 160. What would your drop have been, incidentally, if you were only draining 160 acres?

A Well, I can figure it if you think it's material.

Q Well, we'll perhaps come to it later. Mr. Greer, at the relatively early stage of Cha Cha-Gallup development, you asked the Commission for a spacing order and you had preliminary information there with regard to drainage?

A That is correct.

Q Did you make the same type of proof at that time?

A We made exactly the same type of computation which is shown on the next graph.

Q Is the next graph the same graph that was introduced at the preliminary hearing for 80-acre spacing in Cha Cha?

A This is a reproduction of one of the exhibits which we had at that time.

Q Did it use exactly the same method that you have just



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

used with regard to Puerto Chiquito?

A Yes, sir, exactly the same type of computations.

Q Did it, in light of later development in the pool and interference test, prove to be reliable?

A Yes, sir, it did. We estimated at that time the minimum drainage of 140 acres per well, and it later on developed that it was closer to 500 acres, 400 to 500 acres.

Q In other words, you were very greatly on the conservative side in the amount of acres drained?

A Yes.

Q You think that method is reliable with Puerto Chiquito as having been tried?

A Yes. Of course, with the limited information that we have, it's a reliable method.

Q I believe you earlier went through the fact that you took your pressures with the most accurate instruments possible?

A That's correct.

Q And you further increased this accuracy by running your tests numerous times, did you not?

A That is true.

Q Further, you also had a sample of the oil early in the life of the well, did you not?

A The sample we have is from one deep part. We don't have a sample from the shallower part of the well.

Q But that was taken early.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 11

A Yes.

Q Do you have anything further with regard to Exhibit J?

A No, sir, other than I interpret from it that these shallow wells, even though they are producing only 30 to 40 barrels a day, are draining something in excess of 280 acres apiece.

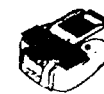
Q Directing your attention now to Exhibit K, will you please explain that to us?

A Exhibit K has to do with our method of direct computation of drainage as to wells in the deep area -- by deep I mean about 6,000 feet. The first five pages are just a detailed record of daily production of oil from the Bolack Greer A-14, Township 25 North, Range 1 West.

Incidentally, I don't believe I mentioned this, but for the benefit of the Staff as they study this report, we have adopted the Commission's method of numbering wells under the later designation. We found that simplifies our work a lot, and where we referred to N-20, A-14, and I-3, that's picked from the Commission's method of designation in the 640.

Q Your number refers to the section and the number refers to the acres in the section?

A Yes, this well was completed last winter, in December. It's producing naturally, it has not been fracked. It's being pumped with a hydraulic pump, and we can detect less than the pressures of our hydraulic pump as we operated the well, despite



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

PAGE 56

the fact we had a lot of difficulty with the well in the winter months, by about the middle of March we had the well settled down to steady production, and we could determine that we were producing the well at capacity because of the operating pressure of the pump, and we have kept this well on rather continuously from that time, measured production as carefully as we could, and the gas-oil ratios; and the gas-oil ratios have not changed.

The well has pumped very steadily. A summation of these production rates is on the page entitled "Summary of Production and Rates of Production for the A-14". We have an average first of the ten-day periods and then average of the thirty-day periods. We can see by the averages for these ten-day periods that the well is producing at a very uniform rate, something on the order of 62 to 63 barrels a day.

Averaged on a thirty-day basis, the variation is only from 62.1 to 63.7 barrels per day. To believe where we have production rates taken under conditions as carefully controlled as we did on this well that we can make a rather accurate determination of total oil that a well can produce from its decline in productivity. We made that computation on the next page, entitled "Computation of Reservoir Volume and Drainage Area, Polack Greer A No. 14 Polack. This computation makes several assumptions. One of the assumptions is that there is no water drive, which we've never found any water in the Gallup so far in this area. We have no reason to believe, because of the oil



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 57

gradient from the shallow wells to the deep ones, that there would be a water drive.

We have made an assumption that there's no gascap, and we believe that's a good assumption for the same reason that we have an oil gradient through the reservoir as we know it. We have made the assumption that there's no compression of incompetent beds tending to give pressure to the reservoir, and we make that determination or that assumption based on the simple oil level which the oil has sought in the reservoir as a result of pressure, of its bottom hole pressure; and also the fact that if the reservoir was suffering from compression of incompetent beds, the pressure would have been probably between or on the order of 3,000 pounds in this A-14 area, whereas we know it to be only about 1600 pounds. Therefore, we believe that's a good assumption.

The next assumption that we make is that the decline in productivity is proportional to the cumulative production that we can anticipate from the well; and we make this assumption based on past experience with other reservoirs. It's pretty obvious in Verde-Gallup and also, of course, we can compute from the production history -- some people use material balance, I prefer Muscat's method of graphical integration, but in either case, for the ranges of relative permeabilities that we are apt to find in this reservoir, we can assume that the decline in productivity is a good method of determining total future production



from a well.

In this instance, this well does not appear to have declined in productivity, and I would estimate that it is because we simply can't measure within one or two barrels how much it might be declining. The very most that I would estimate this well to decline in productivity in the four-month interval in which it produced 7,000 barrels is two barrels a day. I think I'm being conservative at that.

The simple computation, although it's based on these other assumptions which I believe to be valid, shows this well to be draining a minimum of 460 acres. We can anticipate it will produce a minimum of 230,000 barrels of oil, if its actual decline has been two barrels a day, which I believe it probably has not been that much.

We can also compute that if the well had been draining only 160 acres, the productivity would have had to decline to 56 barrels per day. It's just impossible for the well to be draining anything less than something like that, even though it's very obvious if we look back over the production record that it couldn't have a true productivity of 56 barrels a day.

If the well were draining only 80 acres, the productivity would be 50 barrels a day instead of the 62 which was stated. 40 acres, it would have a productivity now of only 30 barrels a day. Unquestionably, the well is draining a large area.

Is this well-14 Salack Well that you have been talking

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6601

PAGE 50

about in this exhibit located in a different area within the pool than the one in the previous exhibit?

A Yes, sir, this is the well located in the deep part of the reservoir, whereas the other ones are located in the shallow part of the reservoir.

Q So you conclude that there is drainage much in excess of 160 acres both in the shallow area and in the deep area?

A That is true.

Q You arrive at your 460 acres drainage by dividing the number of barrels with which you are computing by your number of barrels per acre, is that correct?

A That is correct. I assume the 500 barrels per acre.

Q That's the last calculation that you've made on that sheet?

A That is true. I assumed that the recovery in this area would be 500 barrels an acre.

Q If your calculations of 500 barrels per acre were possibly off and you were making something in the nature of the maximum amount of any area in the Verde-Gallup Pool, which I believe was 940 barrels, let's say a thousand barrels, then how large an area would you still be draining?

A It would be draining, if the recovery was 1,000 barrels an acre, a minimum of 230 acres.

Q So it still would be considerably in excess?

A Yes.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1162

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-5691

Q Anything further with regard to Exhibit K?

A No, sir.

Q Turning then to Exhibit L, will you please explain it?

A Exhibit L has to do with why we need a three-year temporary order rather than the customary one-year temporary order. The first exhibit shows an interference test or the results of an interference test which we conducted during the period of our temporary order in the Cha Cha-Gallup Pool. In this particular pool --

Q Was this exhibit actually taken from the October 16, 1961 hearing of the Cha Cha-Gallup wherein the permanent order was issued?

A Yes, sir, I believe it was October 18th.

Q October 18th?

A Yes, sir. This is one of the exhibits that was presented at the time that we asked for a permanent order and showed the information that we had gathered during the time of our temporary order. We can see that over a period from September to March, we had a very substantial decline in pressure in this well which was shut-in in the Cha Cha-Gallup Pool and was being depleted by wells around it.

The reason we show this exhibit at this time is to show the comparative length of time required to get an interference test now in the Puerto Chiquito Pool. Actually, we took a rather long interference test. We had a pressure drop in excess of 200



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. H.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

pounds. The Commission might actually have accepted the smaller pressure drop and we might have presented evidence, say after three months test on this well, and had, say, less than 100 pound drop, the Commission likely would have accepted that as proper demonstration of interference.

In this Puerto Chiquito Pool, however, we can't expect this fast a pressure drop and make an interference test in that short a time. The reason we show on this next schedule after this graph, where we have comparative rates of completion, Cha Cha-Gallup and Puerto Chiquito shallow wells.

This is comparing the rate of depletion for the shallow area with Cha Cha. For instance, in Cha Cha at the time of the interference tests, the wells are producing about 150 barrels a day. In Puerto Chiquito in this shallow area, they are producing about 30. The well spacing in Cha Cha at the time of the interference was 80 acres, whereas in Puerto Chiquito we hope to make an interference test on 160 acres.

The simple ratios show that the Cha Cha Pool is being depleted at ten times the rate at which we can anticipate in Puerto Chiquito, so if we could make an interference test in Cha Cha in a two or three month period, we are going to need twenty to thirty months to demonstrate the same type of interference in this pool as we did in Cha Cha.

We might demonstrate it earlier, of course, by drilling an unnecessary well, because actually when we demonstrate



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

interference on 160-acre pattern, we're going to be proving drainage on the order of five to 600 acres. Even to do this, we're going to have to drill a \$50,000 well and shut it in for two or three years in order to make this test for the Commission. We would certainly hesitate -- or certainly would not think the Commission would ask us to drill an unnecessary well on a denser spacing to conduct this test to get that information quicker.

Q Mr. Greer, before you pass that exhibit, on your top line right under Cha Cha, it says, "140 approximately." Is that 140 in error?

A I believe we corrected most of the exhibits to show 150.

Q You have corrected them to show 150?

A Yes, that was a typographical error.

Q So it is corrected. Turning to the chart, Exhibit 1 --

A The next chart is entitled "Theoretical Decline Curves for wells with initial productivities of 35 B/D and 75 B/D -- 80,000 bbls. per well ultimate recovery." The 80,000 barrels is simply the recovery to be anticipated from 500 barrels an acre and 160-acre spacing. The point of this exhibit is to show that we can develop the reservoir to a reasonable degree of life. Naturally, we would like to recover the oil in quicker than 15 to 17 years indicated for the wells of productivities of 35 barrels a day; and also as high as 75 barrels a day. In our techniques, we can increase our productivities to 75 barrels a



DEARNLEY-MEIER REPORTING SERVICE, Inc.

DALLAS, TEXAS
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 45

day and perhaps complete it in about ten years. The next exhibit is a simple --

Q This is still a part of L.

A Yes, sir, still a part of L. This is a direct computation of the rate of pressure decline in this shallow area, showing again the need for two to three year period in order to demonstrate interference. The upper dashed line, horizontal dashed line is 395 pounds, indicating initial reservoir pressure. The three declining curves indicate the rates at which I believe the pressures will decline around a producing well, the lower one being the pressure nearer the well, the middle one the average pressure in the reservoir, and the third one being the pressure at the edge of the drainage area, which would be the pressure we would anticipate in a well which would be our interference well test.

This shows at the end of about two years we might have as much as 30 or 40 pounds, maybe ten percent of the initial pressure which we think should be conclusive, and we hope the Commission would accept as evidence of interference. This two-year period needs to commence after we have drilled the wells and have started the test. At this time we only have two wells which we can use. We propose to drill another half-dozen this Fall, if this order is granted; and we would shut one of these wells in.

It would likely be December before we would be ready to start the test, and we would really need two years from



December to have a reasonable chance of showing interference in this shallow area.

Q Turning to Exhibit M, would you explain it?

A Exhibit M has to do with economics, several pages in Exhibit M. The first exhibit is a simple listing of the cost of the wells which we have incurred to date, which we have drilled in this area.

We classified the wells in the left-hand column depending on the depth at which they encountered Zone A, which is the zone which we based our contour map on. These wells vary from about 2,000 feet to about 7500 feet as to that particular datum. The shallow wells, 2500 feet, have been costing us about \$50,000, actually a little in excess of \$50,000, and that includes used pumping units which we have put on each of the wells in order to reduce the cost somewhat. The deeper wells have been rather expensive. Of course, we spent a lot of time attempting to accumulate information.

We have had the unfortunate happening of a downhole explosion, which is just one of the things that will occur as we drill a number of wells; and we just have to face the fact that once in a while this will happen. The deep wells 6000 feet and below have an average cost of about \$200,000 at this point.

Now we hope that with the knowledge we've gained we can improve our economics insofar as our costs are concerned, and hope to reduce the cost of the deep wells to about \$125,000

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182



for wells drilled from the canyon floor. I would like to point out at this time that there are a number of very unusual circumstances which increase the cost of our wells, one of them being the fracture treatment. We have definitely concluded that the important feature in this reservoir in order to attempt to produce it is to improve our fracturing techniques, and we have been spending -- actually, we have doubled the cost of our shallow wells simply to condition them and to frac them.

The deeper wells, of course, we spent a lot of time just trying to determine all of the characteristics of the reservoir, but also there we are spending more money tracking the wells than an operator ordinarily would. We have arrived at the conclusion that we're not attempting in our fracture process to improve the average permeability around the well bore and thereby obtain the two to three to four times increase which we might anticipate by that. Our problem is to connect the well bore with the fracture system, and in one of the wells, as a matter of fact, the Bolack 2, we noticed a breakdown in our fracturing pressure and have definitely determined that we connected this well with the fracture system along toward the end of our fracture treatment, which was in excess of 2,000 barrels.

Another of the wells we had the same experience with, about 3,000 barrels. Had we used normal, small treatment of 1,000 barrels, we would not have fracked the wells, we believe, into the fracture system, and might even have wound up with a dry

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

hole.

So this is very important and it's expensive to develop these techniques, but we feel that it's the proper thing to do, far better than drilling, say, an additional well.

Q Mr. Greer, all of these wells in this area are single completions, are they not?

A Yes, sir.

Q There is no other zone that you can produce out of?

A No, sir. Now in that respect we have cemented the pipe through the entire producing interval and perforated different sections of it. We did this in the P-19, and that well showed the same pressure as the N-20, and we concluded from that that these zones as we have shown them in our electric log sections are in communication, undoubtedly, through vertical fractures.

The next exhibit shows the net value of the oil to the working interest. It varies somewhat for the deep wells and the shallow wells.

Q This is still a part of M2

A Section II, the second schedule in Section M. The net value varies from about the highest of \$1.66 a barrel for the deeper wells to \$1.26 a barrel for the shallow wells, and this is the value to the working interest before operating expense.

One of the major factors which is shown in this schedule is the trucking cost of 66 cents a barrel for the wells in the southwest part of the area to 77 cents on these particular wells,



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 67

and actually we have had as high as 90 cents a barrel transportation cost on an isolated well.

The next schedule, the third one under Section M, shows the economics of the shallow wells on various spacing, assuming 25 cents a barrel operating expense. For 40 acres per well, we anticipate 20,000 barrels, recovery \$20,000 and a drilling cost of \$50,000, with the loss about \$30,000 a well. At 80 acres, our net revenue is about \$40,000, cost \$50,000, and we lose \$10,000 on an 80-acre well.

On 160-acre wells, our income is \$80,000, our drilling cost \$50,000, and our profit around \$30,000 a well. This profit figure does not include any allowance for dry holes, leasehold cost, interest on investment, or income taxes.

The next schedule is two pages. Both pages have to do with the cost of drilling the deep wells in the Santa Fe National Forest. Actually, this area which we're asking in this application covers a part of the Santa Fe National Forest. One of our problems here in this area is lost circulation. The wells that we have drilled so far from the canyon floor, we are just about balanced as far as our hydrostatic column is concerned and being able to overcome lost circulation problems in the Mesaverde. As we go higher, if we have to drill up on the sides of the canyons rather than in the canyon floor, at the higher elevation we'll have the higher hydrostatic pressure in the Mesaverde and unquestionably we will have more difficulty with lost circulation.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q What is the difference, roughly, in elevation of the canyon floor wells and wells that would have to be drilled up on top of the ridges, if that is required?

A The difference in elevation from the canyon floor to the tops of the ridges and mountains is from 1,000 to 1500 feet, very steep canyon walls.

Q And that additional elevation would add a lot of weight to the column of mud that would be on the Mesaverde?

A That is true. We have estimated under Item 1 of this schedule \$50.00 a foot as the additional cost of just a drilling of drilling the wells up on the sides of the canyon walls and up on the tops of the mountains, rather than in the canyon floor.

Q Are there any roads up on top of those ridges and mountains?

A No, sir, there are not.

Q You would have to build a road up there?

A Oh, yes, sir.

Q It's not a matter of building a road from one well to the next, it's a matter of building it up on the side of a mountain so it's strung out several miles?

A Yes, sir. The second part, Item 2 on this schedule, shows the per barrel revenue of \$1.41 after operating expense as to these particular wells.

Then the next part of it, the next page shown as Part



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 69

3, we show the economics for the well spacings in the Santa Fe Forest varying from 40 acres to 320 acres per well. We'll go into detail later as to the location costs of the road and location in this area. It's quite unusual. But it, along with the variation in depth as we decrease the density or increase the density of spacing, gives us a much higher cost per well on the dense spacing as compared to a large spacing.

For instance, we estimate if we can drill about two wells to a section, we can drill them on the canyon floor, under the right-hand column, for about \$125,000. If we have to go to 160-acre spacing, four wells to a section, that would be \$195,000; 80-acre spacing, about \$190,000; and 40-acre, about \$175,000. We estimate on 40-acre we'll lose one hundred -- approximately \$150,000 a well. On 80 acres we will lose about \$134,000; on 160 we lose about \$80,000; and on 320 we'll make about \$100,000. That's about double our investment, and of course we would hope if we could get a pipeline into the area to improve these economics somewhat.

Initially, of course, it will be impossible for us to see our way clear to drill more than two wells to a section, and we would do that by going up the valley floors and drilling these initial wells to a spacing such as that until we determined more about the area.

This only covers a part of the area we're talking about, that part that's in that rough mountain forest.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 70

A That is right. And that is primarily on the west side of the area. It covers perhaps a third of the area we're asking for.

Q Where the deeper wells are located?

A Maybe a half.

MR. PORTER: These figures do not apply to the other two-thirds of the area here covered?

A That is true. The next schedule is merely a statistical summary showing the increase in value if we can get a pipeline in the area, which this area needs very desperately in order to make it worthwhile or economically feasible to go in and explore. In the first place, because of the severe winters, because of the expensive trucking costs, we still can't get the oil out all the time. The pipeline means two things to us, it ultimately will increase the value of our oil and, of course, will help us get it out on a regular basis. If we can't get the oil out in the winter months, of course, we lose the oil while we're delayed to such a point in time that it just isn't feasible to drill the wells.

G. VERNER CAMPBELL: Where would it go?

A Our plan is to bring the oil from this area to Dallas Apache Station, that is north of Lytack some eight or ten miles, I believe. It would be about a fifty-mile pipeline.

(By Mr. Verner) Now does it affect the economics of this pipeline, Mr. Campbell?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 71

A First I might point out we're looking for an increase of 30 to 20 percent of ultimate net value to the operator, which would improve his economics if we had the pipeline.

Q Does spacing affect whether or not someone will build a pipeline?

A Yes, sir. If we would get into that now, the Verde-Gallup Pool, for instance, I believe the pipeline that was built into that area, the wells drilled on close spacing, high production rates, they had to invest really more in the pipeline system than is justified for the amount of oil that was recovered. As a result, pipeline companies are reluctant to go into areas such as this of Gallup production, because they get into the problem of needing a bigger system, really, than the area warrants.

As a result, if the operators drill enough wells close enough together to exceed the capacity of the pipeline, then they must build a larger line or in the alternative, the operators truck a lot of their oil and the pipeline doesn't realize enough revenue off that. As a result, at this time it only makes economic sense to build a pipeline into this area if it's going to be developed on rather wide spacing.

Q In other words, then, if I understand you, if you have higher production rate in the pool you have to build a bigger line.

A Either that or lose the revenue from that oil to the trucks.



Q To truck it?

A Yes.

MR. PORTER: Does that conclude your questions on that section?

Q (By Mr. Verity) Do you have anything further on M?

A No.

MR. VERITY: That concludes M, your Honor.

MR. PORTER: The hearing will recess until 1:30.

(Whereupon, the hearing was recessed until 1:30 P.M.)

* * *

AFTERNOON SESSION

MR. PORTER: The hearing will come to order, please.

Mr. Greer, would you take the stand again, please?

DIRECT EXAMINATION (Continued)

BY MR. VERITY:

Q Mr. Greer, before we leave this question of economics, I believe that your economic calculations and presentations here have been based on the conclusion which we think is valid that there will be 500 barrels per acre recovered in this pool, is that correct?

A That's correct.

Q Suppose that we assumed that you had been too conservative in the amount of recovery you anticipate and that for some reason or other this is going to do a lot better than Verde-Gallup, although we have no indication it will; and instead of



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 73

500 barrels you will get an average of 1,000 barrels. If you will, please, tell us, referring to Exhibits M-3 and M-5 as you do so, and tell us what your economics would then be.

A If we were to experience a recovery of 1,000 barrels an acre in place of 500 barrels an acre, the approximate economics would be for the wells in the shallow area on 40 acres a loss of \$10,000 per well; on 80 acres, a profit of \$30,000 per well; and on 160 acres, a profit of \$110,000 per well.

Q What would be your ratio of recovery to cost in that instance?

A The ratio of total income to cost for 80 acres would be --

Q This is on 1,000 barrels.

A On 1,000 barrels per acre would be 1.6, and 160, 3.2 to 1.

Q While you are at it, what is your ratio of return to investment on the 500 barrels with that same Exhibit 3?

A 500 barrels an acre on 40-acre spacing, the loss is about \$30,000; on 80 acres, the loss is about \$10,000; and on 160 it shows a profit of \$30,000. The only one showing a profit is 160, and that ratio is about 1.6 total income to investment.

Q That's on your shallow wells?

A That's on the shallow wells.

Q Then going to the deep wells, which I believe is in your Exhibit B, first give us the ratio of return, if you will,



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-5691

please, calculated on 500 barrels.

A Well, the ratio of return on 500 barrels, we only have one showing a profit, that's on 320-acre spacing. That ratio of return to investment is about 2 to 1 at 500 barrels.

Q Then assuming that you are going to have more than you feel and that it will be 1,000 barrels per acre return, what will be your economics?

A Economics for the deep wells in the Santa Fe National Forest, if the recovery is 1,000 barrels per acre, would be for 40 acres per well a loss of \$120,000; on 80 acres, a loss of about \$78,000; on 160-acre spacing it would be a profit of \$30,000; on 320-acre spacing it would be a profit of \$335,000.

Q What is your ratio of return to investment on the 1,000-barrel calculation?

A On the two spacings which show a profit, 160-acre and 320, the ratio would be 1.5 to 1 on 160; and 320, 3.6 to 1.

Q Then actually even if you are going to get a lot more oil than you think you are, your ratios of return to investment are still far from great?

A Yes, sir, it would be a break-even even if you get twice as much.

Q How many dry holes have you already drilled?

A I don't recall the number. We drilled several in the area east of this.

Q And they have not been profitable?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

A. BUJERQUE, N. M.
PHONE 243-6691

A Yes, sir.

Q Also in defining the extremities of this pool, it's quite possible you will have other additional dry holes?

A We anticipate there will be dry holes in this area.

Q These dry holes have not been figured at all in these figures?

A No, sir.

Q And no income tax has been calculated?

A No, sir.

Q Is there any possibility of casinghead gas recovery and sale?

A We're producing a little casinghead gas now, it's not very much. At this time it has no economic value.

Q Do you anticipate in the future that you'll ever have enough casinghead gas to have any economic value?

A It's very questionable at this time. One of the primary concerns is that we're so far from a gas pipeline and the value of the gas at present varies from a few cents to a couple of dollars a day is all the value of the gas that's being produced. It's a few cents per well, to a couple of dollars per well.

Q Could they save the gas at Verde-Gallup? Was there any income from casinghead?

A I believe they did not save the gas at Verde-Gallup.

Q What about secondary recovery?

A At the present time we can't foresee any chance of



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 383-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 70

secondary recovery, because everything we have drilled so far is just a fractured shale which we feel is not susceptible to secondary recovery. There's a possibility, of course, that we may find a sand stringer such as the other Gallup areas have shown, in which instance then it might justify secondary recovery.

Q There's been no secondary recovery project at Verde-Gallup?

A No, sir.

Q And in fact there hasn't been any fractured shales or fractured system that have permitted secondary recovery that you know of, have there?

A Pure fractured shales as far as we know, as far as I know there has been no successful secondary recovery.

Q You mentioned the possibility of sand in this pool?

A Yes, sir. We feel there's always a possibility in the Gallup zone to find a sand stringer running anywhere through it, such as have been found in the past.

Q Do you have any reason to believe that if that occurred there would be any lesser area of drainage than what we have proven here with regard to fractured shales?

A No, sir. Our experience has been that the Gallup sands exhibit good drainage and can likely be developed efficiently on 160-acre spacing.

Q What was the experience of Shell Oil and Refining Company in Northwest Ohio that



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

A I'm sure that Humble found interference on some of their wells drilled on 160-acre pattern which they drilled in the northwest part of Cha Cha.

Q Do you have anything further with regard to this point that we have been on of economics?

A No, sir.

Q Directing your attention to Exhibit N, please tell us what it is.

A Exhibit N shows the estimate of comparative cost of production of roads and locations in the part of the area that's covered by the Santa Fe National Forest, and the resulting damage to the forest lands. We have this very unusual situation in which we can get into most of the area by roads which are presently there, improving present forest roads and working up the canyon floors. We can get to probably two locations per section in this fashion at a fairly reasonable cost, something on the order of \$10,000 a well. If we try to go to closer spacing, then we have to start up the sides of mountains and our cost increases at a very sharp rate.

I would judge on the average to go from two wells to a section to four wells a section will cost for the second well something like \$10,000 per second well on a section. As set out on this Exhibit N, then, we can see for 320 acres per well a cost of \$10,000; 160 acres, about \$30,000; for 80 acres, about \$35,000; and for 40 acres, about \$30,000 cost per well.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

We can then compute the total cost per section of this road and location work, which on 320-acre is \$20,000; 160, \$120,000; 80 acres, \$280,000; on 40 acres, \$480,000, practically half a million dollars per section. Those comparative costs, then, in terms of percent of cost of construction on 40-acre locations, by drilling two wells to a section we would spend about four percent as much money as if we drilled sixteen wells to a section. Four wells to a section would be 25 percent as much; at eight wells to a section, about 58 percent as much as for 16 wells to the section.

Now the comparative damage to the forest, and this we consider a rather important point although it is unusual before this Commission. This is one of the most scenic forests in New Mexico. We consider damage to this forest something that deserves some consideration, where we can go in and develop the land and take the oil out from under it with a damage to the forest of only two to three percent as much as would be required by drilling 16 wells to a section, we feel certainly deserves some consideration. My thought is that although the cost might be four percent for two wells to a section, part of that money is spent in improving the present roads; and the actual damage that we would do to the forest will be about two percent by drilling two wells to a section as compared to 16.

Mr. Spear, can you describe adequately in words the word "terrace" in the forest on the side of this land.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

PAGE 70

A It's almost impossible to describe it. It's, I'm sure, the worst terrain as far as drilling costs and road construction is, in the San Juan Basin.

Q There aren't any roads up on top, on the crests, are there?

A No, sir.

Q If the Commission desired to do so and it's satisfactory, would you be willing to fly them over this area tomorrow morning?

A Yes, sir, I certainly would.

Q Do you think that they could observe what you have been trying to express here in words by flying over it?

A Yes, sir, I believe they could. It's about a 25-minute flight from here to that area, and it's hard to believe figures such as we have presented here without actually seeing the land.

Q Anything further with regard to Exhibit No. N?

A No, sir.

Q Then I direct your attention to Exhibit No. O. Will you describe it?

A Exhibit O shows comparative allowables for different spacing patterns of 40, 80 acres, and 160 acres, using the Commission's present method of establishing allowables as determined by both spacing and depth. The allowable factors themselves are shown in the top part of the schedule. The allowables which



we would anticipate would be operative in this area with the basic allowable of 70 barrels a day is shown on the lower part of the schedule.

We have asked that the allowable be set at an equivalent of four basic allowables for the 160-acre proration units, with a depth factor increment of 5,000 feet allowable. This would give an allowable of 280 barrels per day, as shown in the bottom right-hand column. We would like to point out the example that if we were to set up individual pools throughout the area as on 80-acre spacing, for instance, our deepest well on 80 acres would get an allowable of 233 barrels a day. So the allowable that we're asking for is roughly the same throughout the pool as we would receive for 80-acre spacing if we set the allowable on the deeper wells. There's very little difference, 230 barrels a day, 280 barrels a day.

MR. PORTER: You are asking for four basic allowables without a depth factor being applied?

A That is correct. We would like for the allowable to be the same throughout the whole area, and we have selected the minimum allowable which would apply.

Q (By Mr. Verity) Mr. Green, why is it necessary in your opinion that you have the allowable the same throughout both sides of the pool and throughout the pool?

A We feel that in the event two allowable wells are discovered that we need, of course, to protect our relative rights;



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

and the only way we can do it is to withdraw the same amount of oil per tract throughout the area. This requires an allowable be the same throughout the entire area and not varied from one spot to another.

Q In order to get this large area, that is an important factor, is it not?

A I feel that it is.

Q And the reason that it is required at this time?

A Yes, sir.

Q Mr. Greer, are you familiar with the land ownership situation in the area covered by the application?

A Yes, sir, I studied the land ownership.

Q Will you direct your attention to Exhibit P and the land map of part of the Puerto Chiquito area that I believe is included in the exhibit?

MR. VERITY: Does the Commission have this exhibit?

MR. PORTER: Yes.

Q (By Mr. Verity) Would you please tell us what it is?

A This land map shows the working interest ownership of the area of the small tracts, and the area in which some of the wells have been drilled on small tracts, and the area in which we would anticipate problems as far as offset wells and changing the spacing pattern from the current one to a wider pattern.

Q Before you go further, Mr. Greer, I wonder if we might direct your and the Commission's attention back to Exhibit D,



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 82

which I believe is a plat of the entire area here under consideration, is that correct?

A Yes, sir, Exhibit D covers the entire area.

Q Does Exhibit D show the portion of the area under consideration that is in Federal units?

A Yes, sir. It has two units, two Federal units, one outlined with a red boundary and the other outlined with a green boundary; the Canada Ogitos Unit and the Puerto Chiquito.

Q Is all of the Canada Ogitos Unit Federal land?

A The division between the Federal and fee land and the Indian land is at the south boundary of Township 27 North, and so we have two townships of Indian land, being Townships 27 North, Range 1 East and 1 West. South of that is either Federal land or fee land, and primarily Federal land.

Q I notice also the Puerto Chiquito Unit; is that all Federal land?

A The Puerto Chiquito Unit I would estimate to be about 75 percent Federal land and one-fourth fee land.

Q So that actually we have a very small amount of fee acreage involved in this area?

A That is true.

Q At the present time, have there been some wells in the area to be affected by the application that have been drilled on a smaller spacing pattern than 160 acres?

A Yes, sir, there are several wells that have been drilled



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

PAGE 83

on smaller pattern.

Q Do you propose that the Commission grant an exception to the operation of these wells?

A Yes, sir, we have suggested exceptions be granted. We have taken each individual case and worked it out in detail with the owners who are affected to see that we could solve all of these small tract problems. We have solved them all.

Q Are those solutions set out on this part of Exhibit P, "Land Map of Part of Puerto Chiquito Area"?

A The exceptions are listed on the next schedule. I might point out how we solved part of the problems on the checkerboarded area colored yellow and red. Standard of Texas and our company have alternate narrow 160-acre tracts, and we have an agreement with Standard of Texas and in the event the Commission establishes 160-acre spacing, how we will drill the wells in this area and drill them on 160-acre tracts.

In the checkerboarded area, yellow and green, we have checkerboarded 80-acre tracts with Pan American; and there again, we have made an agreement with Pan American in the event the Commission establishes 160-acre spacing how these wells will be drilled, the manner in which they will join us when it comes up, or will farm it out to us.

Q Referring to your recommended non-standard units, your next exhibit under P --

A Yes, sir. We clearly mark all of the tracts which we



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 84

feel require exceptions to the order. Some of the tracts are drilled, and where an 80-acre tract is drilled we have suggested that an exception be given to that tract and also to the other 80-acre tract on the same quarter section. With these exceptions there appear to us to be no problems in changing the spacing pattern to 160 acres. The only possibility that we can see of offset drainage would occur under Jicarilla Indian lands between Sections 19, 20, 29 and 30; and in this instance the Indians own all of the royalty so their interest will be protected.

The only people who could be hurt would be the working interest owners under Sections 19, 20, and 30; and that is primarily our company and we're willing to take whatever risk might be involved there.

Q Do you think that correlative rights will be protected under this method of allowing exceptions to these wells?

A Yes, sir, I do.

GOVERNOR CAMPBELL: What tolerance are you seeking with regard to location of a well within the quarter section?

A We have suggested as near the center of a 40-acre tract within the 160-acre unit as is reasonable, because of the terrain: about 150 feet within any 40-acre tract. The country is so rough that we would not at this time suggest a certain particular spot.

Q (by Mr. Verity) Please describe Exhibit 2 to us.

A Well, Exhibit 2 has two parts, one a little schedule



and the other a stratigraphic section. This is simply our recommendation of identification of the productive interval in the Mancos formation which we're concerned with. The wells have been drilled and completed in various parts of the Mancos formation, all of which are included within the zone which we recommend here; and we suggest it be identified by a couple of wells, one a shallow well and one a deep well.

The specific wells we use for examples are the Intex Hijo, location F-5 in 26 North, 1 East; and the Bolack Greer No. 1 Bolack, location O-9, 26 North, 1 West. This simply identifies the vertical limits we suggest the Commission use. It's my understanding that these vertical limits have not been previously definitely established.

Q You included the logs for the same purpose?

A Yes, sir.

Q Mr. Greer, in conclusion, do you have an opinion as to whether or not one well located on each 160 acres of this area will efficiently drain the area of oil.

A Yes, sir. I feel that it will.

Q Do you think that it can be economically produced on anything less than 160 acres?

A No, sir, I think it cannot be.

Q Do you have an opinion as to whether or not if the Commission grants this order, it will protect the relative interests of the parties?

A Yes, I feel the relative rights will be protected by

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182



approval of the application.

Q Do you have an opinion as to whether or not it would prevent waste?

A It would prevent waste.

MR. VERITY: That's all.

MR. PORTER: Do you want to offer your exhibit at this time?

MR. VERITY: We offer Exhibit 1 in evidence in its entirety.

MR. PORTER: Exhibit 1, which contains Sections A through R, is there any objection to the admission? It will be admitted in the record.

(Whereupon, Applicant's Exhibit No. 1, Sections A through R, received in evidence.)

MR. PORTER: Does anyone have a question of Mr. Greer? Mr. Mutter.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Greer, several times during your testimony you mentioned the Verde-Gallup pool, and you also had some exhibits relating to the Verde-Gallup pool. Is this pool similar to that one?

A I feel they are quite similar.

Q What are you producing from here, a fractured shale?

A Yes, we feel that it's a fractured shale.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q Do you think you are producing from the matrix of the shale or from the fractures?

A I feel it's from the fractures. I feel it would be very difficult to get anything out of the matrix.

Q So your production would be from the system of fractures?

A That is my feeling. I feel there are probably large fractures and small fractures.

Q Do you feel that these fractures have any particular direction that they run? Would they be along the strike of this structure, being north and south, or would the main trend of the fractures be downdip and into the Basin?

A That's something I wish we knew. We have given some thought to it. We certainly don't know. We hope in the course of drilling the wells to find the areas of the most fracturing and best fracturing, but at this time we have no idea as to orientation of the fractures or where the most fracturing occurs.

Q Geologically here, was the shale laid down as a flat plane and then there was an uplift that caused it to come up and cause this extreme dip?

A That is my thought.

Q As the uplift occurred, the shales were bent to the point of breaking?

A I feel that that is likely what happened. Of course, accordingly, we would expect the greatest fracture at the point



of the most flexure. So far we have not proven that.

Q Is there any faulting in this area?

A We suspect one fairly large fault in one area, the north part of this area. Other than that, we have not seen evidence of a lot of faulting.

Q One other question I had, Mr. Greer, I heard this morning during one of the opening statements in this case that it would be advisable for the Commission to go to a wide spacing in this area in order to prevent finding themselves in some sort of a dilemma, and I think actually the words that were used, "In order to conserve some elbow room for allowable purposes." Is the San Juan Basin in any kind of a bind allowable-wise right now, except that it can't make the allowable?

A I think we are not in a bind allowable-wise, as far as market for the oil is concerned.

Q There's market for the oil that's produced?

A At this time, yes, sir. I would not think that contradicts Mr. Selinger's statement, of course.

Q I didn't remember who made that. Mr. Greer, this one exhibit here which is the graphic display of pressure equalization --

A Yes, sir.

Q -- that Mr. Verity likened to a "U" tube. That actually does this show, the pressure gradient measured in the wells confirms the computed pressure gradient on the previous page?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 893-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

A Yes, and therefore establishes that the wells have equalized pressures with an oil gradient.

Q You could have two pools with similar hydrostatic heads and pressure gradients that weren't in connection with each other that would demonstrate equal pressures like this?

A It is entirely possible that this would happen, that they could have equalized over geologic times and by happenstance you could have equalized pressures and not in communication. It is possible.

Q As a matter of fact, the communication and the equalization of the pressures could have been when the thing was still a flat bed and then it was raised and maybe some of these fractures or some of this bending would isolate one area from another?

A If that occurred, we could not then have the equalized pressures without communication. If that were the case, the pressures would remain the same.

Q There isn't any evidence here that one area has gone down in the pressure of another area?

A Of course not, they are ten miles apart and we produced the wells a couple of months.

Q Now, Mr. Greer, if you will turn to this pullout page on Exhibit J, the contour map of the Gallup in the Verde, looking there at Sections 29 and 30 of the Three States Lease and the Standard of Texas lease --

A Yes.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q -- these two leases are just about equal as far as structural position is concerned, are they not?

A That is true.

Q You would expect from a cursory inspection here that those two leases would be similar in productivity and production capability as far as structural position is concerned?

A As far as structural position is concerned, they would have the same relative pressure and therefore we would anticipate the same productivity if they had the same fracture system.

Q I believe on the other pullout sheet that shows the production of barrels per acre?

A Yes.

Q That the Three States lease showed 550 barrels and the Standard lease showed 900 barrels per acre.

A Yes, sir.

Q That was for the entire lease that's in the little cross-hatched line?

A That is correct.

Q Now, Mr. Greer, if we take the top 480 acres of each of those leases, being the North Half of Section 29 and the North Half of the South Half of Section 29, and the North Half of Section 30, and the North Half of the South Half of Section 30, have you made a comparison of the production per acre between those two areas?

A I have not made it -- would you repeat the areas again?



Q Well, all of each section except the South Half of the South Half.

A Just the North Half.

Q Being the North Half and the North Half of the South Half, 480 acres, including the 406 along the bottom of each section.

A Oh, well, that would not be a very logical division of the acreage because you are drawing a line right through a row of wells which undoubtedly drain some distance away from them.

Q Well, each one of those sections, though, would have a row of wells directly north of it on 40-acre spacing, the one in Section 29 would have the four wells in Section 20 of Aztec's or Southern Union's; the Three States wells would have four Pubco wells directly north, would it not?

A I believe that's right.

Q And hasn't the main mechanism for production in the Verde Pool been a gravity drive?

A I think not. It's been a combination of gravity and solution gas.

Q And solution gas?

A Primarily solution.

Q Gravity has been an important factor in these?

A I believe it is a factor where you complete the areas as fast as they did on the Hubco lease, gravity could not have much influence. That would be primarily solution drive in that



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325.1182

SANTA FE, N. M.
PHONE 983.3971

ALBUQUERQUE, N. M.
PHONE 243.6691

area.

Q Have you made a comparison of the production from those two 480-acre tracts that I was describing in there in Sections 29 and 30 as to production per well and production per acre?

A I have not. I limited my analysis on this particular exhibit to include full leases to avoid the possible error which might arise by using estimated productivities or production, amounts of production per well, which of necessity have to be estimated where all wells produce into the common battery, and I presumed that's what happened. For that reason I chose these areas to eliminate that error.

Q Assuming on the Three States lease that there are eight wells in that 480-acre tract, and that those eight wells have a cumulative production through 1962 of 373,000 barrels, would that be approximately 46,600 barrels per well?

A I believe it would.

Q Would that also be approximately 780 barrels per acre?

A On the approximately 60 acres, yes, sir, assuming that that was the area they drained.

Q Assuming that the Standard of Texas lease in Section 29, the north 480 acres only, has twelve wells on it and has produced through 1962 a total of 122,700 barrels of oil --

A Yes.

Q -- would that be approximately 43,410 barrels per well?

A Yes, sir.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q. Would that be approximately 1090 barrels per acre?

A. Yes, sir.

Q. Would you attribute the difference in recovery per acre, being 1090 over 780, to the fact that there are four more wells in that 480 tract than there are in the other one?

A. No, sir.

Q. What would you attribute it to?

A. They're just drilled in a better part of the field, which is pretty obvious if you will study the wells going from east to west. The Three States lease I feel is not as good as the one to the east; and we have a very definite check on that by taking the offset wells drilled by Humble, the Humble 1-X in Section 25 and the No. 3 -- I don't have the figures with me, but I believe the No. 3 Well produced less than 10,000 barrels. That's Section 25 and 26 is just one of the tight spots in the field, apparently.

Q. Section 28 to the east of the Standard lease is also a tight area, isn't it?

A. Appears to be. It varies somewhat. You certainly could not conclude that you have more recovery where you have the more wells, in this instance, as being more efficient drainage.

Q. But the recoveries per well are rather comparable, being 46,600 barrels per well and 43 on the other lease?

A. Yes.

Q. It's just that one lease recovered more oil by virtue



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

of having more oil?

A That is true, and the better communication the more nearly they would be the same. If you had exactly equalized pressures, exactly, we might say 100 percent communication through out, then they would have been exactly the same.

Q If you are depending on producing from a fractured system, you have a better chance of encountering a fractured system if you have additional wells?

A No, I disagree with you on this point. We have discussed this, in fact, one of the company's Geological Staff recommended that an area such as this, we attempt to develop the area as economically as possible and to go in and drill a well on every 40-acre tract where you hit a fracture, complete it, if you didn't walk off from it; and that you would recover more oil for less money in that fashion. I strongly disagree with that for this reason, that we have found that we can drill into this formation and whether we hit a fracture or not, if we get a large enough frac job into it, we can connect the well with the fracture system and this is far more important than drilling another well that will make two or three gallons a day natural. The important thing is to get into the system, and that is far more important than drilling additional wells.

Q Well, I realize that if you don't hit a fracture and you frac it heavy enough, that you might frac into a fractured system.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3171

FARMINGTON, N. M.
PHONE 325-1182

A It is improper to assume in this particular comparison that you have more efficient drainage. You know you haven't made a proper comparison because of the variables within the area. To compare for drainage, we need something -- as we took Section 19 where you have wells surrounded by other wells, and there you can take an average and assume they are relatively competent.

Q I see. Turning on over to production rate versus time for the first eleven wells in the Pubco lease in Section 19, also turning to production rate versus time for the last four wells, it appears that the last four wells came on production about the middle of 1959?

A All four of them came on in the month of July and August. All four of them were on production at the end of August 1959.

Q Is the completion of those four wells reflected on the production curve for the first eleven wells?

A No, sir. The production as reported by Pubco for the separate wells are computed separately.

Q I mean the production over here on your production rate versus time for the first eleven wells.

A Yes, sir.

Q Is there any change in the production at the time the last four came on?

A Oh, at that time they were all producing at restricted



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1162

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6591

by their allowable, and so they're all producing in the order of 50 to 60 barrels a day, which was the allowable at that time.

Q And no decrease in productivity, as reflected by this production chart, as a result of bringing the additional four wells on?

A There's no way to measure that without testing the wells, which of course we have no idea that they did. All we had is actually how much oil was produced from each well, and where they are producing restricted by allowable, of course, you cannot tell.

Q This is the average for each of the wells, a single average for each of the wells, or composite?

A It's the average from the eleven. We took the production from the eleven, divided it by eleven and got the average.

Q The wells were producing at top allowable, and were producing at top allowable for approximately a year after the second wells were brought in?

A Yes, sir, and they all quit together.

Q As a matter of fact, they didn't have a decline, they just had a drop?

A Yes, sir, very definite indication of overdrilling.

Q Would this also be a possibility at that time, that they had just depleted the fractures and there wasn't anything left in the fractures?

A Oh, I feel that's probably what happened, but they



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

depleted the fractures, I doubt that there was anything else contributing to the production other than very minute fractures.

Q And the pressure probably just about nose-dived with the production?

A Oh, I feel certain that it did.

Q Turning to your pressure versus cumulative production graph for the N-20 Jicarilla, which is the first pullout under Exhibit J, we have here a moderately declining bottom hole pressure line going clear up to 140,000 cumulative barrels of production, and it's a straight line until it gets out to 110,000. Would you expect this pool, which is similar to the Verde-Gallup Pool, to produce at that rate and for that long a period of time before the pressure dropped off, like it would in Verde-Gallup?

A Of course, we don't know exactly what the relative permeability relationships are for these fractured pools, but this particular projection that I've made is based on the assumption that we will recover a substantial part of the oil out of the fractures before we reach free gas saturation, which I believe will occur. I feel likely that we can produce up to a third or half of the oil before the ratios get severe.

Q You had an analysis made from fluid from one of the deep wells, but not of the shallow

A That is correct. We have not had an analysis of the shallow wells. All we can do there is estimate what it would be, and the variation is not great under the different types of reservoir



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 242-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

PAGE 08

fluid which we can anticipate we would have.

Q What pressure do you think this would have to be drawn down to in the deep wells before the free gas starts coming out?

A Again it's hard to say. We are hoping that we can drop the pressure, oh, perhaps twenty percent or twenty-five percent, and of course I feel by the time the pressure is dropped twenty-five percent we will probably have a third, maybe forty percent of the recovery.

Q What is the solution gas-oil ratio in that deep well?

A Approximately 400 cubic feet per barrel, between four and five hundred.

Q Is it your estimate that it's similar to that in the shallow well?

A No, the shallow wells only have about 50 cubic feet per barrel.

Q Over here on this computation of reservoir volume and drainage area for the A-14 Bolack, which is the next to the last page in K --

A Yes.

Q -- what is the 7840 times 62 over 2?

A That's just a simple extrapolation of productivity decline. Of course, it's based on the assumptions which I went over this morning.

Q What is the 62?

A The 62, that's barrels per day average production rate.



initially. The 2 would be the decline in, the maximum rate of decline in production rate, 2 barrels a day.

Q When did you experience the 2-barrel per day decline?

A Perhaps I wasn't clear when I presented this this morning. That was my estimate of the maximum rate at which this well is actually declining, on the assumption that our measurements are not exactly accurate. I feel that we can probably tell within one or two barrels a day, actually within one barrel a day of what the well was truly making. For instance, in March it was probably making closer to 62.0 barrels per day, rather than 62.3; and in July it's probably closer to 63.0 than 63.5.

We can't measure it any closer than that. The assumption is made that the maximum rate of decline would be two barrels per day. Actually, I feel it's probably less.

Q And you probably have a very small rate of decline like that until the pressures start dropping in these crevices or in these fractures, or until your KJKO relationships would start slowing down the migration of the oil?

A Of course, that would not happen until the pressure has dropped considerably. The pressure obviously is not dropping, or the productivity could not stay up. The inescapable conclusion then is that the well is draining a very wide area. The minimum drainage area, of course, even at two barrels per day decline and 100 barrels an acre is 460 acres. If it is only one barrel a day it would be on the order of 1,000 acres.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 583-3971ALBUQUERQUE, N. M.
PHONE 243-6691

This is assuming it would make that much oil before that pressure and before the production went down.

A I see what you are getting at.

Q You are assuming this over quite a long period of time in order to make 230,000 barrels of oil.

A Yes, I made quite a study, of course, as to which is the most accurate method of determining reserves, pressure decline, or productivity decline; and I am convinced where we can measure productivities accurately you can't beat productivity decline, and you can take over a wide range of relative permeability ratios of the different characters that we might anticipate; and throughout all of them the rate of decline of productivity as compared to cumulative production is a better indicator, easier to extrapolate and more accurate than pressure. The pressures, of course, will hold up for a while until you hit the free gas saturation, and then they drop off drastically.

Q So will production?

A The production will drop off in the meantime as your bubbles of oil expand in the reservoir, and your Productivity Index will decline in a more accurate fashion than your pressures and you will find the curve relation of pressure to cumulative production for practically all types of oil and all types of permeability relationships, but the decline in productivity index is more nearly a straight line.

Q You won't have any decline in productivity, will you,



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-5691

PAGE 101

if you are producing from almost infinite permeability through a system of fractures?

A Certainly. Your total productivity must be a combination of your Productivity Index and your total pressure. As you withdraw oil from the reservoir, even though the productivity Index did not decrease, your pressure must decline as you withdraw oil; and as it declines, your productivity declines. This is a very accurate method, in my opinion, if you have the type of information which we have here; and realizing, of course, that we have only produced a small amount of oil.

Q It would appear from the inspection of the summary of oil production on the preceding period that the productivity of oil has not declined, either by ten-day periods in the upper part of the summary --

A Right.

Q -- or by monthly periods--

A That is true.

Q -- in the lower part of the summary. As a matter of fact, the productivity has increased rather than gone down.

A True. That's why I say that I believe we are reasonable in assuming that the maximum rate at which the true productivity is declining could not exceed one barrel a day. Of course, the net is, what you are coming to is the same conclusion that I have come to; namely, that the well could likely produce not 230,000 barrels of oil, probably at least 100,000, maybe a million. It's



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

draining not a minimum of 500 acres, probably a minimum of 1,000 acres, maybe 2,000 acres.

Q If it has good permeability through the fractures, it would be draining as far as the fractures went?

A Right. We are hopeful that the system is as large as we believe it is. If we had a practically unlimited system covering two or three townships, we'd find exactly what we have here; namely, no measurable decline in production over a four or five month period.

Q Until the fractures were beginning to be depleted or the gas bubbles formed?

A Until you have taken enough oil out to reduce the pressure.

Q Now the next one would be the estimated manner of pressure decline with time over here, the last one under L. We have three curves there, the pressure at the edge of the drainage area, the average pressure at the reservoir, and the pressure near the well. Now the pressure at the edge of the drainage area appears to be higher than the pressure near the well.

A Yes, sir.

Q Would the difference between those two increase with the distance of the drainage area?

A Yes, sir.

Q So that the difference between those two would also increase with the difference between the wells?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6611

A Yes, sir.

Q And the amount of acreage that each well would be draining?

A Yes, sir.

Q When the pressure near the well has declined to the point that production is so low that the well must be abandoned that would mean then that with the broader spacing the pressure would be higher out in the reservoir than if the wells were closer together, would it not?

A That is true, if you had exactly uniform conditions.

Q This would also mean, Mr. Greer, wouldn't it, that at the time of abandonment there would be more oil out in the reservoir with wider spacing than there would be with narrow spacing?

A If you had exact uniform reservoir, that is true. The amount, of course, would be quite small, and especially in view of the fact that after you reach free gas saturation that the pressures then tend to equalize, whereas I have estimated them to be apart at the end of three years, as you reach depletion they will likely draw together a little closer. The amount of oil would be very small, and of course my feeling is that from a practical stand-
 Q Let me ask you one more thing. If we will see you have oil on 160 acres then we ever would be 30 in this area.

Q Because you would drill more wells on 160 than you would on 30 -- I know that sounds backward, but that's what I mean.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

A Because we would have an opportunity to make a profit and as such, we would be willing to spend money improving our fracturing technique which I feel is far more important.

Q Nevertheless, you have used a uniform 500 barrels per acre throughout your comparisons, comparing 40 acres and 320 acres and the recovery actually wouldn't be the same per acre comparing 40 and 320, would it?

A Well, just as in Verde-Gallup where the recoveries varied from 200 to 300 barrels an acre. We are hopeful that we will drill enough wells that we can get an average and come out on the average. I certainly would think there would be some areas that would have higher recoveries than others. Those recoveries are, of course, going to be more closely connected, I believe, with productivity than anything else.

Q Just one more question, Mr. Greer. How long did you say this pipeline would have to be from the Lybrook station up to this area?

A Roughly fifty miles.

Q Has anyone contemplated building a line at the present time?

A If this application is granted, Llavas Pipeline Company will build that line.

Q What is that line going to cost?

A Between 400,000 and 500,000; it might reach 600,000.

Q What would be the effort; would it be to establish a



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

central gathering point in the area of the production and truck the oil to that, or would you lay gathering lines to all the batteries?

A The system as contemplated now is gathering lines of all the wells in the shallow area, piped down to the area just east of the little cluster of wells you may recall in Township 25 North, Range 1 West. At that point there would be a storage area and another pump station there that would pump from there to the El Paso Apache Station.

Q Some of the remote wells would be trucked into the storage area?

A No, the gathering lines would go to them.

Q They would all be gathered into the storage areas?

A The wells that are presently drilled, that is our plan.

GOVERNOR CAMPBELL: Did I understand you to say that if this application is granted the pipeline is committed on the present development?

A That is correct. That's the only further requirement between us and the pipeline is this Commission's order.

GOVERNOR CAMPBELL: Why are they so interested in this, because it will be less costly for them to gather the oil at fewer points in this terrain?

A They can gather their oil from fewer points, not necessarily fewer points but for a smaller cost; they can take the oil out over a ten-year period instead of a five-year period and their



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6651

costs are less. They are pretty much assured they can gather all the oil. If they lay a line in there that is not large enough, the wells are drilled on a dense pattern and the production rates go up high. Then they either have to increase their investment or lose the oil to trucks. As near as we can tell, there's very little profit in trucking. We can't see that that is really a big help to anybody.

GOVERNOR CAMPELL: This will be their line, you are not paying it out, you producers?

A No, this line would be owned by Llaves Pipeline Company. They have made an agreement with El Paso Products Company. El Paso Products Company would buy the oil in the field.

MR. NUTTER: That's all.

MR. PORTER: Mr. Durrett, do you have a question?

MR. DURRETT: No, thank you.

MR. PORTER: Mr. Arnold.

BY MR. ARNOLD:

Q What are you recommending as the vertical limits?

A We picked out -- of course, as you know, every company has a different idea of the top and the bottom of these different producing zones. We picked out the one that we feel is the top of the Miabara and extends to the Greenhorn. The Greenhorn, of course, is a definite and easy marker all within the Mancos formation. The top, of course, is a little bit -- some people call the top one spot and the another. We have just suggested an



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

electric log marker which we consider to be the top of the Niobrara, as being the top limit in the lower Devonian, the very Devonian marker being the top of the Greenhorn.

MR. MUTTER: What's the top limit of the Dakota producing interval, the base of the Greenhorn?

A I believe the base of the Greenhorn is the top of the Dakota.

MR. VERITY: Base is 400 feet below.

MR. PORTER: Mr. Utz.

BY MR. UTZ:

Q Mr. Greer, what is the principal drive mechanism in this pool?

A I feel it will be a combination of solution drive and gravity drainage. If it were possible, of course, to just drill the deep wells on the downdip side and produce the field primarily through gravity drainage, I think it would be an ideal situation. To get the oil out in a reasonable length of time, we will probably have to drill wells throughout the area, and a lot of it then will be by solution gas drive.

Q You anticipate the upside reserves to be approximately the same as the downside reserves?

A I have in this estimate, but of course it's primarily because we don't have any better information; but as we all know, the more you recover, everything else being the same as far as the solution gas drive mechanism is concerned, will be lost in



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 10

the deeper area than in the shallower area. On the other side, we feel that the gravity drainage will be higher than in the shallow area, perhaps they will just about balance and recoveries will be approximately the same.

Q That is the principal reason for you suggesting the same allowables per acre throughout the pool.

A Yes, because I feel that the thing will balance out close enough, from the information that we have at this time, that the reserves are approximately the same and the allowables accordingly should be about the same.

Q In the event there's considerable gravity drainage, then the low structure wells will receive more oil anyway?

A They would if there's more gravity drainage. In view of the past history of the Gallup, it's apparent to my mind that gravity drainage will be as important as solution gas drive.

MR. UTA: That's all.

MR. PORTER: Any further questions?

MR. VERITY: I have another question.

MR. PORTER: Mr. Verity.

REPHASE EXAMINATION

BY MR. VERITY:

Q Mr. Greer, if you actually drilled one well to 40 acres in an area here instead of one well to 17 1/2 acres, do you feel that you would get any appreciable amount of additional oil?

A Oh, no, sir. The amount, even if conditions were very



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

uniform and we know we can make computations assuming a uniform sand, or even if you could assume uniform fractures, you can compute that there would be a slightly greater recovery on 40-acre as compared to 80 or 160. It's not less by one or two percent.

Q It's a negligible amount, but you would increase the recovery.

A Oh, yes, and far overshadowed by what I consider the practical aspect in this area.

Q Mr. Greer, in the opening statement we made reference to the 80-acre spacing in Cha Cha-Gallup and the fact that oil was left in the ground there because of 80-acre spacing as against what would have been if it had initially been spaced on 160 acres. Will you tell us whether or not that is the situation?

A That's true. For the same volume of reservoir rock of the same character in the Southeast Cha Cha and Northwest Cha Cha, the area drilled on 160 acres will recover more oil than the area drilled on 80 acres, by virtue of the fact that the waterflood will be more efficient.

Q Approximately how many barrels do you think has been left in the ground by reason of this fact?

A In Southeast Cha Cha, if waterflood could have been started at the bubble point, as compared to what it is now, I would estimate at least half a million barrels more oil would have been recovered than we will recover through our waterflood.

Q Do you think that the 80-acre order as against the initial



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 119

160-acre order affected the fact that a tremendous amount of casinghead gas was vented there?

A There's no question about it. The Commission records will reflect time and again the people who planned to lay the system in the field asked for extension of time, having difficulty financing the project, and the reason it's difficult to finance is that the gas was going to be recovered too fast. They had to buy more compressors than was really an economically good project. Had the wells been drilled on wider spacing, the gas recovered over a longer period of time, it would have been much easier to finance. As a matter of fact, our company might have been interested if it hadn't been developed on that.

MR. VERITY: We have nothing further of this witness.

MR. PORTER: Anyone else have a question of the witness? He may be excused.

(Witness excused.)

MR. VERITY: I would like to call Mr. Letimore. I don't believe this witness was present this morning when the other witnesses were sworn.

(Witness sworn.)

ROBERT D. LATIMORE

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. VERITY:



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1162

Q Will you state your name, please?

A Robert E. Latimore.

Q Mr. Latimore, what is your present occupation?

A I am Forest Supervisor of the Santa Fe National Forest.

Q Are you familiar with the Santa Fe National Forest in Rio Arriba County in townships 24, 25, 26 and 27 North and 1 West?

A Yes, sir.

Q Will you please describe to us the nature of the terrain at that point?

A Well, probably the easiest way to describe it would be that it has narrow valleys or canyon bottoms in which we have planted crested wheat grass and we have some native gamma grass around the edges. The sides of the mesas are very rugged and rough, rocky terrain, almost inaccessible; and then the mesa tops are covered by timber, Ponderosa pine timber and pinon pine, some juniper.

Q Is this area under your jurisdiction?

A Yes, sir.

Q Tell us what this timber is like that you referred to, the Ponderosa pine, I believe you said?

A We feel that where we do have Ponderosa pine growing there, it is a commercial timber.

Q Are you familiar with what is done with this timber when an oil company makes an oil location and drills a well?

A Yes, I certainly am. Whenever they have a contract



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

roads into the area, why of course they take the land out of production and put it into a road and it ceases to produce timber. We do have roads in that area in the canyon bottoms, but we do not have roads on the mesas.

Q Then if it's developed oil and gas-wise on the canyon bottoms, there would be a minimum amount of damage to the Forest?

A That's right.

Q You already have roads there and you would not have to cut timber for roads; but if it's necessary to go out of those canyon bottoms, timber would have to be cut for the roads as well as the additional locations?

A That is correct.

Q Does the Forest Service desire to see the smallest amount of space used to develop the oil and gas resources in this area?

A Yes, it certainly does.

(Whereupon, Applicant's Exhibit No. 2 marked for identification.)

Q I hand you what the reporter has marked as Exhibit 2. Tell us if you will, please, whether or not these pictures in your opinion represent a true picture of the area that we have been referring to.

A Yes, I feel they certainly do.

Q Mr. Latimore, as Forest Supervisor, what extent of area is under your jurisdiction?

A Well, approximately a million and a half acres.

Q Of national forests?



A Yes.

Q Does your territory extend to Coconino County, Arizona?

A No, it does not. It's just here in Northern New Mexico.

Q Are you familiar -- in your capacity, have you familiarized yourself with the Kaibab National Forest over there?

A Yes, I have, and for the past four years prior to coming to Santa Fe, I was Chief of Wildlife Management for the Southwest Region of the Forest Service, which includes thirteen National Forests in Arizona, New Mexico, Texas, and Oklahoma.

Q Is this area very similar to the Kaibab National Forest?

A Yes, it is.

Q Did you aid and assist in the negotiations with regard to the restrictions that were prepared for leases on the Kaibab National Forest?

A Yes, I sure did.

Q Are you familiar with those restrictions?

A Yes, I am.

(Whereupon, Applicant's Exhibit No. 3 marked for identification.)

Q Mr. Latimore, I hand you Exhibit 3, which is a restriction off of U. S. Government Lease AR-92467 which governs the National Forest. Is that the restriction that you have referred to?

A Yes, it is.

Q Do you recall what these restrictions say with regard



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6651

to the amount of wells that can be drilled on the Forest?

A Yes, it's very well stated here in Item 5, but in short it states that only one well will be permitted per 640 acres during the exploration, and if a field is proven that the spacing will not be less than 160 acres.

MR. VERITY: We offer Exhibits 2 and 3.

A I might also add that the reason for this was to benefit the multiple use values that are found within the Kaibab.

Q (By Mr. Verity) Did the U.S.G.S. assist in negotiating this lease, along with the National Forest?

A Yes, they did.

MR. PORTER: May I see that exhibit, please?

GOVERNOR CAMPBELL: There's no such agreement in this area here, is there?

MR. VERITY: Merely because of the fact, Your Honor, that these leases were issued several years before the Department and the U.S.G.S. became cognizant of the fact that these areas could be drilled with 160-acre locations.

Q (By Mr. Verity) The other question is that line, Mr. Lathrop. In recent years has the National Forest appended restrictions to its leases that require all development to be in units?

A Yes, that is a part of the lease that goes out, and that one of the stipulations of the Department of Agriculture.

Q How long has this practice been in effect?

A Well, I think approximately three years.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

MR. PORTER: Applicant's Exhibits 2 and 3 have been offered. Any objection to the admission?

MR. DURETT: I would like to ask a question before you accept or reject the exhibits.

CROSS EXAMINATION

BY MR. DURETT:

Q Mr. Latimore, did you take these pictures? Are these your pictures?

A No, sir.

Q I realize that you testified that they do represent the area. What I'm particularly interested in right at this point are the remarks on the pictures, and I'll call your attention to the remarks on the next to the last picture where it says, "Still lost some valuable timber and grass," and remarks on the very last picture, "A number of healthy trees lost here." Have you read those remarks?

A No, sir, as I went through here I looked at the pictures. I didn't read the remarks.

Q Before the exhibit is entered in evidence, would you please read the remarks and state whether you agree with it or do you know as to whether or not that's true.

A Just let me glance at the remarks.

A Yes.

MR. PORTER: All through any question concerning this fact, Mr. Greer can testify with regard to these captions.



FARMINGTON, N. M.
PHONE 325.1182

DEARNLEY-MEIER REPORTING SERVICE, Inc.

SANTA FE, N. M.
PHONE 983.3971

ALBUQUERQUE, N. M.
PHONE 243.6691

PAGE 107

GOVERNOR CAMPBELL: I think we can take judicial notice of the fact if you cut down a tree you lose some timber.

A I couldn't find any fault with it.

MR. DUARETT: Thank you, Mr. Latimore. I have no objection to the admission. I just wanted to call the Commission's attention to the fact.

MR. PORTER: Applicant's Exhibits 2 and 3 will be admitted to the record.

(Whereupon, Applicant's Exhibits Nos. 2 and 3 received in evidence.)

MR. PORTER: Does anyone have any questions of the witness? Mr. Rutter.

BY MR. RUTTER:

Q Did the U. S. Forest Service make any study of any reservoirs underlying the Kaibab National Forest as to drainage efficiency of oil wells before putting that restriction in the leases?

A As you well know, the Forest Service controls the surface of the land and the U.S.D.B. is the agency which advises the Government agency which advises the Forest Service, and the two worked this out together.

Q Did they make any study of the drainage efficiency of any reservoir underlying the land prior to they put the restriction in?

A No drilling had taken place in there.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

Q They really didn't know whether 160 would have been proper for the oil wells; it might have been nice for the forest, but they didn't know any potential as to the oil wells?

A That would be up to the U.S.G.S. to testify.

GOVERNOR CAMPELL: I think it establishes that the drainage is better under the Forest than it is out in the open.

MR. PORTER: The witness may be excused.

(Witness excused.)

MR. VERITY: That's all we have. We rest our case.

MR. PORTER: Mr. Spann, I believe you indicated you had some testimony.

MR. SPANN: If the Commission please, we have one witness, yes, sir.

JOHN MASON

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. SPANN:

Q Would you state your name for the record, please?

A My name is John Mason.

Q You were sworn earlier, is that correct?

A That is correct.

Q Could you state by whom you are employed and what capacity?

A I am employed by the El Paso Natural Gas Products Company



as an attorney in the Legal Department.

Q Do you have any statement which you would like to make on behalf of the El Paso Products Company in connection with this hearing?

A Yes, I do.

Q Would you proceed with your statement?

A I might say in the beginning that this is something that perhaps could have been said just as well by a statement of Counsel. However, in order to accommodate the Commission and anyone else present, we wanted to do this under oath so that it would be subject to any questioning which anyone may desire. Also I would like to say in the beginning that Products Company as a producer naturally favors the adoption of the spacing rule which is requested by the Applicant today, and we do concur with what has been said by the other producers present.

However, our primary purpose in being here today is not as a producer or as a mere purchaser in the area in Northwest New Mexico, but as a local New Mexico refinery wholly dependent on the Northwest area as a source of feed stocks for our Cinizia, New Mexico, Refinery. As the graph in the left-hand corner behind the Commission will show, and as the testimony presented by Mr. Kapteina points out, also, the production in the Northwest area is quite a bit less than what the nominations have been for a considerable period of time. As that graph shows, the production in the Northwest area has declined quite rapidly because of our

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 323-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-1181



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

investment in our Cinizia refinery and the network of pipelines that we have servicing that refinery, and because of our dependence on the Northwest area as a source of crude for that refinery, we are naturally quite concerned about the state of decline of production and thus vitally interested in creating such conditions as will be conducive to the development and recovery of reserves and thus increase the ultimate potential of the Northwest area to satisfy the requirements of our refinery.

This will not only benefit the Products Company as a refiner but will also benefit the community and the State as a whole. We do not pretend to have made a study of this reservoir so as to be able to judge at this time what the proper spacing rule should be; and we do not have an opinion as to whether these wells are located in one common source of supply or in several. Thus we make no recommendations in this respect.

However, there is one thing that we do have rather strong feelings about, and that is that just as the Commission can effectively prevent waste by prohibiting certain practices and by ordering certain spacing, it can also cause waste if it is not realistic in considering the economics as a prime factor in the determination of a proper spacing rule for a given area.

By not recognizing the economics and by issuing a spacing order based strictly upon a showing or lack of showing of such reservoir characteristics as would permit drainage of a given area by one well, the development of an area can be discouraged and unit



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

we're sure the Commission wishes to avoid. We do know from experience that the Commission is not adverse to considering economics of a situation in making its decision with respect to waste, for just as surely as spacing is a means used by the Commission to prevent waste, so is the proration of production.

The imposition of minimum allowables the Commission determines is almost wholly upon the basis of economics which would permit a producer the opportunity to recover his operating costs and thereby avoid premature abandonment, and which in turn may cause waste by prematurely abandoning.

We feel that the economics or comparative costs that were presented by Mr. Greer this morning in connection with the anticipated revenues and the cost of drilling on various spacing units, 40, 80, 160, and so on, could have a direct bearing upon whether or not this area is fully developed. If it is not fully developed, then this would be a source of supply for our refinery which we would be denied. We feel that no prudent operator would go into this area with an 80-acre spacing unit staring them in the face, with the realization that he would not be able to recover his cost and perhaps incur a loss; or even if he were limited to a small amount of recovery of his investment in the profit, that it would not still be conducive to development of the area.

So we feel there is a direct relation here between the amount of reserves which we can look to to supply our refinery



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 963-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 121

and the cost of development of the area. Since there is a scarcity of conclusive reservoir data because of limited drilling in the area, we would urge the Commission to give the greatest weight at this time to such factors as would encourage a maximum development of the area, and one of the only factors which we can look to with any degree of certainty right now is the cost of drilling and completing a well.

A spacing rule which would, on the basis of presently available information, permit an operator to recover a little more than his investment or incur losses is not further conducive to further exploration and development. There has been some discussion here today on the prospective pipeline. I wish to confirm what Mr. Greer has said and the others said in their testimony, that we have entered into an agreement with Llaves Pipeline Company. The effective date of this contract -- and of course the validity of the contract is wholly dependent upon the issuance of 160-acre spacing order for this area.

As a refiner our motive is, as I mentioned, to encourage and support that which serves to continue and supply a continuing feed stock for our refinery, which will result in a greater recovery of oil from the Northwest Area.

The net result is not incident in any way with the royalty owner, the producer, the Commission, and the State. The creation of such a climate with respect to the area in question, we feel compels the granting of the temporary spacing order in



accordance with the request of the applicant in this proceeding.

GOVERNOR CAMPBELL: What's the capacity of your refinery?

A 10,000 barrels a day.

GOVERNOR CAMPBELL: What's your present run?

A It's operating about at capacity, I think.

GOVERNOR CAMPBELL: Where are you going to make room for this oil?

A As I mentioned, we have sufficient reserves right now at the moment, and what we're concerned with is the future, maybe a year or two from now, at the rate of decline that the Northwest area is experiencing, that it may not be in the too far distant future when we would have a real problem in getting our adequate feed stock.

GOVERNOR CAMPBELL: Your entire supply comes from New Mexico sources?

A Right, the Northwest area for our Cinizia refinery.

MR. SPANN: We would tender Mr. Mason for cross examination by the Staff, the Commission, or any other interested parties, including Mr. Kellahin.

MR. PORTER: Anyone have a question of Mr. Mason? You may be excused.

(Witness excused.)

MR. PORTER: Does that conclude your testimony?

MR. SPANN: That's all we have.

MR. PORTER: Does anyone else desire to present testimony? Anyone have a statement to make that hasn't already been made?

MR. DURRATT: I have a motion I would like to make at



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 123

MR. PORTER: You may proceed, Mr. Durrett.

MR. DURRETT: In order to assist the Commission in its consideration of the case before it today, I move the Commission take administrative notice of any and all of its official files and records pertaining to wells and production history from wells in any and all of the pools that have been discussed here today.

MR. PORTER: Does anyone object to Counsel's motion?

MR. VERITY: We do not object.

MR. PORTER: The Commission will take administrative notice of those pools and wells that have been under discussion here today in the testimony. Does anyone have a statement to make?

MR. DURRETT: If the Commission please, I would like to state for the record prior to statements of Counsel that the Commission has received two communications, one from Standard Oil Company of Texas in the form of a telegram, stating that they have no objection to approval of the application; and we have also received a letter from Pan American Petroleum Corporation stating that they support the application. These will be in the file if anyone would like to consider them in their entirety.

MR. PORTER: Thank you, Mr. Durrett. Anyone else?

MR. SISCO: If the Commission please, my name is Bill Sisco. I'm a staff engineer with the U.S.G.P. in the Regional Office at Roswell, New Mexico.



MR. PORTER: Would you spell your last name?

MR. SIKGER: S-h-a-n-e-r. I wish to make a statement on behalf of the U.S.G.S. concerning Benson-Montin-Greer's application for 160-acre drilling and spacing units for the Gallup formation underlying certain lands in Rio Arriba County, New Mexico.

The area of concern contains two units, the Canada Ojitos and Puerto Chiquito, which consists of approximately 99 percent and 93 percent, respectively, of Federal lands. The northern part of the area in question, as has been pointed out today, consists of Jicarilla Tribal lands, so we have great concern for that area.

We believe that wider spacing of Gallup wells in this area as proposed will provide the development needed to extend proven production, and it will be in the interest of conservation. The U.S.G.S. offers no objection to the approval of wider spacing, as set forth in Case 2881. Thank you.

MR. PORTER: Thank you, sir. Mr. Bratton.

MR. BRATTON: Howard Bratton on behalf of Humble Oil and Refining Company. Humble owns approximately 7,000 acres in Township 27 North, 1 West, in this area, and about another 1,000 acres scattered throughout the area.

Our position with respect to the various matters in the application is as follows: (1), We have no knowledge or information as to the extent of the common source or sources of supply in the area. We have not studied the area and therefore we do not have

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-669



information upon which we could at this time form and present a conclusion to the Commission.

(2). As a result of this fact, we have no opinion as to the allowable which should be assigned in this proceeding other than that certainly if lands are spaced on 160 acres, an allowable in excess of the 80-acre allowable should be granted. We think that would follow.

(3). We think that the temporary 160-acre spacing requested is certainly advisable and desirable on the basis of the evidence presented here today, the factors outlined by Mr. Verity in his excellent presentation at the beginning of the case. We view it as a matter of encouraging exploration, and this type of area certainly seems to indicate and demand the widest possible spacing for exploratory purposes. We believe that the three-year order, temporary order, is a reasonable request.

We believe further that this being something of a policy-type matter, we think the law is certainly clear that any order of the Commission is undoubtedly subject to further hearing at any time. We believe it might be advisable to spell out specifically in the order that the order in its entirety or any portion of it could be called up for further hearing during the three-year period upon the request of the Commission or any interested operator; and we would agree if there were significant developments in the area or some portion of it, a hearing might be in order. It might not. The three-year period might be soon enough for further

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1162

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 126

consideration.

Based upon those considerations, we certainly urge that the Commission approve the 160-acre spacing. We think it is in the interest of exploration and in the interest of the State.

MR. REYOS: My name is James S. Reyes, the realty officer of the Jicarilla Indian Tribe Agency. In the past the Jicarilla Tribe has taken favorable action upon recommendations of the Oil and Gas Supervisor's Office, and I guess in this case I know the tribe will have no objection to the wide spacing as recommended by the Oil and Gas Supervisor's Office.

The land of the Jicarillas have been used for grazing and they have spent quite a bit of money policing their areas and this particular area operation. I'm quite sure they will go along with the wide spacing program so that they can protect their range land and also the ultimate production of the oil on their Reservation. Thank you.

MR. PORTER: Thank you. We appreciate your appearance and your stating the Tribe's position. Mr. Kellahin.

MR. KELLAHIN: Jason Kellahin, representing R. L. Bayless. Mr. Bayless is the owner and operator of some wells which I will mention, and in addition is the operator and owner of the undivided half of additional lands; and under a drilling arrangement with this group would earn the mineral rights to Sections 21, 22, 27, 28 in Township 27 North, Range 1 East.

Mr. Bayless initially drilled his first well, the . . .



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243 6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182

Bernie in the Southeast quarter of the Northeast quarter of Section 6, 26 North, 1 East. On the basis of the information he learned in drilling on the 40-acre tract, he determined that wider spacing was indicated, and the subsequent wells that were drilled were drilled on approximately 80-acre units. Section 29, Township 27 North, Range 1 East, six wells were drilled, the Eatsy No. 1 to No. 6 inclusive, which are on units approximately 64 acres up to 80 acres.

On the basis of this information, Mr. Bayless is convinced that one well will effectively and economically drain 160 acres, and urges the Commission to adopt the recommendations which have been made by Benson, Montin, and Greer.

In connection with the order, I believe that Benson, Montin and Greer have listed all of the wells which would require an exception to 160-acre unit. However, I do have a letter from Mr. Bayless which sets out these wells, and I would like to leave that with the Commission in order that all of them would be covered. There is one, however, on here that is not in Mr. Bayless' letter but it is covered in the testimony, and the Exhibit No. 1 offered in this case; and that is a presently drilling well located in the Southwest Northwest and Lot 4 of Section 28, 27 North, 1 East. If I may, I would like to leave this letter with the Commission.

MR. PORTER: Is that last well that you mentioned in the letter?

MR. KELLAMER: It is not, but it is in Exhibit No. 1



and they propose a non-standard unit for that.

MR. PORTER: Thank you, Mr. Kellahin. Do you want it marked as an exhibit?

MR. KELLAHIN: The letter?

MR. PORTER: The Commission will enter it into the record.

MR. VERITY: I would like to make a few additional remarks, if it please the Commission. To start with, I would like to call the Commission's attention to Statute 65-3-14, subsection (b) as to the first sentence. "The Commission may establish a proration unit for each pool, such being the area that can be efficiently and economically drained and developed by one well."

As the Commission is aware, it delineates the various things that can be considered with regard to that, including the prevention of waste, the protection of correlative rights, and the avoidance of unnecessary risk and unnecessary waste of drilling unnecessary wells. We submit to the Commission that we have borne the burden of this Statute, that we have unequivocally proven that this area can and will be efficiently drained by one well of 160 acres.

We have proven that it cannot be economically developed on any more than one well of 160 acres. We believe that since there has been no opposition to this and there has been no contravening evidence that it becomes incumbent upon the Commission to grant the order, in line with the language of the Statute.

We have another unit that I think is critical to the

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

SANTA FE, N. M.
PHONE 983-3971

FARMINGTON, N. M.
PHONE 325-1182



philosophy of this Commission continuing with the orderly development of oil and gas pools in New Mexico, and that is the extent of the area that is to be spaced in the initial order. If a family suddenly finds that they have got eight children and that they really think they only need three or four, there just isn't much that can be done; and if three years down the line, or two or five years down the line you find that one well would efficiently drain 160 acres in an area but it's already been developed on 80 acres, there just isn't anything that can be done about it. The only time that this Commission has got a position to prevent this tragical situation is at the inception of the development of a pool.

There isn't anything that's unusual, there isn't anything that is hard about it at this juncture of the development of a pool, knowing what the extent of the limits of the producing area is going to be. This is something that can be successfully predicted, it is successfully predicted by companies; and we think that in this instance it has been successfully predicted, as development will show in the future, as to what will be the producing exterior limits of the Santa Fe-Chicago pool.

We have shown to this Commission what is a phenomenally similar series of logs in cross section four or five feet from the next. We could put them end to end and they would look similar. We have shown to the Commission that we have been successful in the fact that we have been

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 843-3971

ALBUQUERQUE, N. M.
PHONE 243-6391



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

of the wide separation of the pools in this area, that they all have an equalized pressure. We think that these points are significant.

In addition to this, we know from a geological standpoint that this entire area has this structure. There is no contraverting evidence to the fact that this pool will extend over the confines as here shown to the Commission; and we feel that if we are to protect the correlative rights of the parties here involved that it is imperative that the Commission not draw a close line around the wells that have now been completed as producing wells and say that this is the producing area, when the evidence shows that the producing area is going to connect up this production, connect up these wells into one common source of supply.

On the other hand, if the Commission does not grant this application with regard to the extent of the order that we have requested, what can happen? Someone can come in in the meantime, in between this, irrespective of you might have 160-acre spacing, at the end develop the area on 80-acre spacing, and you have destroyed the correlative rights of the parties that have here asked that this application be granted.

There is no way that any persons can possibly be damaged by allowing this order to extend to the entirety of the pool as it is now believed will be the extent of the field. There is no way that any party can be damaged if at a later date it is discovered that this is an incorrect conclusion and that an error was



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

PAGE 131

made and that these facts, although they indicate this, maybe are not true, nonetheless no one will be hurt. At that juncture the Commission can alter its order on the changed condition. It can say, "Now you'll have to drill more wells," or "Now it's in another pool," and no one has been hurt; but if we let it go the other way and the Commission does not space the entirety of the area, then great damage will be done, these correlative rights will have been damaged, and even waste might be committed.

We believe that it is imperative that the Commission at this time and with regard to this pool take the step of spacing the entirety of the pool now, and not set it out one well at a time as it is drilled and developed and as we may then encounter areas of improper development not encompassed within the order.

We believe that also the evidence of the Applicant has shown to the Commission that it is necessary that we have a temporary order of three years. The low recoveries that have been known in these wells and the wide spacing that we're talking about demands it. Certainly, as Mr. Bratton has pointed out to this Commission, the Commission can interrupt a three-year temporary order at any time upon its own motion; and if necessary or the Commission feels inclined, such a finding can be placed in an order that would be promulgated, irrespective of whether the finding is there or not. The matter could be called up at any date between now and three years later, even with a three-year temporary order.



DEARNLEY-MEYER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

In conclusion, we believe that it is incumbent on this Commission to grant all aspects of the Applicant's request here today. We believe that not only is it necessary for this pool and for this area that it be done in order to insure that it can be developed in an orderly fashion, economically and efficiently, that everyone's correlative rights can be protected and that waste can be prevented; but we believe that if this Commission will take the step to grant this order as it has been requested today, that Northwestern New Mexico will see a finer day in its economy and that the poor 31 wells we have in the area up north now drilling will grow back toward the number that were once drilling and active in the area.

We believe that this is necessary if we are to grant and acknowledge that we want people like Benson, Montin, and Greer and their associates to spend a million dollars developing an area like this on the faith and conviction that this Commission will go forward with the new knowledge of drainage and techniques instead of react like the people, the companies who own leases in this area and farmed them out or released them and take their money to Canada and elsewhere to spend.

We believe that this Commission should grant this order in its entirety and we appreciate the opportunity to present it.

Q VERITY: Now, Mr. Verity, there's testimony here with reference to a limit to the eastern side of this area. All



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

understand it, your application requests, in effect, a temporary definition of a pool that extends beyond the limits. Do you see any legal impediment there?

MR. VERITY: This was done merely as a matter of convenience. If we were going to be technical about it, we would turn to Applicant's Exhibit D and go right down the right extremity of its green line.

GOVERNOR CAMPBELL: Or square it off?

MR. VERITY: Actually what we did was to square it off to the township line. You are correct, it should be squared off at a closer point.

GOVERNOR CAMPBELL: Conceivably there could be some other pools discovered over in that area, but theoretically it might complicate legally the situation.

MR. VERITY: It isn't possible it could be Gallup, because the Gallup outcrops there.

GOVERNOR CAMPBELL: You wouldn't object to that if the Counsel for the Commission felt that this was a more appropriate way?

MR. VERITY: This would be entirely proper and we would concur in it.

MR. PORTER: Anyone else have a statement? If there's nothing further to be offered in the case, the Commission will take it under advisement.

* * *



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill, and ability.

WITNESS my Hand and Seal this 23rd day of September, 1963.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:
June 19, 1967.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill, and ability.

WITNESS my Hand and Seal this 23rd day of September, 1963.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:
June 19, 1967.



BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 2881
Order No. R-2565
NOMENCLATURE

APPLICATION OF BENSON-MONTIN-GREER
DRILLING CORPORATION FOR 160-ACRE
SPACING, RIO ARriba COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 14, 1963, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 9th day of September, 1963, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Benson-Montin-Greer Drilling Corporation, seeks the promulgation of special rules and regulations establishing 160-acre spacing units for oil wells completed in the vicinity of the Puerto Chiquito-Gallup Oil Pool for a temporary period of three years.
- (3) That the applicant also seeks authority to conduct interference tests in the subject area and to transfer allowables among producing wells on the same lease while such tests are being conducted.
- (4) That the horizontal limits of the Puerto Chiquito-Gallup Oil Pool should be extended in order to include therein all wells producing from the same common source of supply.

-2-

Case No. 2881

Order No. R-2565

(Nomenclature)

(5) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 160-acre spacing units should be promulgated for the Puerto Chiquito-Gallup Oil Pool.

(6) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(7) That the temporary special rules and regulations should be established for a three-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(8) That an administrative procedure should be established whereby the operators in the Puerto Chiquito-Gallup Oil Pool would be permitted to conduct interference tests and to transfer allowables among producing wells on the same lease during the temporary three-year period in order to facilitate the gathering of information pertaining to reservoir characteristics.

(9) That this case should be reopened in September, 1966, at which time the operators in the subject pool should appear and show cause why the Puerto Chiquito-Gallup Oil Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

(1) That the horizontal limits of the Puerto Chiquito-Gallup Oil Pool are hereby redefined to include the following-described area:

TOWNSHIP 25 NORTH, RANGE 1 EAST, NMPM
Sections 2 through 10 inclusive: All
Sections 15 through 22 inclusive: All
Sections 27 through 33 inclusive: All

TOWNSHIP 25 NORTH, RANGE 1 WEST, NMPM
Sections 1 through 36 inclusive: All

-3-

Case No. 2881
Order No. R-2565
(Nomenclature)

TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM

Sections 3 through 10 inclusive: All
Sections 14 through 23 inclusive: All
Sections 26 through 35 inclusive: All

TOWNSHIP 26 NORTH, RANGE 1 WEST, NMPM

Sections 1 through 36 inclusive: All

TOWNSHIP 27 NORTH, RANGE 1 EAST, NMPM

Sections 3 through 10 inclusive: All
Sections 15 through 22 inclusive: All
Sections 27 through 30 inclusive: All

TOWNSHIP 27 NORTH, RANGE 1 WEST, NMPM

Sections 1 through 30 inclusive: All

(2) That Special Rules and Regulations for the Puerto Chiquito-Gallup Oil Pool are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
PUERTO CHIQUITO-GALLUP OIL POOL**

RULE 1. Each well completed or recompleted in the Puerto Chiquito-Gallup Oil Pool shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Puerto Chiquito-Gallup Oil Pool shall be located on a standard 160-acre unit comprising a single governmental quarter section.

RULE 3. Each well completed or recompleted in the Puerto Chiquito-Gallup Oil Pool shall be located within 165 feet of the center of a governmental quarter-quarter section.

RULE 4. The Secretary-Director may grant an exception to the requirements of Rule 3 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection.

-4-

Case No. 2881
Order No. R-2565
(Nomenclature)

to the unorthodox location within 20 days after the Secretary-Director has received the application.

RULE 5. A standard unit in the Puerto Chiquito-Gallup Oil Pool (158 through 162 acres) shall be assigned a 160-acre proportional factor of 4.00 for allowable purposes. Any unit comprising less than 158 acres or more than 162 acres shall be assigned a proportional factor in the same ratio to 4.00 as the acreage in the unit bears to 160.

IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Gallup formation within the Puerto Chiquito-Gallup Oil Pool that will not comply with the well location requirements of Rule 3 is hereby granted an exception to the requirements of said rule. The operator shall notify the Astec District Office of the Commission in writing of the name and location of the well on or before October 1, 1963.

(2) That any operator desiring to dedicate 160 acres to a well presently drilling to or completed in the Puerto Chiquito-Gallup Oil Pool shall file a new Form C-128 with the Commission on or before October 1, 1963.

(3) That the following-described non-standard units comprising less than 160 acres are hereby approved:

TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM

Section 5:	E/2 NE/4	80.00 acres
Section 5:	W/2 NE/4	80.00 acres
Section 5:	E/2 NW/4	80.00 acres
Section 5:	W/2 NW/4	80.00 acres
Section 9:	E/2 NW/4	80.00 acres
Section 9:	W/2 NW/4	80.00 acres
Section 15:	SE/4 SW/4	40.00 acres
Section 15:	N/2 SW/4 and SW/4 SW/4	120.00 acres
Section 16:	E/2 NE/4	80.00 acres
Section 16:	W/2 NE/4	80.00 acres
Section 21:	E/2 SE/4	80.00 acres
Section 21:	W/2 SE/4	80.00 acres
Section 22:	W/2 NW/4	80.00 acres
Section 22:	E/2 NW/4	80.00 acres

-5-

Case No. 2881
Order No. R-2565
(Nomenclature)

TOWNSHIP 27 NORTH, RANGE 1 EAST, MERIDIAN

Section 28:	N/2 NW/4	80.00 acres
Section 28:	SW/4 NW/4 and Lot 4	64.31 acres
Section 28:	SE/4 NW/4 and Lot 3	64.01 acres
Section 29:	N/2 NE/4	80.00 acres
Section 29:	N/2 NW/4	80.00 acres
Section 29:	SW/4 NE/4 and Lot 4	64.30 acres
Section 29:	SE/4 NE/4 and Lot 3	64.30 acres
Section 29:	SW/4 NE/4 and Lot 2	64.30 acres
Section 29:	SE/4 NE/4 and Lot 1	64.30 acres

PROVIDED HOWEVER, That none of the aforesaid non-standard units shall become effective until the operator thereof has filed with the Commission Form C-128 outlining thereon the acreage dedicated to the well.

(4) That the Secretary-Director of the Commission is hereby authorized to approve interference tests and the transfer of allowables to wells on the same lease or, if in a unitized area, to wells in the same participating area, provided however, that any such authorization shall be limited to a period of six months, but may be renewed. No transfer well shall be permitted to receive, in addition to its own allowable, more than 50 per cent of one top unit allowable for the Puerto Chiquito-Gallup Oil Pool.

To obtain administrative approval for interference tests and the transfer of allowable, the operator shall submit in triplicate a request for such authority describing in detail the proposed method of conducting such tests and transferring the allowable. The application shall be accompanied by a plat showing thereon all Gallup wells within a radius of two miles of the proposed shut-in well(s) and the transfer well(s). The plat shall also identify each lease or participating area as to ownership or operating rights. The application shall include evidence that all offset operators to the shut-in well(s) and the transfer well(s) have been furnished a complete copy of the application. It shall also be accompanied by Form C-116 for each shut-in well, showing the results of a pre-shut-in test to determine the amount of allowable to be transferred. The transferred allowable shall not exceed the volume of oil produced during the last 24 hours of a 72 hour period during which the well shall be produced at a constant rate. The Commission and offset operators to both the shut-in well(s) and the transfer well(s) may witness such tests if they so desire

-6-

Case No. 2881
Order No. N-2565
(Monoculture)

and shall be notified of the tests at least 48 hours prior to the commencement thereof.

The Secretary-Director of the Commission may grant approval of the interference tests and transfer of allotments upon receipt of waivers from all offset operators or upon expiration of a 20-day waiting period, provided no offset operator has objected to the proposed test and transfer.

(5) That notwithstanding any of the provisions of Rule 104(a) of the Commission Rules and Regulations, the Special Rules and Regulations for the Puerto Chiquito-Gallup Oil Pool shall not be applicable outside the limits of said pool as hereinabove defined or as hereafter extended.

(6) That this case shall be reopened in September, 1966, at which time the operators in the subject pool may appear and show cause why the Puerto Chiquito-Gallup Oil Pool should not be developed on 40-acre proration units.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

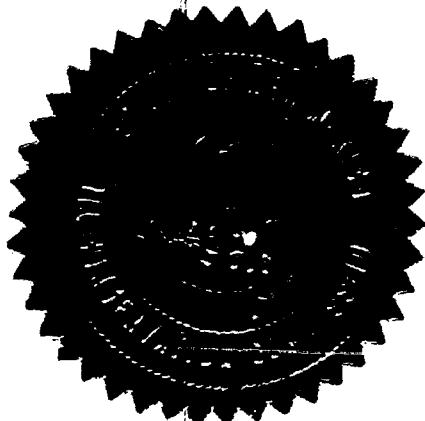
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary



1x/

DRAFT

JMD/esr
June 25,
1964

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CASE No. 2881
Order No. R-2565-A

IN THE MATTER OF THE APPLICATION OF
~~REINSON-MONTIN-GREER~~ DRILLING CORPORA-
TION FOR 160-ACRE SPACING, RIO ARRIBA
COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE COMMISSION:

It appearing to the Commission that due to clerical error and inadvertence, Order No. R-2565, dated September 9, 1963, does not correctly state the intended order of the Commission,

IT IS THEREFORE ORDERED:

(1) That the following-described non-standard units are hereby stricken from Order No. R-2565:

TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM

Section 5:	E/2 NW/4	80.00 acres
Section 5:	W/2 NW/4	80.00 acres

(2) That the following-described non-standard units are hereby interlineated in lieu of the above-described non-standard units:

TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM

Section 5:	N/2 NW/4	80 acres
Section 5:	S/2 NW/4	80 acres

(3) That this order shall be effective nunc pro tunc as of September 9, 1963.

DONE at Santa Fe, New Mexico, on this _____ day of June,
1964

1964 JUL 16 AM 7:40
MAIN OFFICE OCC
OIL CONSERVATION COMMISSION
1000 RIO BRAZOS ROAD
SANTA FE, NEW MEXICO

July 13, 1964

File 2881
Benson-Martin-Greer Drilling Company
158 Petroleum Center Building
Farmington, New Mexico

Attn: Mr. Al Greer

Dear Sir:

Reference is made to our letter of July 9, 1964 pertaining to the dedicated well for your #3-5 Puerto Chiquito Unit well located in the NE1/4 Section 5-26N-1E.

Since writing this letter I have received a copy of Order R-2565-1 which is a Mine Pro Tuna Order changing the original order. Under the new order two non-standard units are established in the NE1/4 of Section 5, one being the NE1/4 and the other being the SE1/4. The effective date of this Mine Pro Tuna Order is September 9, 1963.

In the light of the above information you may proceed with the drilling and production of your #3-5 well when you are ready.

Yours very truly

ECA:ks

cc: Oil Conservation Commission
Santa Fe, New Mexico

United States Geological Survey
Farmington, New Mexico

Intex Oil Company
P.O. Box 1411, Bakersfield, Calif.

Emery C. Arnold
Supervisor, District #3

R. L. Bayless
P.O. Box 1541, Farmington, N.M.

File 2881

OIL CONSERVATION COMMISSION
1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO

MAIN OFFICE OCC

1964 JUL 10 AM 7:46

July 9, 1964

Benson-Muntn-Greer Drilling Corporation
158 Petroleum Center Building
Farmington, New Mexico

Attn: Mr. Al Greer

Dear Sir:

On July 8, 1964 two copies of Federal Notice of Intention to Drill, along with Form C-120, Average Dedication Plan, pertaining to your 63-5 ~~Section~~ ~~Unit~~ well were received in this office. The Form C-120 shows the well to be located in the ~~NE 1/4~~ Section 5-25N-1E and shows the dedicated acreage to consist of the ~~NE 1/4~~ Section 5. This acreage dedication is contrary to Order A-2565 which established 160-acre spacing in this pool and also established certain non-standard units. The order specifies that the two non-standard units in the NE 1/4 Section 5 shall consist of the ~~NE 1/4~~ and the ~~NE 1/4~~, each containing 80 acres. Bayless Drilling Company already has a well producing on the ~~NE 1/4~~ Section 5 and therefore if your 63-5 ~~well~~ is drilled at the present location it will result in two wells being located on one legally approved unit.

We are, therefore advising you that any drilling operations carried out at this location will be strictly at the risk of the operator and that no production can be approved from this well until the acreage dedication problem has been properly resolved with the Commission.

Yours very truly

Emery C. Arnold
Supervisor, District #3

EOA:ks

cc: Oil Conservation Commission ✓
Santa Fe, New Mexico

United States Geological Survey
Farmington, New Mexico

R.L. Bayless
P.O. Box 1541, Farmington, N.M.

Inter Oil Co.
P.O. Box 1411, Bakersfield, Calif.

file
Case 2881

BURR & COOLEY
ATTORNEYS AND COUNSELORS AT LAW
SUITE 152 PETROLEUM CENTER BUILDING
FARMINGTON, NEW MEXICO

June 25, 1964

JOEL B. BURR, JR.
WILLIAM J. COOLEY

TELEPHONE 325-1702

Mr. James Durrett, Chief Counsel
New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Dear Jim:

Forwarded herewith is the Affidavit of Albert R. Greer concerning the lease ownership in the NW $\frac{1}{4}$ of Section 5, Township 26 North, Range 1 East, Rio Arriba County, New Mexico.

Very truly yours,

BURR & COOLEY

By

Jack
William J. Cooley

WJC/kp
Enc.

A F F I D A V I T

STATE OF NEW MEXICO)
) ss.
COUNTY OF SAN JUAN)

I, ALBERT R. GREER, being first duly sworn, on oath depose and state as follows:

1. That I am Vice-President of BENSON-MONTIN-GREER DRILLING CORP.;
2. That Benson-Montin-Greer Drilling Corp. is the owner of numerous oil and gas leases in the Puerto Chiquito Pool in Rio Arriba County, New Mexico;
3. That I personally presented most of the testimony in the New Mexico Oil Conservation Commission spacing hearing for the Puerto Chiquito Pool, and prepared most of the exhibits which resulted in New Mexico Oil Conservation Commission Order No. R-2565 which established 160 acre spacing for oil wells in the pool;
4. That said Order No. R-2565 established certain exceptions to said spacing pattern established thereby which were necessitated by existing wells at the time of the hearing;
5. That one of such exceptions was necessitated by the existing well in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 5, Township 26 North, Range 1 East, Rio Arriba County, New Mexico, belonging to R. L. Bayless & Associates;
6. That due to inadvertance in the preparation of certain of the exhibits presented to the Oil Conservation Commission, the Bayless lease was shown as being the E $\frac{1}{2}$ NW $\frac{1}{4}$ of said Section 5, and an exception was granted for the drilling of an additional well in the W $\frac{1}{2}$ NW $\frac{1}{4}$ of said Section 5;
7. That the description of the lease actually owned by R. L. Bayless & Associates, and which should be dedicated to the above

referenced well, is the S¹/₄ of said Section 5, and an exception should have been granted for the drilling of an additional well on the N¹/₄ of said Section 5;

8. That the working interest ownership in the S¹/₄ of said Section 5 is totally different and apart from the working interest ownership in the N¹/₄ of said Section 5;

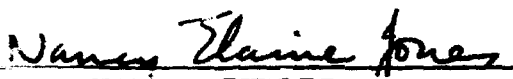
9. That H.M.O.C.C. Order No. R-2565 should be amended by a Nunc Pro Tunc Order to conform to the actual lease ownership in the NW¹/₄ of said Section 5, and thereby show the S¹/₄ of said Section 5 to be dedicated to the existing Bayless well, and to show the N¹/₄ of said Section 5 as being an authorized 80 acre exception drilling unit.

FURTHER Affiant sayeth not.


(Albert R. Greer)

Subscribed and sworn to before me this 25th day of June, 1964.

My commission expires:


NOTARY PUBLIC

8-20-1966

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

RECEIVED IN 4 25

IN RE: THE APPLICATION OF -

BENSON-MONTIN-GREER DRILLING CORP.

for a Temporary Order Spacing the Gallup Formation underlying the following described lands in Rio Arriba County, New Mexico, to-wit:

All of Townships 25, 26, and 27 North, Range 1 East and Range 1 West, and the N/2 of Township 24 North, Range 1 East and Range 1 West

For 160 acre drilling and spacing units, providing for interference tests and transfer of allowable during such temporary spacing order.

APPLICATION FOR TEMPORARY SPACING ORDER

Comes now the applicant, Benson-Montin-Greer Drilling Corp., and states:

1. That wells have been drilled or are drilling into the Gallup formation on the above described lands as set out in detail in Exhibit "A" attached hereto.
2. That the Gallup sand encountered and to be encountered on the above described lands has been demonstrated by the drilling of the wells described on Exhibit "A" to lie between the depths of 1,000 feet and 7,000 feet; that the Gallup formation in this area is approximately 1,000 feet thick and that it dips sharply from east to west so that the depth of the formation is much greater on the west edge of the above described area; that all of said area is underlaid by one common source of supply in the Gallup formation.
3. That present information indicates that one (1) well drilled into the above described Gallup ~~sand~~ formation

common source of supply will adequately, efficiently and economically drain 160 acres, and that the Commission should enter an order which provides that only one (1) well can be drilled on each quarter-section; that such well should be located within 150 feet of the center of any 40 acre tract located within a quarter-section drilling and spacing unit with provisions that the Commission could grant an exception for a greater diversion from the center of the 40 acre tract where surface conditions require; and that such order should further provide for an exception for all those wells and quarter-sections upon which they are drilled described in Exhibit "A" which have been drilled or are being drilled more than one to a quarter-section or which have been drilled where the owner of the well does not own the lease on the entire quarter-section upon which it is located.

4. That the Puerto-Chiquito Pool lies within the captioned area covered by this Application; that no other designated pools are located within such area but that wells are producing within such area in undesignated pools.

5. That the Commission should enter a Temporary Order for a period of three (3) years which permits only one (1) well to be drilled on each quarter-section within the above described common source of supply, in accord with the provisions set out in this Application and that during such period of time applicant and other operators in the pool be granted permission to conduct interference tests in wells completed in the area and that in order to adequately conduct such interference tests such order grant the privilege of transferring allowables from one producing well to other producing wells on the same lease; that when such interference tests have been conducted, and the pool sufficiently

developed under a proper temporary spacing order, the question of 160 acre spacing be again heard by the Commission and at such time if geological and engineering information then available confirm the present information regarding one (1) well adequately, efficiently and economically draining a 160 acre tract, that then such 160 acre spacing order be made permanent.

6. That the temporary order which applicant requests the Commission to enter, as above set out, should further provide that all wells located in the above described common source of supply, on 160 acre drilling and spacing units, should be granted an allowable consistent with the Commission's current practices and that such wells be given an allowable equivalent to four (4) allowables for a 40 acre well and that no depth factor be allowed for any well in the pool.

7. That granting of the temporary 160 acre spacing order, and the other relief herein requested, will prevent waste and protect correlative rights and that drilling more than one (1) well to each 160 acre tract in the above described common source of supply will create waste and interfere with correlative rights of parties owning minerals therein; that at the present time it is necessary that all oil produced from wells located within the above described area be hauled a distance of from 50 to 65 miles to the nearest purchasing station; that it is now necessary in order to prevent the excessive cost of such hauling charges that a pipe line be built into the area covered by this Application and that drilling and development will be curtailed unless and until such pipe line can be built; that it is economically feasible to build such

pipe line if the area is developed on 160 acre drilling and spacing units but it is not economically feasible to build such pipe line if the area is to be developed on less than 160 acre spacing; that the Gallup formation in this area renders a low ultimate per acre recovery and requires that one well be permitted to recover the oil from not less than 160 acres, and that if wells are drilled on a denser pattern then the income from production will not cover the cost of drilling and much of the area covered by this application will never be drilled.

8. That the names and addresses of all parties interested in the subject matter of this application, so far as they are known to applicant, are so shown in Exhibit "B" attached hereto and made a part hereof.

WHEREFORE, applicant prays that this Application be set down for hearing; that due notice be given of such hearing in accord with the rules of this Commission and the laws of the State of New Mexico, and that upon such hearing and from the evidence to be adduced, the Commission enter its order as follows:

1. granting temporary 160 acre drilling and spacing units for the above described common source of supply with one (1) well to be drilled on each such unit in the approximate center of any 40 acre tract allocated thereto with a 165 foot tolerance with further provision for greater deviation on administrative approval where surface lands require.

2. permitting producers from the common source of supply to conduct interference tests by transferring the allowable from one producing well on a lease to the other producing

wells thereon;

3. granting wells producing from 160 acre tracts under the above prescribed order an allowable of four (4) times that for the ordinary 40 acre wells of 5,000 feet, or less, in depth; and,

4. prescribing such other rules and regulations as may be necessary to prevent waste and protect correlative rights.

VERITY, BURR, COOLEY & JONES

BY 

Geo. L. Verity, Attorney for
Benson-Montin-Greer Drilling
Corp., Applicant

EXHIBIT A TO
BENSON-MONTIN-GREER DRILLING CORP. APPLICATION
FOR TEMPORARY SPACING ORDER

TOWNSHIP 24 NORTH, RANGE 1 EAST, N.M.P.M.

Section 5: Lemm & Maiatico #1 Arellano
1963' FNL, 1980' FWL

Lemm & Maiatico #1 Western Development
660' FSL, 990' FEL

Lemm & Maiatico #1 Intex Government
1963' FNL, 1980' FWL

TOWNSHIP 25 NORTH, RANGE 1 EAST, N.M.P.M.

Section 10: Royal Development Company #1 Harvey
1650' FNL, 330' FWL

Section 32: Standard Oil Co. of Texas #1 Federal (17-32)
660' FSL, 1650' FWL

Standard Oil Co. of Texas #2 Federal (17-32)
2350' FNL, 1650' FWL

TOWNSHIP 25 NORTH, RANGE 1 WEST, N.M.P.M.

Section 13: Bolack Greer et al #2 Bolack
1785' FSL, 2120' FWL

Section 14: Bolack, Greer et al #A-14 Bolack
1125' FNL, 450' FEL

TOWNSHIP 26 NORTH, RANGE 1 EAST, N.M.P.M.

Section 4: Benson-Montin-Greer Drilling Corp.
Puerto Chiquito Unit D-4 (Drilling)
395' FNL, 330' FWL

Section 5: Standard Oil Co. of Texas #1-5 Intex
1650' FNL, 990' FEL

Intex Oil Company #1 USL-Alto
650' FNL, 1980' FEL

R. L. Bayless #1-X Hijo
1650' FNL, 1650' FWL

Section 6: R. L. Bayless #1 Bernie
1450' FNL, 430' FEL

Section 8: Benson-Montin-Greer Drilling Corp.
Puerto Chiquito Unit I-8 (Drilling)
1980' FSL, 660' FEL

Section 9: Intex Oil Company #1 USL-Bajo
1980' FNL, 1980' FWL

Section 15: Harold O'Connor #1 Jean Read Federal
370' FSL, 1650' FWL (Drilling)

TOWNSHIP 26 NORTH, RANGE 1 EAST, N.M.P.M. (continued)

- Section 16: Intex Oil Company & South Penn #1 USL-Casa
1975' FNL, 593' FEL
- Section 19: Mountain States Natural Gas Corp. #1 Cynthia
660' FNL, 660' FEL
- Section 21: Intex Oil Company & South Penn #1-21 USL-Gran
1975' FSL, 485' FEL
- Section 26: Coral Oil and Gas Company #1 Grevey
660' FSL, 660' FWL
- Section 27: Intex Oil Company & South Penn #1 USL-Duro
660' FNL, 1980' FWL

TOWNSHIP 26 NORTH, RANGE 1 WEST, N.M.P.M.

- Section 9: Bolack, Greer et al #1 Bolack (Drilling)
1080' FSL, 1920' FEL

TOWNSHIP 27 NORTH, RANGE 1 EAST, N.M.P.M.

- Section 17: Benson-Montin-Greer Drilling Corp. #0-17 Apache
660' FSL, 1980' FEL
- Section 19: Benson-Montin-Greer Drilling Corp. P-19 Jicarilla
660' FSL, 660' FWL
- Section 20: Benson-Montin-Greer Drilling Corp. N-20 Jicarilla
660' FSL, 1980' FWL
- Section 21: E. L. Fundingsland #11 Jicarilla
330' FSL, 660' FWL
- Section 28: E. L. Fundingsland #12 Jicarilla
1900' FNL, 1850' FEL
- Section 29: R. L. Bayless #1 Betsy
471' FSL, 660' FWL
- R. L. Bayless #2 Betsy
1650' FNL, 1650' FEL
- R. L. Bayless #3 Betsy
660' FNL, 1980' FWL
- R. L. Bayless #4 Betsy
330' FSL, 1980' FWL
- R. L. Bayless #5 Betsy
660' FNL, 660' FEL
- R. L. Bayless #6 Betsy
471' FSL, 660' FEL

EXHIBIT B TO
BENSON-MONTIN-GREER DRILLING CORP. APPLICATION
FOR TEMPORARY SPACING ORDER

Atlas Corporation, National Bank of Tulsa Building, Tulsa 3,
Oklahoma

M. A. Barton, Box 2154, Santa Fe, New Mexico

R. L. Bayless, Box 1541, Farmington, New Mexico

Benson-Montin-Greer Drilling Corp. 158 Petroleum Center Building,
Farmington, New Mexico

Tom Bolack, 1010 North Dustin, Farmington, New Mexico

Alice Bolack, 1010 North Dustin, Farmington, New Mexico

Bolack-Greer, Inc., 158 Petroleum Center Building, Farmington,
New Mexico

Burk Royalty Company, 800 Oil and Gas Building, Wichita Falls,
Texas

F. H. Carpenter, Sour Lake, Texas

Coral Oil & Gas Company, 2127 San Mateo NE, Albuquerque, New
Mexico

J. V. Fritts, Box 4176, Albuquerque, New Mexico

E. L. Fundingsland, 1402 Denver US National Building, Denver,
Colorado

Albert R. Greer, 158 Petroleum Center Building, Farmington,
New Mexico

H & S Drilling Company, Tri-State Insurance Building, Tulsa 19,
Oklahoma

Humble Oil and Refining Company, Box 801, Tulsa, Oklahoma

Intex Oil Company, 531 California Avenue, Bakersfield, Calif.

Lemm and Maiatico, 806 Connecticut Avenue, Washington, D.C.

Jack London, Jr., 1390 First National Building, Oklahoma City 2,
Oklahoma

Mobil Oil Corp., 612 S. Flower Street. Los Angeles 54, Calif.

Montin-Harbert Pipeline Construction Co., Inc.,
1390 First National Building, Oklahoma City 2, Oklahoma

Wm. V. Montin, 1390 First National Building, Oklahoma City 2,
Oklahoma

Mountain States Natural Gas Corp., Box 1362, Tulsa, Oklahoma

Harold O'Connor, 300 Carlisle SE, Albuquerque, New Mexico

Pan American Petroleum Corp., Box 1410, Fort Worth, Texas

Noel Reynolds, 305 Korber Building, Albuquerque, New Mexico

Royal Development Company, Box 1299, Albuquerque, New Mexico

Skelly Oil Company, Box 1650, Tulsa, Oklahoma

Joe E. Smith, 8285 White Road, Beaumont, Texas

Robert D. Snow, Tri-State Insurance Building, Tulsa 19, Oklahoma

Standard Oil Company of Texas, Box 2766, Amarillo, Texas

Stanley J. Stanley, 1702 Chaco, Farmington, New Mexico

Virgil L. Stoabs, 158 Petroleum Center Building, Farmington,
New Mexico

Sunray Oil Company, 101 University Boulevard, Denver 6,
Colorado

Texota Oil Company, 318 Denver US National Building, Denver,
Colorado

Thor-Westcliffe Development, Inc., 302 East Palace Avenue,
Santa Fe, New Mexico

Case file
2881

BENSON-MONTIN-GREER DRILLING CORP.

GENERAL OFFICE:
2808 FIRST NATIONAL BLDG.
OKLAHOMA CITY, OKLAHOMA 73102
PHONE CENTRAL 5-0346

158 PETROLEUM CENTER BUILDING
FARMINGTON, NEW MEXICO 87401
PHONE DAVIS 5-8874

July 2, 1965

Mr. J. M. Durrett, Jr.
New Mexico Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Mexico

Dear Jim:

After our conversation this morning regarding application to change rules for spacing of wells in the Puerto Chiquito Pool, we have discussed it among ourselves here in Farmington, and have decided it would probably be more appropriate to consider a change in well location regulations at the same time we have the hearing regarding well spacing in general. Accordingly we will delay until next year to ask the Commission to consider this matter.

Thanks for your help.

Yours very truly,



Albert R. Greer

ARG:nej

DRAFT

JMD/esr
Sept. 4, 1963

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2881

Order No. R-2565

NOMENCLATURE

APPLICATION OF BENSON-MONTIN-GREER
DRILLING CORPORATION FOR 160-ACRE
SPACING, RIO ARriba COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 14, 1963, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of September, 1963, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Benson-Montin-Greer Drilling Corporation, seeks the promulgation of special rules and regulations establishing 160-acre spacing units for oil wells completed in the vicinity of the Puerto Chiquito-Gallup Oil Pool for a temporary period of three years.

(3) That the applicant also seeks authority to conduct interference tests in the subject area and to transfer allowables among producing wells on the same lease while such tests are being conducted.

(4) That the horizontal limits of the Puerto Chiquito-Gallup Oil Pool should be extended in order to include therein all wells producing from the same common source of supply.

(5) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 160-acre spacing units should be promulgated for the Puerto Chiquito-Gallup Oil Pool.

(6) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(7) That the temporary special rules and regulations should be established for a three-year period in order to allow the operators in the subject ^{pool} to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(8) That ^{an administration procedure should be established} the operators in the Puerto Chiquito-Gallup Oil Pool ~~should~~ be permitted to conduct interference tests and to transfer allowables among producing wells on the same lease during the temporary three-year period in order to facilitate the gathering of information pertaining to reservoir characteristics.

(9) That this case should be reopened ~~at an examiner hearing~~ in September, 1966, at which time the operators in the subject pool should appear and show cause why the Puerto Chiquito-Gallup Oil Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

(1) That the horizontal limits of the Puerto Chiquito-Gallup Oil Pool are hereby redefined to include the following-described area:

OK
TOWNSHIP 25 NORTH, RANGE 1 EAST, NMPM
Sections 2 through 10 inclusive: All
Sections 15 through 22 inclusive: All
Sections 27 through 33 inclusive: All

TOWNSHIP 25 NORTH, RANGE 1 WEST, NMPM
Sections 1 through 36 inclusive: All

ok
TOWNSHIP 26 NORTH, RANGE 1 EAST, NMPM
Sections 3 through 10 inclusive: All
Sections 14 through 23 inclusive: All
Sections 26 through 35 inclusive: All

TOWNSHIP 26 NORTH, RANGE 1 WEST, NMPM
Sections 1 through 36 inclusive: All

TOWNSHIP 27 NORTH, RANGE 1 EAST, NMPM
Sections 3 through 10 inclusive: All
Sections 15 through 22 inclusive: All
Sections 27 through 30 inclusive: All

TOWNSHIP 27 NORTH, RANGE 1 WEST, NMPM
Sections 1 through 30 inclusive: All

(2) That Special Rules and Regulations for the Puerto Chiquito-Gallup Oil Pool are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
PUERTO CHIQUITO-GALLUP OIL POOL**

RULE 1. Each well completed or recompleted in the Puerto Chiquito-Gallup Oil Pool ~~or in the Gallup formation within one mile of the Puerto Chiquito-Gallup Oil Pool, and not nearer to or within the limits of another designated Gallup pool,~~ shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Puerto Chiquito-Gallup Oil Pool shall be located on a standard 160-acre unit comprising a single governmental quarter section.

RULE 3. Each well completed or recompleted in the Puerto Chiquito-Gallup Oil Pool shall be located within 165 feet of the center of a governmental quarter-quarter section.

RULE 4. The Secretary-Director may grant an exception to the requirements of Rule 3 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection

to the unorthodox location within 20 days after the Secretary-Director has received the application.

~~RULE 3. A standard 40-acre unit shall be established for each well~~

~~in the Puerto Chiquito-Gallup Oil Pool or within one mile of the Puerto Chiquito-Gallup Oil Pool that will not comply with the well location requirements of Rule 3 is hereby granted an exception to the requirements of said rule. The operator shall notify the Aztec District Office, in writing of the name and location of the well on or before October 1, 1963.~~

IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Gallup formation within the Puerto Chiquito-Gallup Oil Pool ~~or within one mile of the Puerto Chiquito-Gallup Oil Pool~~ that will not comply with the well location requirements of Rule 3 is hereby granted an exception to the requirements of said rule. The operator shall notify the Aztec District Office, ^{of the Commission} in writing of the name and location of the well on or before October 1, 1963.

(2) That any operator desiring to dedicate 160 acres to a well presently drilling to or completed in the Puerto Chiquito-Gallup Oil Pool shall file a new Form C-128 with the Commission on or before October 1, 1963.

~~(3) That a non-standard 40-acre unit is hereby established for each well presently drilling or completed in the Puerto Chiquito-Gallup Oil Pool or within one mile of the Puerto Chiquito-Gallup Oil Pool and that each non-standard unit shall receive the normal unit allowable for Northwest New Mexico.~~

(4) ~~That the operators in the Puerto Chiquito-Gallup Oil Pool are hereby authorized to conduct interference tests in said pool and to transfer allowables among producing wells on the same lease during the temporary three-year period of this order.~~

(6) That this case shall be reopened ~~at an examiner hearing~~ in September, 1966, at which time the operators in the subject pool may appear and show cause why the Puerto Chiquito-Gallup Oil Pool should not be developed on 40-acre proration units.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

See
attach-
ment
(para 5)

See
attach-
ment
(3)

See
attach-
ment
(4) and (5)

1
Rule 5. A standard unit in the Puerto
Chiquito - Gramp Oil Pool (158 through
162 acres) shall be assigned a 100 acre
proportional factor of 100 for common
purposes. Any unit comprising more
than 158 acres or more than the unit
shall be assigned a proportional
factor in the same ratio to 4.50 as
the acreage in the unit bears to 160.

(3) That the following non-standard units comprising less than 160 acres are hereby approved, provided however that the number of such units shall be determined by the Commission.

(3) That the following described non standard ~~proposed~~ units comprising less than 160 acres are hereby approved:

Township 26 North, Range 1 East, NMPM

Section 6:	E/2 NE/4	80.00 acres
Section 5:	N/2 NE/4	80.00 acres
Section 6:	E/2 NW/4	80.00 acres
Section 5:	W/2 NW/4	80.00 acres
Section 9:	E/2 NW/4	80.00 acres
Section 9:	W/2 NW/4	80.00 acres
Section 15:	SE/4 SW/4	40.00 acres
Section 15:	N/2 SW/4 and SW/4 SW/4	120.00 acres
Section 16:	E/2 NE/4	80.00 acres
Section 16:	W/2 NE/4	80.00 acres
Section 21:	E/2 SE/4	80.00 acres
Section 21:	W/2 SE/4	80.00 acres
Section 22:	N/2 NW/4	80.00 acres
Section 22:	E/2 NW/4	80.00 acres

Township 27 North, Range 1 East 18879

Section 28: $N\frac{1}{2}$ NE $\frac{1}{4}$	80.0 acres
Section 28: SW $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 4	64.21 acres
Section 28: SE $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 3	64.01 acres
Section 29: $N\frac{1}{2}$ SE $\frac{1}{4}$	80.0 acres
Section 29: $N\frac{1}{2}$ NE $\frac{1}{4}$	80.0 acres
Section 29: SW $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 4	64.30 acres
Section 29: SE $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 3	64.30 acres
Section 29: SW $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 2	64.30 acres
Section 29: SE $\frac{1}{4}$ NE $\frac{1}{4}$ and Lot 1	64.30 acres

Provided however, that none of the
 aforesaid non-standard ~~parcels~~
 units shall ~~become~~ ^{become} ~~part of the~~
~~unit~~ ^{unit} ~~until~~ ^{until} ~~the operator thereof has filed~~
~~with the~~ ^{with the} Commission Form C-128 outlining thereon
 the acreage ~~to be~~ dedicated to the well.

(4) That the Secretary-Director of the Commission is hereby authorized to approve interference tests and the transfer of allowances to wells on the same lease or, if in a unitized area, to wells in the same participating area, provided however, that any such authorization shall be limited to a period of six months, but may be renewed. No ~~well~~ ^{transfer} shall be permitted to receive, in addition to its own ~~allowance~~ ^{allowance}, more than 50 per cent of ~~the~~ ^{one top unit} allowance of a for the ~~same well~~ ^{Puerto Chiguito - Group}

To obtain administrative approval for interference tests and the transfer of allowance, the operator shall submit in triplicate a request for such authority describing in detail the proposed method of conducting such tests and transferring the allowance. The application shall be accompanied by a plat showing thereon all ~~existing~~ ^{existing} wells within a radius of two miles of the proposed shut-in well(s) and the transfer well(s). The plat shall also identify each lease or participating area as to ownership or operating rights. The application shall be ~~accompanied~~ ^{accompanied} by evidence that all offset operators,

to the shut-in well(s) and the transfer well(s) have been ~~received~~ ~~of the proposed transfer~~ furnished a complete copy of the application. It shall also be accompanied by Form C-116 for each shut-in well, showing the results of a pre-shut-in test to determine the amount of allowance to be transferred. The transferred allowance shall not exceed the volume of oil produced during the last 24 hours of a 72 hour ~~period~~ during which the well shall be produced at a constant rate. The Commission ~~and~~ ^{may witness such tests if they so desire and} effect operators to both the shut-in well(s) and the transfer well(s) ~~shall be~~ ^{of the tests} notified at least 48 hours prior to the commencement ^{thereof} of the tests. ~~in~~

The Secretary Director of the Commission may grant approval of the interference tests and transfer of allowance upon receipt of waivers from all effect operators or upon expiration of a 20-day waiting period, provided no effect operator has objected to the proposed test and transfer.

- (5) That notwithstanding any of the provisions of Rule 104(a) of the Commission Rules and Regulations, the Special Rules and Regulations for the Puerto Chiquito-Gallup Oil Pool shall not be applicable outside the limits of said pool ~~as set forth hereinabove~~

(5) That notwithstanding any of the provisions of Law 100 (a) of the Commission Bureau and Regulations, the Special Rules and Regulations for the Puerto Chiriquito-~~Island~~ Oil Pool shall not be applicable outside the limits of said pool as ~~it is hereinafter~~ ^{hereinafter} defined or as hereafter extended.