EXHIBIT NO. 4

GENERAL RESERVOIR CHARACTERISTICS
LA PLATA POOL
SAN JUAN COUNTY, NEW MEXICO

Reservoir:	Tocito-Gallup
Type of Pay:	Fracture shale and siltstone
Type of Structure:	Monocline
Type of Drive:	Liquid expansion, solution gas, and gravity
Number of Wells:	One
Depth:	5,900' to 6,200' (through slotted liner)
Original FVF:	1.27
First BHP:	1462 psig (8-6-59) @ sea level
Original Estimated BHP:	1475 psig
Lates BHP:	1312 psig (8-29-62) @ sea level
Saturation Pressure:	1169 psig
Reservoir Temperature:	164° F. @ sea level
Gravity of Oil:	40° API
Specific Gravity of Gas:	0.893 @ Trap
Oil Viscosity in Reservoir:	1.3 cp above BP, 0.63 cp at BP
Original Solution GOR:	361 cfpb
Produced GOR:	390 cfpb (April 1963)
Cumulative Production:	129,831 Barrels Oil, 54,000 MCF Gas (April 30, 1963)
Calculated Transmissibility:	713 md-ft.
Calculated Permeability to Oil:	13 md. (minimum)

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO.

STANDARD OIL COMPANY OF TEXAS
PRODUCTION HISTORY
LA PLATA-GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

	Oil Barrels	Gas MCF
1962		
January	2,980	1,275
February	2,700	1,156
March	2,992	1,281
April	2,813	1,204
May	2,955	1,265
June	2,833	1,213
July	2,886	1,235
August	2,944	1,260
September	2,912	1,246
October	2,982	1,163
November	2,957	1,153
December	3,015	874
	34,969	14,325
Cumulative to 12/31/62	119,769	50,964
1963		
January	2,993	1,167
February	1,838	717
March	2,807	1,095
April	2,873	1,120
May	2,872	1,120
June	2,859	1,115
July	2,922	1,029
August	3,012	1,060
September	3,123	1,099
October	2,817	992
November	2,841	1,000
December	3,006	1,058
	33,963	12,572
Cumulative to 1/1/64	153,732	63,536
1964		
January	3,479	1,225
February	3,209	1,130
March	3,372	1,187
April	2,835	998

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. _____
CASE NO. _____

K+E SEMI-LOGARITHMIC 359-71
KEUFFEL & ESSER CO.
3 CYCLES X 70 DIVISIONS

BUILDUP ANALYSIS
FEDERAL 12-5 No. 1
BUILDUP AUGUST 29, 1962

CALCULATIONS:

$T = \frac{107,903 \text{ BBLS}}{109 \text{ BPD}} = 23,750 \text{ HRS.}$

TRANSMISSIBILITY = $KH = 162.6\ Q\mu\beta/\Delta P$
$= 162.6 \times 109 \times 1.3 \times 1.27 / 41$
$= 713$ MD-FT

PERMEABILITY = (713 MD-FT)/65 FT = 13 MD

SLOPE = 41 PSI/CYCLE

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 2858

BOTTOM HOLE PRESSURE (PSIG)

1380
1360
1340
1320
1300
1280
1260

1 10 100 1000

$\frac{T + \Delta T}{\Delta T}$

GENERAL RESERVOIR CHARACTERISTICS
LA PLATA - GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

Reservoir:	Tocito-Gallup
Type of Pay:	Fractured shale and siltstone
Type of Structure:	Monocline
Type of Drive:	Liquid expansion, solution gas, gravity
Number of Wells:	One
Depth:	5900' to 6200'
Original FVF:	1.27
Original BHP (Est.):	1475 psig (8-3-59) @ sea level
Saturation Pressure:	1169 psig
Reservoir Temperature:	164° F. @ sea level
Gravity of Oil:	40° API
Specific Gravity of Gas:	0.893 @ Trap
Oil Viscosity in Reservoir:	1.3 cp above BP, 0.63 @ BP
Original Solution GOR:	361 cfpb
Produced GOR (April 1964)	352 cfpb
Cumulative Production (Through April 1964):	166,627 BO; 68,100 MCF Gas
Calculated Transmissibility:	713 md-ft.
Calculated Permeability to Oil:	13 MD (min.)

EXHIBIT NO. 6

RESERVES CALCULATION
LA PLATA-GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

Date	BHP At Sea Level	Cumulative Production
8-6-59	1462 psig	8,589 Barrels
8-29-62	1312 psig	107,903 Barrels

$$\text{Productivity} = \frac{107,903 - 8,589 \text{ Bbls.}}{1462 - 1312 \text{ psi}} = 662 \text{ Barrels/psi}$$

Estimated Recovery to 100 psi = 107,903 + (1312 - 100 psi)(662 Bbls./psi)

= 909,903 Barrels

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO.

SEMILOGARITHMIC 359-71

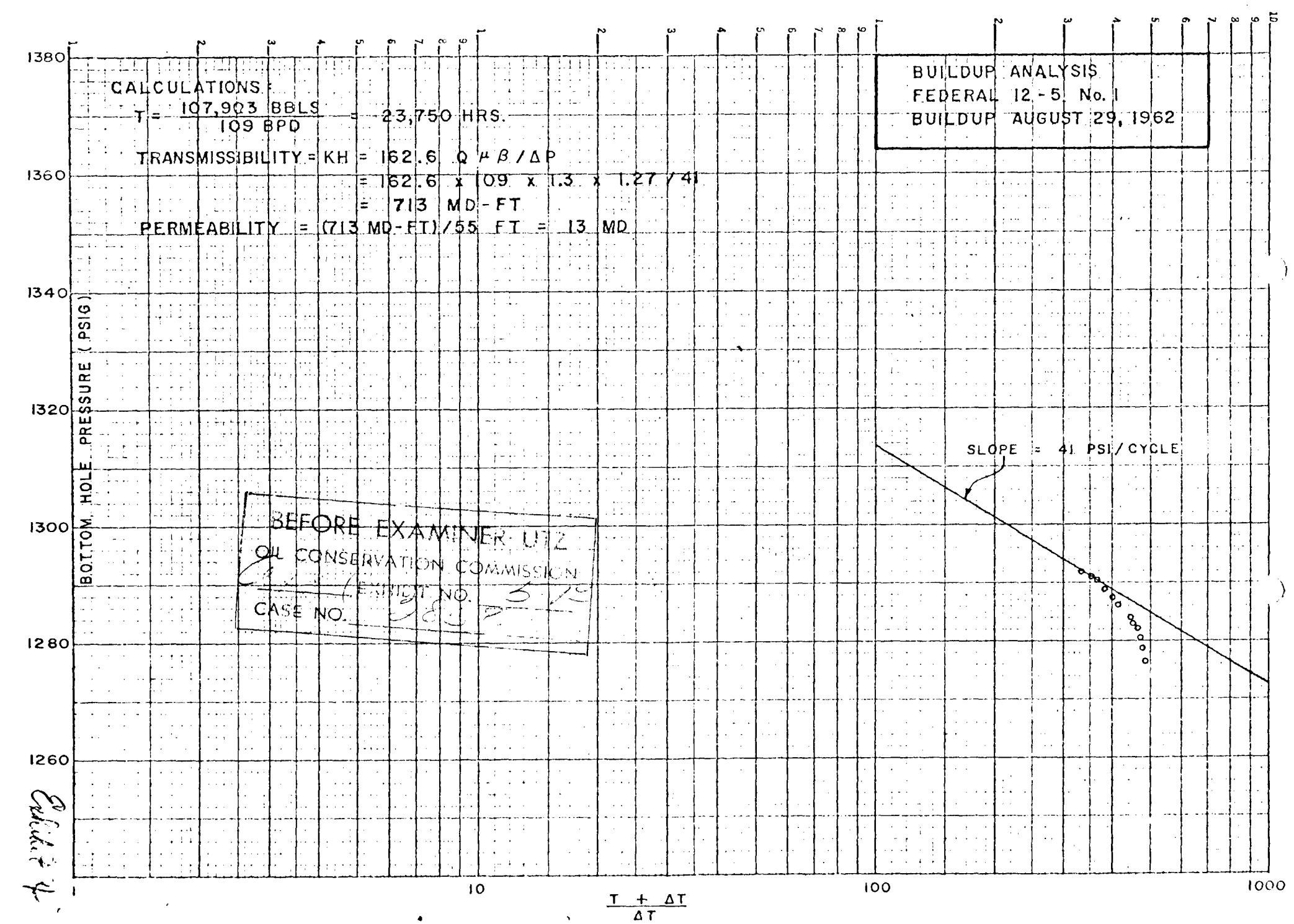

EXHIBIT NO. 7

ESTIMATION OF DRAINAGE AREA
FEDERAL 12-5 NO. 1
LA PLATA-GALLUP POOL

1. Estimated Recovery Per Acre-Foot =

$$\frac{(7758 \text{ Bbls./Acre-Ft.})(\text{Fracture Porosity})(\text{Recovery Factor})}{\text{Formation Volume Factor}}$$

Where: Fracture Porosity = 2%. This figure is an estimation based on cores and neutron logs in nearby Verde-Gallup Pool. Cores showed an average matrix porosity of 5.6% (and matrix permeability of 0.05 md), while neutron logs showed a gross porosity of 7.7%. It is, therefore, assumed that fracture porosity is on the order of 2%.

Recovery Factor = 25%. This figure is assumed to be about the maximum per cent of oil-in-place that can be recovered from fractured shales.

Formation Volume Factor = 1.27 Bbls./Bbl., from fluid analysis.

So: Estimated Recovery Per Acre-Foot =

$$\frac{(7758 \text{ Bbls./Acre-Ft.})(.02)(.25)}{1.27} = 30.5 \text{ Bbls./Acre-Foot}$$

This estimate is belived reasonable, and, if in error at all, the figure should be optimistic. Verde-Gallup Pool is expected to produce about 17 barrels/acre-foot.

2. Estimated Net Pay = 230 Feet.

Federal 12-5 No. 1 was drilled below 5350' with gas. The well quit dusting and began producing oil while drilling at 5970' and continued producing oil to total depth of 6200'. If it is assumed that the entire 5970' to 6200' interval is productive, then net pay is 230 feet. It can be seen that this estimate is the maximum that can be reasonably assumed productive.

3. Estimated Drainage Area = $\frac{\text{Estimated Ultimate Recovery}}{(\text{Recovery Per Acre-Foot})(\text{Net Pay})}$ =

$$\frac{909{,}903 \text{ Bbls.}}{(30.5 \text{ Bbls./Acre-Foot})(230 \text{ Ft.})} = 130 \text{ Acres}$$

It can be seen that, since recovery per acre-foot and net pay figures were estimated at their maximum values, the resulting estimation of drainage area is conservative. In other words, the high recovery predicted from pressure decline cannot be accounted for volumetrically with less than 130 acres being drained.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO.

EXHIBIT NO. 8

ECONOMICS OF 40-ACRE V. 80-ACRE SPACING
LA PLATA-GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

80-Acre Spacing Assumptions

Development Costs: $22,081 tangible, $101,304 intangible, $123,385 Total
Ultimate Recovery: 909,903 Barrels
Production Rate: Top Allowable 164 BOPD (59,860 Bbls./Year) for 11 Years, 20% decline thereafter
Crude Price: $2.40/Barrel after trucking
Operating Cost: $10/Well-Day
Dry Hole Risk Factor: 0.75

40-Acre Spacing Assumptions

Development Costs: $22,081 tangible, $101,304 intangible, $123,385 Total
Ultimate Recovery: 454,951 Barrels
Production Rate: Top Allowable 94 BOPD (34,310 Bbls./Year) for 9 Years, 20% decline thereafter
Crude Price: $2.40/Barrel
Operating Cost: $10/Well-Day
Dry Hole Risk Factor: 0.75

Resulting Economics (Calculations Attached)

	80-Acre Spacing	40-Acre Spacing
Payout (Years)	3.76	6.49
Rate of Return	29.40	12.10
Net Profit or (Loss)	$760,624	$240,631
Net Investment	$260,888	$260,888
Profit-to-Investment Ratio	2.915	0.922

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO.

LA PLATA-GALLUP POOL
80-ACRE SPACING

WELL APPROPRIATION	PRODUCER	DRY HOLE	YEAR	W I PRODUCTION	PR TIMES F1 OR F2	NET CASH EARNINGS
TANGIBLES	22,081	22,081	1	52,378	73,593	62,443
INTANGIBLES	101,304	101,304	2	52,378	73,593	71,950
TOTAL WELL APPROPRIATION	123,385	123,385	3	52,378	73,593	71,950
PRORATE DTF MONIES	14,806	14,806	4	52,378	73,593	71,950
SUBTOTAL	138,191	138,191	5	52,378	73,593	71,950
			6	52,378	73,593	71,950
DRY HOLE RISK INVESTMENT	414,573		7	52,378	73,593	71,950
LESS OTHER PRORATES			8	52,378	73,593	71,950
GROSS DEVELOPMENT WELL INV	552,764		9	52,378	73,593	71,950
LESS TAX CREDITS INTANGIBLES			10	52,378	73,593	71,950
DTF PRORATES AND DH RISK INV	291,876		11	52,378	73,593	71,950
NET DEVELOPMENT WELL INV	260,888		12	41,902	58,874	57,231
			13	33,436	46,979	45,336
PRODUCTION COST PER YEAR	3,650		14	26,748	37,582	35,939
WORKING INTEREST	.875		15	21,399	30,066	28,423
DRY HOLE RISK FACTOR	.750		16	17,119	24,053	22,410
PO ALLOWABLE		164	17	13,695	19,242	17,599
PO PER YEAR		365	18	10,956	15,394	13,751
CRUDE PRICE PER BBL	2.400		19	8,765	12,315	10,672
GAS PRICE PER BBL	.000		20	7,011	9,851	8,208
TOTALS				757,189	1,063,879	1,021,512
PAYOUT PERIOD IN YEARS	3.760					
RATE OF RETURN IN PCT	29.400					

LA PLATA-GALLUP POOL
40-ACRE SPACING

WELL APPROPRIATION	PRODUCER	DRY HOLE	YEAR	W I PRODUCTION	PR TIMES F1 OR F2	NET CASH EARNINGS
TANGIBLES	22,081	22,081	1	30,021	42,658	35,566
INTANGIBLES	101,304	101,304	2	30,021	42,658	41,015
TOTAL WELL APPROPRIATION	123,385	123,385	3	30,021	42,658	41,015
PRORATE DTF MONIES	14,806	14,806	4	30,021	42,658	41,015
SUBTOTAL	138,191	138,191	5	30,021	42,658	41,015
			6	30,021	42,658	41,015
DRY HOLE RISK INVESTMENT	414,573		7	30,021	42,658	41,015
LESS OTHER PRORATES			8	30,021	42,658	41,015
GROSS DEVELOPMENT WELL INV	552,764		9	30,021	42,658	41,015
LESS TAX CREDITS INTANGIBLES			10	24,019	34,129	32,486
DTF PRORATES AND DH RISK INV	291,876		11	19,206	27,290	25,647
NET DEVELOPMENT WELL INV	260,888		12	15,365	21,833	20,190
			13	12,381	17,593	15,950
PRODUCTION COST PER YEAR	3,650		14	9,905	14,074	12,431
WORKING INTEREST	.875		15	7,928	11,265	9,622
DRY HOLE RISK FACTOR	.750		16	6,344	9,014	7,371
PD ALLOWABLE		94	17	5,075	7,211	5,568
PD PER YEAR		365	18	4,060	5,769	4,126
CRUDE PRICE PER BBL	2.400		19	3,251	5,426	2,780
GAS PRICE PER BBL	.000		20	2,581	4,308	1,662
TOTALS				380,304	541,834	501,519
PAYOUT PERIOD IN YEARS	6.490					
RATE OF RETURN IN PCT	12.100					

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appl EXHIBIT NO. 9
CASE NO. 2854

PRODUCTION TEST

LA PLATA-GALLUP POOL

Well	Test Date	Production (24-Hr.)
Federal 12-5 No. 1	6-18-63	165 BO, 0 BW

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO.
CASE NO.

EXHIBIT NO. 1

PROPOSED RULES
LA PLATA-GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

RULE 1. Each well completed in the La Plata-Gallup Pool or in the Gallup formation within one mile of the La Plata-Gallup Pool and not nearer to nor within the limits of another designated Gallup pool shall be spaced, drilled, operated, and prorated in accordance with the rules hereinafter set forth.

RULE 2. Each well completed or recompleted in the La Plata-Gallup Pool shall be located on a unit containing 80 acres, more or less, which consists of any two contiguous quarter-quarter sections of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

RULE 3. All wells projected to or completed in the La Plata-Gallup Pool shall be located within 200 feet of the center of either quarter-quarter section in the unit.

RULE 4. For good cause shown, the Secretary-Director may grant an exception to Rule 2 without notice and hearing where an application has been filed in due form and where:

1. The non-standard unit consists of a single quarter-quarter section or lot.
2. The non-standard unit may be reasonably presumed productive.
3. The applicant presents waivers from all offset operators, or proof of notification of offset operators (in which case 20 days delay required).

RULE 5. For topographic reasons, the Secretary-Director may grant an exception to Rule 3 without notice and hearing upon presentation of waivers or proof of notification (after 20 days delay).

RULE 6. The allowable assigned to any non-standard proration unit shall bear the same ratio to a standard allowable in the La Plata-Gallup Pool as the acreage in the non-standard unit bears to 80 acres.

RULE 7. An 80-acre proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 2.33 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from said wells in any proportion.

RULE 8. All wells completed in or drilling to the La Plata-Gallup Pool at the time this order becomes effective are hereby granted exception to Rule 3.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 1207

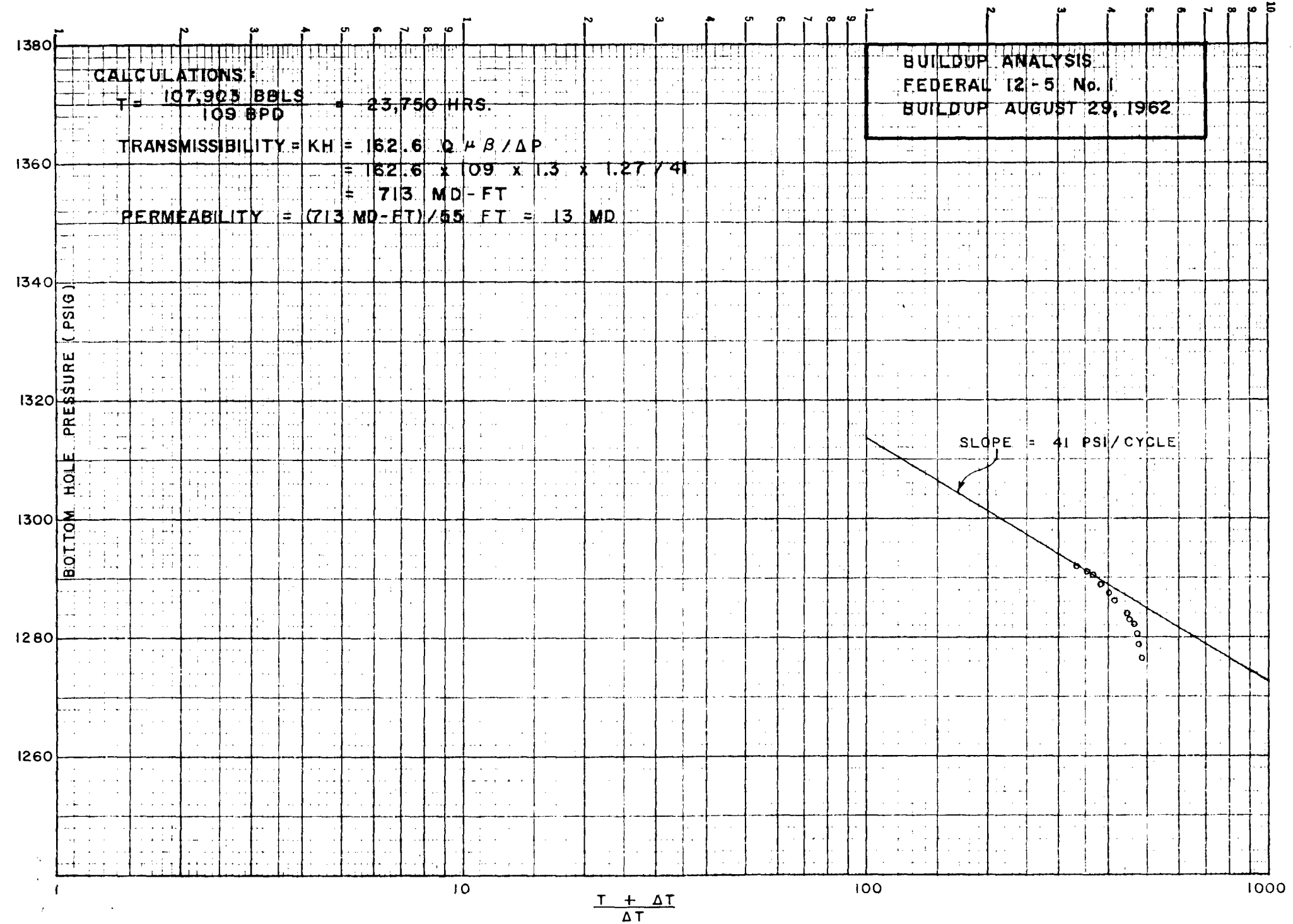

EXHIBIT NO. 6

RESERVES CALCULATION
LA PLATA-GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

Date	BHP At Sea Level	Cumulative Production
8-6-59	1462 psig	8,589 Barrels
8-29-62	1312 psig	107,903 Barrels

$$\text{Productivity} = \frac{107,903 - 8,589 \text{ Bbls.}}{1462 - 1312 \text{ psi}} = 662 \text{ Barrels/psi}$$

Estimated Recovery to 100 psi = 107,903 + (1312 - 100 psi)(662 Bbls./psi)

= 909,903 Barrels