

BENSON-MONTIN-GREER DRILLING CORP.
EXHIBITS IN CASE NO. 2069
before the
NEW MEXICO OIL CONSERVATION
COMMISSION
SEPTEMBER 14th, 1960

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INDEX OF BENSON-MONTIN-GREER DRILLING CORP. EXHIBITS

IN CASE NO. 2069 BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
SEPTEMBER 14th, 1960

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

EXHIBIT No. 1
CASE 2069

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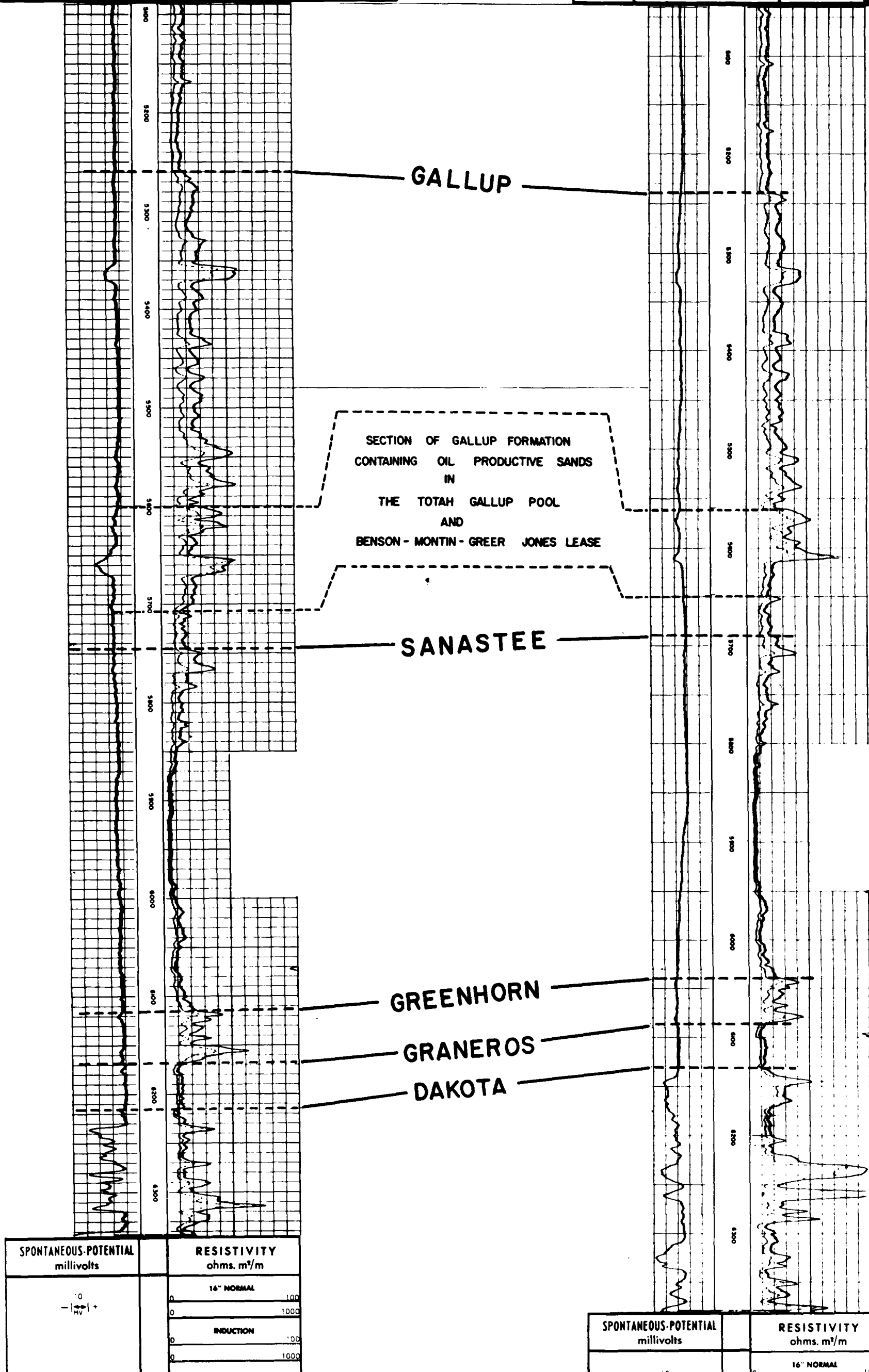
SECTION R: ECONOMICS OF DRILLING ON 40 ACRES PER WELL
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BENSON - MONTIN - GREER
NO. 1 JONES

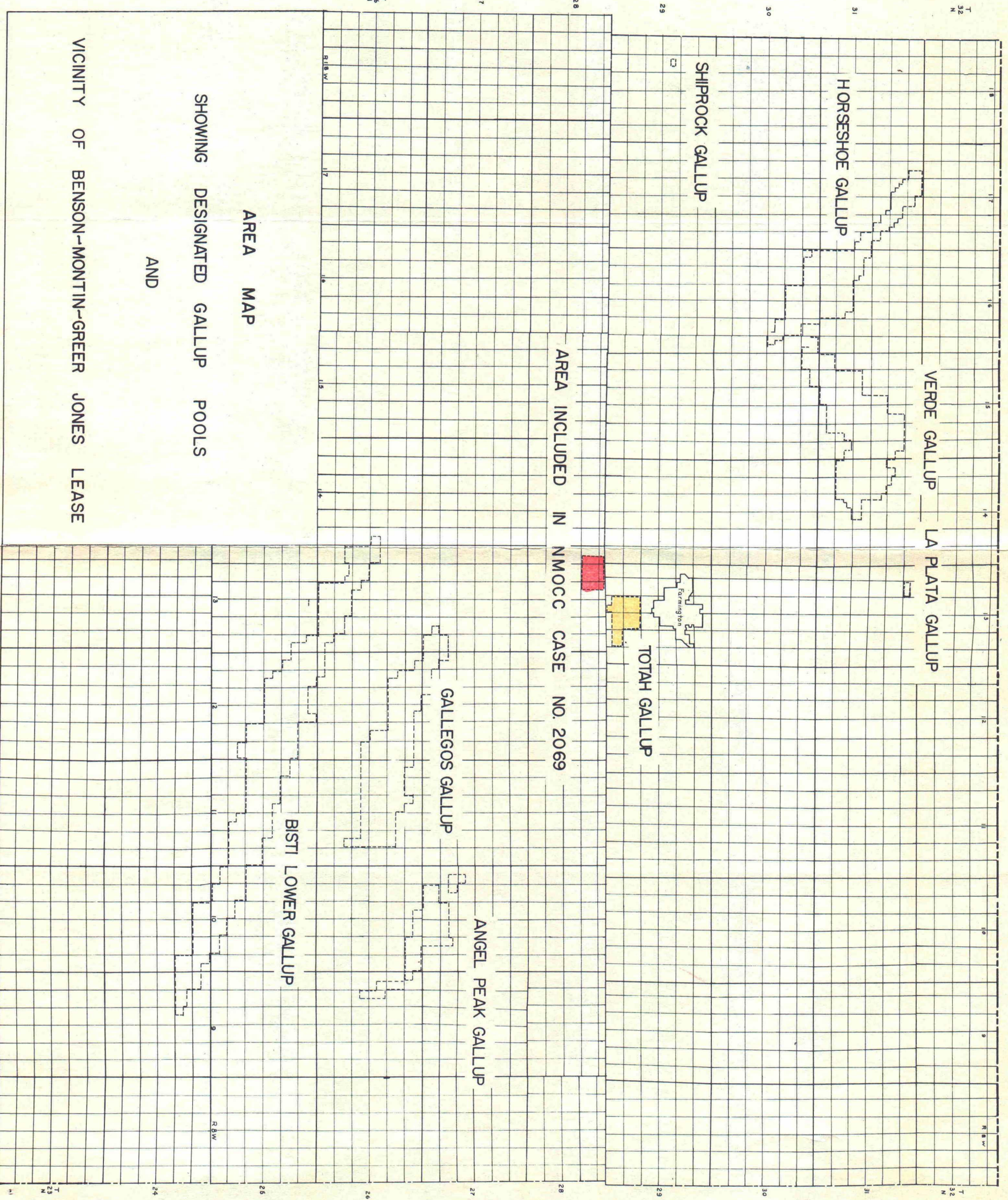
TENNESSEE GAS AND OIL COMPANY
NO. 12 CALLOW

SCHLUMBERGER WELL SURVEYING CORPORATION		Induction-Electrical Log	
COUNTY SAN JUAN, NEW MEX. FIELD or LOCATION WEST GALLEGO DAK. WELL JONES COMPANY BENSON-MONTIN-GREER		RUN No. ONE Date 6-20-59 First Reading 6344 Last Reading 212 Feet Measured 6132 Log. Schlum. 212 Log. Driller 212 Depth Reached 6350 Bottom Driller 6350 Depth Datum KB Mud Not. GEL CHEM Dens. Visc. 9.1 @ 67 Mud Resist. 2.0 @ 70 Res. BHT 1.6 @ 147 Emf 1.35 @ 147 pH 8.0 @ Wtr. Loss 9.4 @ 20 mm Bit Size 7 7/8" Specs. AM 16" IND. 40" Log Time 2 HRS Log No. 2515 FARM Recorded By PARSLOW Witness MR. LILLY	
COMPANY BENSON-MONTIN S. GREER WELL JONES # 1 FIELD WEST GALLEGO DAKOTA LOCATION SEC. 17-28N-13W COUNTY SAN JUAN STATE NEW MEXICO		Other Surveys NONE Location of Well 790' FR S/L 790' FR E/L SEC. 17-28N-13W Elevation D.F. 6024 K.B. 6026 or G.L. 6012 FILING No.	

SCHLUMBERGER WELL SURVEYING CORPORATION		Induction-Electrical Log	
COUNTY SAN JUAN, NEW MEXICO FIELD or LOCATION UNDESIGNATED DAKOTA WELL U.S.A. G.H. CALLOW COMPANY TENNESSEE GAS & OIL COMPANY		RUN No. ONE Date 1-27-60 First Reading 6379 Last Reading 148 Feet Measured 6231 Log. Schlum. 148 Log. Driller 152 Depth Reached 6385 Bottom Driller 6380 Depth Datum 638 Mud Not. CHEM GEL Dens. Visc. 9.9 @ 68 Mud Resist. 2.0 @ 75 Res. BHT 1.1 @ 141 Emf 1.75 @ 141 pH 8.5 @ Wtr. Loss 7 CC 20 mm Bit Size 8 5/8" Specs. AM 16" IND. 27 1/2" Log Time 11 HOURS Log No. 2517 FARM Recorded By LAYTON Witness MR. LACEY	
COMPANY TENNESSEE GAS S. OIL COMPANY WELL U.S.A. G.H. CALLOW FIELD TOTAL GALLUP LOCATION SEC. 33-29N-13W COUNTY SAN JUAN STATE NEW MEXICO		Other Surveys SGR Location of Well 1820' FR W/L 890' FR N.L. SEC. 33-29N-13W Elevation D.F. 5831.5 K.B. 5833 or G.L. 5822 FILING No.	



CORRELATION OF
BENSON-MONTIN-GREER DRILLING CORPORATION JONES AREA
AND THE
TOTAL GALLUP POOL



AREA MAP
SHOWING DESIGNATED GALLUP POOLS
AND
VICINITY OF BENSON-MONTIN-GREER JONES LEASE

AREA INCLUDED IN NMOCC CASE NO. 2069

HORSESHOE GALLUP

SHIPROCK GALLUP

VERDE GALLUP LA PLATA GALLUP

TOTAH GALLUP

GALLEGOS GALLUP

ANGEL PEAK GALLUP

BISTI LOWER GALLUP

SCHEDULE OF COMPLETION DATES
OF ALL WELLS DRILLED TO THE GALLUP FORMATION
IN AREA COVERED BY
NEW MEXICO OIL CONSERVATION COMMISSION CASE NO. 2069
AS OF SEPTEMBER 13th, 1960

WELL	LOCATION	COMPLETION DATE
JONES #1	SE SE SEC. 17-T28N-R13W	7-16-60 *
JONES #2	NW SE SEC. 17-T28N-R13W	10-19-59
JONES #3	SE NW SEC. 17-T28N-R13W	8- 2-60
JONES #4	NW NW SEC. 17-T28N-R13W	9- 6-60
JONES #5	SE NE SEC. 17-T28N-R13W	8-16-60
JONES #6	NW NE SEC. 17-T28N-R13W	9-13-60
JONES "A" #1	SE SW SEC. 17-T28N-R13W	6- 9-60

* Dual completion. Originally completed in Dakota on 10-6-59.



CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

COMPANY BENSON - MONTIN - GREER

DATE ON 8/16/60

FILE NO. RP-3-1246

WELL JONES #4

DATE OFF 8/17/60

ENGRS. ENGLISH

FIELD UNNAMED

FORMATION GALLUP

ELEV. 5988' KB

COUNTY SAN JUAN

STATE N.MEXICO

DRLG. FLD. OIL BASE MUD

CORES DIAMOND

LOCATION SEC17 T28N R13W

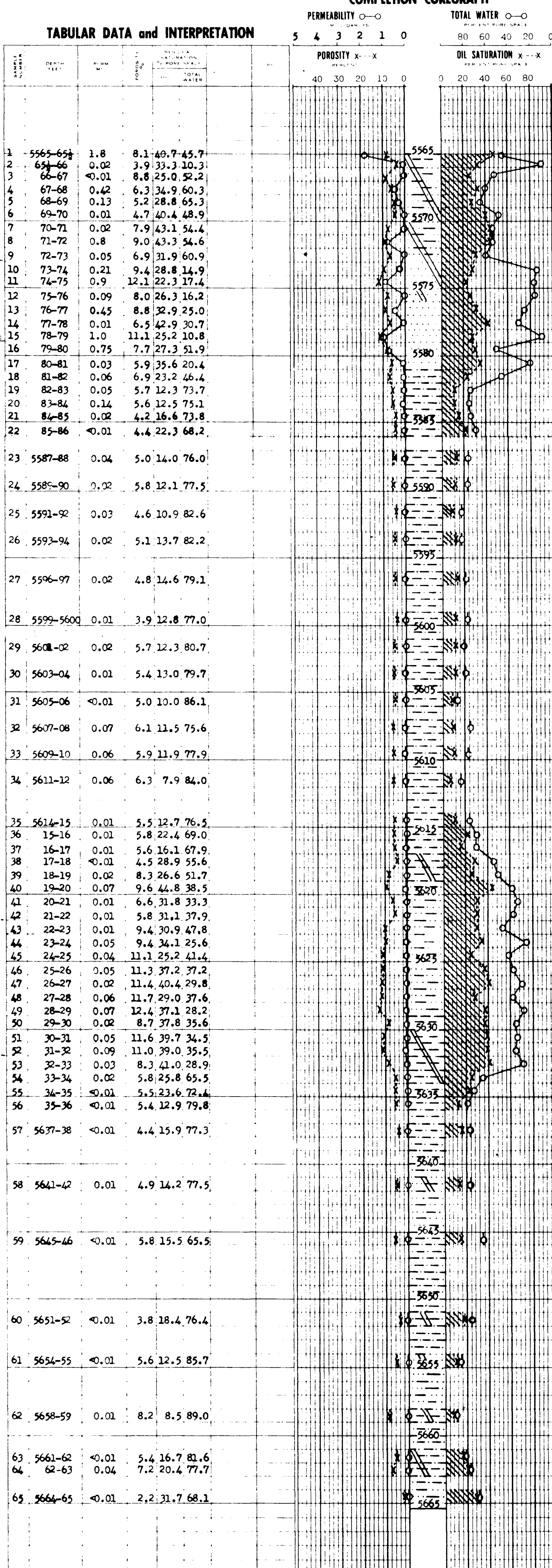
REMARKS SAMPLED BY CLIENT



These analyses, reports or interpretations are based on observations and material supplied by the client to whom they are made. The client is responsible for the accuracy of the data and the interpretation of the results. The client is also responsible for the accuracy of the data and the interpretation of the results. The client is also responsible for the accuracy of the data and the interpretation of the results.

TABULAR DATA and INTERPRETATION

COMPLETION COREGRAPH



SCHEDULE OF PAY THICKNESSES OF
SIX BENSON-MONTIN-GREER DRILLING CORP. JONES WELLS

WELL	PAY THICKNESS FROM CORE ANALYSES		PAY THICKNESS FROM SONIC LOGS	
	UPPER SAND	LOWER SAND	UPPER SAND	LOWER SAND
NO. 1 JONES	-	-	0	18
NO. 2 JONES	3	16	4	20
NO. 3 JONES	-	-	5	14
NO. 4 JONES	6	10	5	10
NO. 5 JONES	-	-	6	20
NO. 6 JONES	-	-	6	12
ARITHMETICAL AVERAGES			4.5	15.6

ALBERT R. GREER

SCHEDULE OF PAY THICKNESSES OF
SIX BENSON-MONTIN-GREER DRILLING CORP. JONES WELLS

WELL	PAY THICKNESS FROM CORE ANALYSES		PAY THICKNESS FROM SONIC LOGS	
	UPPER SAND	LOWER SAND	UPPER SAND	LOWER SAND
NO. 1 JONES	-	-	0	18
NO. 2 JONES	3	16	4	20
NO. 3 JONES	-	-	5	14
NO. 4 JONES	6	10	5	10
NO. 5 JONES	-	-	6	20
NO. 6 JONES	-	-	6	12
ARITHMETICAL AVERAGES			4.5	15.6

CORE ANALYSES SUMMARY

A. UPPER SAND

	<u>Thickness (Ft)</u>	<u>Average Porosity (%)</u>	<u>Average Perme- ability (md)</u>	<u>Average Oil Saturation (%)</u>	<u>Average Water Saturation (%)</u>
Jones #2	3	7.4	0.08	30.2	14.0
Jones #4	6	9.3	0.44	29.7	19.2
Average	4.5	8.3	0.26	30.0	16.6

B. LOWER SAND

	<u>Thickness (Ft)</u>	<u>Average Porosity (%)</u>	<u>Average Permea- bility (md)</u>	<u>Average Oil Saturation (%)</u>	<u>Average Water Saturation (%)</u>
Jones #2	16	11.0	0.08	38.3	27.1
Jones #4	10	10.8	0.05	35.0	35.3
Average	13	10.9	0.07	36.6	31.2

ESTIMATED OIL RECOVERY FOR AVERAGE OF
SIX BENSON-MONTIN-GREER DRILLING CORP. JONES WELLS

A. ACRE-FOOT RECOVERY

UPPER SAND: Normal solution gas drive oil recovery for sand of this porosity if it had good permeability would be about 85 barrels per acre foot. Because of probable poor relative permeability (K_g/K_o) due to extremely tight sand, recovery is estimated at 65 barrels per acre foot.

LOWER SAND: Normal solution gas drive oil recovery for sand of this porosity if it had good permeability would be about 110 barrels per acre foot. Because of probable poor relative permeability (K_g/K_o) due to extremely tight sand, recovery is estimated at 80 barrels per acre foot.

B. PER ACRE RECOVERY

UPPER SAND: 4.5' x 65 barrels per acre foot = 292

LOWER SAND: 15.6' x 80 barrels per acre foot = 1,250

Total 1,542

For ensuing calculations, the figure of 1,500 barrels per acre is used.

C. WELL RECOVERY

1. 40 acre spacing:

40 acres x 1,500 barrels per acre = 60,000
barrels per well.

2. 80 acre spacing:

80 acres x 1,500 barrels per acre = 120,000
barrels per well.

RECORD OF OIL RUNS

BENSON-MONTIN-GREER DRILLING CORP. #2 JONES
NW SE SECTION 17, TWP. 28N, RGE. 13W
SAN JUAN COUNTY, NEW MEXICO

OCTOBER, 1959 (first production)	436
NOVEMBER, 1959	3,106
DECEMBER, 1959	2,214
JANUARY, 1960	1,661
FEBRUARY, 1960	2,133
MARCH, 1960	1,855
APRIL, 1960	2,522
MAY, 1960	2,216
JUNE, 1960	262
JULY, 1960	2,389
AUGUST, 1960	2,941
	<u>21,735</u>

SUMMARY OF BOTTOM HOLE PRESSURES

BENSON-MONTIN-GREER DRILLING CORP. #3 JONES

DATE	TIME	DAYS SHUT IN	PRESSURE AT DEPTH OF 5000' (psig)	PRESSURE CORRECTED TO DATUM OF 4350 (psig)	CASING PRESSURE DWT (psig)	TUBING PRESSURE DWT (psig)	REMARKS
9- 1-60	2:00 PM	13	1465	1485	1241	671	B-M-G 7/8" Humble bomb, 2000# element.
9- 2-60	2:30 PM	14	1476	1496	1295	686	"
9- 3-60	9:00 AM	15	1470	1490	1248	676	"
9- 4-60	2:00 PM	16	1467	1487	1251	675	B & R bomb #272 M.K. 2000# element.
9- 5-60	2:00 PM	17	1479	1499	1255	693	"
9- 6-60	2:00 PM	18	1479	1499	1256	688	"
9- 8-60	2:00 PM	20	1487	1507	1260	714	B & R bomb #254 M.K. 4000# element.
9- 9-60	2:00 PM	21	1496	1516	1261	728	"
9-10-60	12 Noon	22	1496	1516	1263	739	"
9-11-60	12 Noon	23	1497	1517	1263	753	"

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

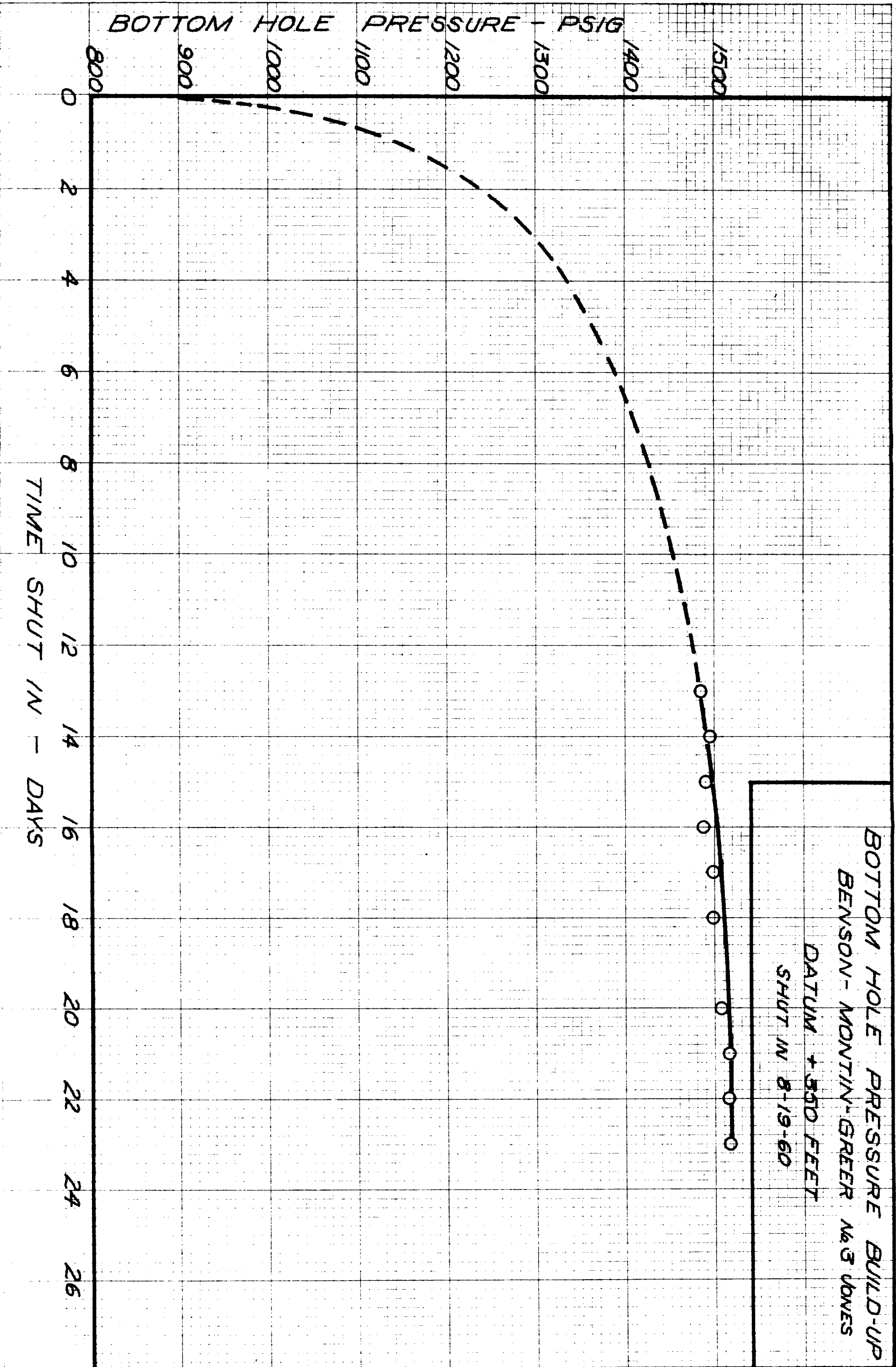
SUMMARY OF BOTTOM HOLE PRESSURES
BENSON-MONTIN-GREER DRILLING CORP. #2 JONES

DATE	TIME	DAYS SHUT IN	PRESSURE AT DEPTH OF 5600' (psig)	PRESSURE CORRECTED TO DATUM OF 4350 (psig)	CASING PRESSURE DWT (psig)	TUBING PRESSURE DWT (psig)	REMARKS
9- 3-60	10:00 AM	5	1063	1085	255 *	200 **	B-M-G 7/8" Humble bomb, 2000# element.
9- 4-60	3:00 PM	6	1113	1138	173 *	112 **	B & R bomb #272 M.K. 2000# element.
9- 5-60	3:00 PM	7	1132	1157	141 *	77 **	"
9- 6-60	1:00 PM	8	1155	1180	143 *	20 **	"
9- 8-60	3:00 PM	10	1196	1221	115 *	66 **	B & R bomb #254 M.K. 4000# element.
9- 9-60	3:00 PM	11	1207	1232	103 *	39 **	"
9-10-60	1:00 PM	12	1221	1246	101	52	"
9-11-60	1:00 PM	13	1224	1249	103	62	"

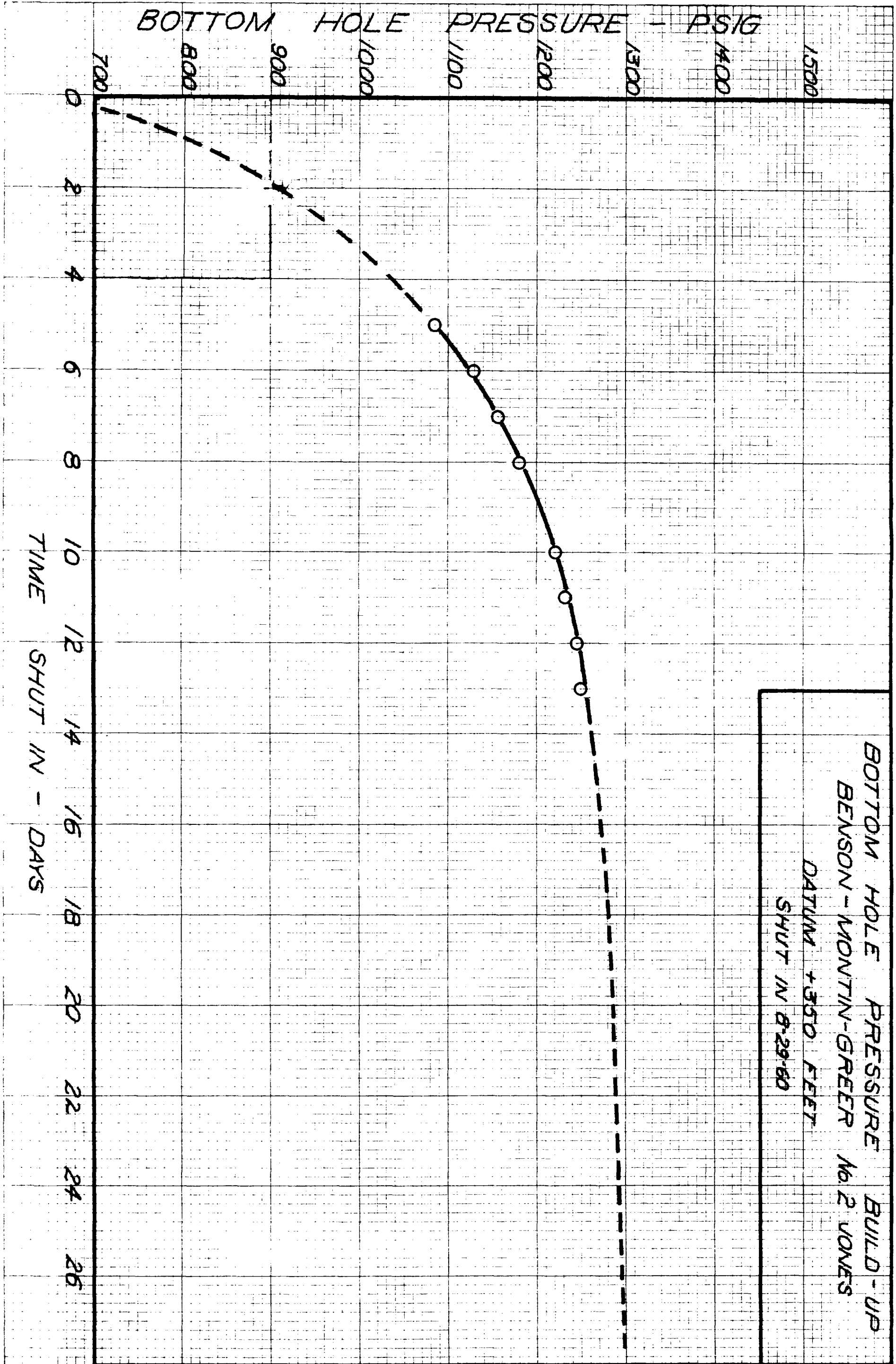
* Casing valve leaking. Repaired 9-10-60.

** Choke leaking. Repaired 9-9-60.

K·E 10 X 10 TO THE INCH 359-5L
KEUFFEL & ESSER CO. MADE IN U.S.A.



BOTTOM HOLE PRESSURE BUILD-UP
BENSON-MONTIN-GREER No. 3 JONES
DATUM + 350 FEET
SHUT IN 8-19-60



DETERMINATION OF INITIAL AND CURRENT RESERVOIR PRESSURES
OF BENSON-MONTIN-GREER DRILLING CORP. NO. 2 JONES

A. INITIAL RESERVOIR PRESSURE

Bottom hole pressures were not measured in the #2 Jones until August, 1960. At this time the well had produced approximately 22,000 barrels of oil. The initial pressure therefore is estimated from the #3 Jones, a diagonal northwest offset on 80 acre spacing. The #3 Jones was completed August 2nd, 1960, and shut in on August 19th after producing approximately 3,000 barrels of oil. With this comparatively small amount of production it is reasonable to anticipate stabilization of pressure in a short time as compared to the #2 Jones. A plot of bottom hole pressure versus time indicates possible stabilization of pressure after building up for 21 days.

Assuming the well to be in actual communication with 300,000 barrels of recoverable oil, the 3,000 barrels produced represents 1% of this amount, and could have caused a 15 psig drop from original pressure.

Another 8 psig is added as maximum probable extrapolation of the present build-up curve on the #3 Jones.

Estimated original pressure therefore is determined as follows:

1517 psig maximum measured pressure after 23 days shut in.
15 psig pressure drop because of depletion.
8 psig maximum extrapolation of present curve
1540 psig at 350'.

B. CURRENT RESERVOIR PRESSURE

The 13 day shut in pressure on the #2 Jones is 1249 psig. Extrapolation of the build-up curve to 30 days indicates a minimum pressure of 1300# at 30 days.

Assuming a straight line pressure gradient from the well bore to the edge of the "radius of drainage" and a reservoir pressure at this drainage boundary to be 1540 psig, the actual average pressure of the area now in communication with the Jones #2 by simple mathematics is its pressure (1300#) plus two-thirds of the difference in its pressure and the boundary pressure of 1540#, or 1460 psig.

ECONOMICS OF DRILLING ON 40 ACRES PER WELL
AND 80 ACRES PER WELL

I. PER BARREL REVENUE FOR EITHER 40 ACRES OR 80 ACRES:

Current sale price of oil		\$2.75 per barrel
Less Average royalty and overriding		
royalty of 20%	\$0.55	
Less Production taxes of approxi-		
mately 5%	.14	
Less Trucking charges to pipeline	<u>.36</u>	<u>1.05</u>
Net per barrel income before		
operating expense		\$1.60
Less Operating Expense		<u>.25</u>
		<u>\$1.35</u>

II. NET INCOME TO WORKING INTEREST ON 40 ACRE SPACING
(60,000 BARRELS PER WELL)

60,000 barrels x \$1.35 per barrel \$81,000 .

III. NET INCOME TO WORKING INTEREST ON 80 ACRE SPACING
(120,000 BARRELS PER WELL)

120,000 barrels x \$1.35 per barrel \$162,000

IV. AVERAGE COST OF DRILLING, COMPLETING AND EQUIPPING,
INCLUDING ARTIFICIAL LIFT, IS \$75,000 PER WELL.

CHA CHA GALLUP FIELD, NEW MEXICO
PRORATION UNIT SIZE HEARING
OCTOBER 18, 1961

HUMBLE OIL & REFINING COMPANY EXHIBITS

DOCKET: REGULAR HEARING - WEDNESDAY - OCTOBER 18, 1961

OIL CONSERVATION COMMISSION - 9 A.M., ELKS CLUB, 200 NORTH RICHARDSON
AVENUE, ROSWELL, NEW MEXICO

- ALLOWABLE: (1) Consideration of the oil allowable for November, 1961.
- (2) Consideration of the allowable production of gas for November, 1961, 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 November, 1961.

CONTINUED CASE

CASE 2215: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the promulgation of an order prohibiting the flaring of casinghead gas from oil wells in the Cha Cha-Gallup and Totah-Gallup Oil Pools, San Juan County, New Mexico.

CASE 2069: (Reopened)
In the matter of the application of Benson-Montin-Greer Drilling Corporation for the establishment of 80-acre oil proration units in the Cha Cha-Gallup Oil Pool, San Juan County, New Mexico. Case 2069 will be reopened pursuant to Order No. R-1800 to permit the applicant and other interested parties to appear and show cause why the Cha Cha-Gallup Oil Pool should not be developed on 40-acre proration units.

NEW CASES

CASE 2401: Southeastern New Mexico nomenclature case calling for an order creating new pools and extending, contracting, and abolishing certain existing pools in Eddy, Lea, and Roosevelt Counties, New Mexico.

- (a) Create a new oil pool for Ellenburger production, designated as the North Justis-Ellenburger Pool, and described as:

TOWNSHIP 24 SOUTH, RANGE 37 EAST, NMPM
Section 35: SE/4

- (b) Create a new oil pool for Fussleman production, designated as the North Justis-Fussleman Pool, and described as:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 1: NW/4

- (c) Create a new gas pool for Pennsylvanian production, designated as the Lea-Pennsylvanian Gas Pool, and described as:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
Section 11: NW/4

- (d) Create a new oil pool for Devonian production, designated as the Medicine Rock-Devonian Pool, and described as:

TOWNSHIP 15 SOUTH, RANGE 38 EAST, NMPM
Section 22: NE/4

- (e) Create a new oil pool for Delaware production, designated as the Parallel-Delaware Pool, and described as:

TOWNSHIP 20 SOUTH, RANGE 31 EAST, NMPM
Section 23: SW/4

- (f) Create a new oil pool for Delaware production, designated as the Pecos-Delaware Pool, and described as:

TOWNSHIP 26 SOUTH, RANGE 29 EAST, NMPM
Section 34: Lot 4 and NE/4 NE/4

- (g) Create a new oil pool for Delaware production, designated as the Quahada Ridge-Delaware Pool, and described as:

TOWNSHIP 22 SOUTH, RANGE 30 EAST, NMPM
Section 27: E/2

- (h) Create a new gas pool for Atoka production, designated as the South Salt Lake-Atoka Gas Pool, and described as:

TOWNSHIP 20 SOUTH, RANGE 32 EAST, NMPM
Section 36: E/2

TOWNSHIP 20 SOUTH, RANGE 33 EAST, NMPM
Section 31: S/2

SOUTHERN UNION PRODUCTION COMPANY

FIDELITY UNION TOWER

DALLAS 1, TEXAS

October 13, 1961

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

Gentlemen:

In re Case No. 2069 (Reopened)

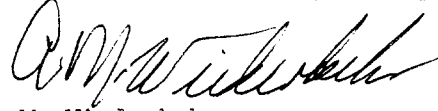
Reference is made to Order No. R-1800 entered by your Commission on October 3, 1960 in Case No. 2069, adopting Temporary Operating Rules for the Cha Cha-Gallup Oil Pool in San Juan County, New Mexico.

Southern Union Production Company is of the opinion that the Cha Cha-Gallup Reservoir may be efficiently and economically operated and developed on eighty-acre proration units, and that it would be uneconomical to drill wells in the Cha Cha-Gallup Oil Pool on forty-acre proration units.

Accordingly, upon the reopening of Case No. 2069 at the regular hearing of the Commission in October, 1961, Southern Union Production Company, as a working interest owner in a number of wells in the Cha Cha-Gallup Oil Pool, urges that the Special Rules and Regulations for the Cha Cha Gallup Oil Pool, as originally adopted in Order No. R-1800 to provide for eighty-acre spacing and proration units, be permanently continued in effect.

Very truly yours,

SOUTHERN UNION PRODUCTION COMPANY



A. M. Wiederkehr
Vice President

AMW:feh

GRANTHAM, SPANN AND SANCHEZ
ATTORNEYS AT LAW
914 BANK OF NEW MEXICO BUILDING
POST OFFICE BOX 1031
ALBUQUERQUE, NEW MEXICO

EVERETT M. GRANTHAM
CHARLES C. SPANN
MAURICE SANCHEZ

TELEPHONE
243-3525

October 16, 1961

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

Re: Case 2069 (Reopened)

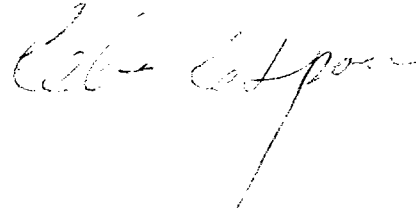
Dear Mr. Porter:

Please enter my appearance as local attorney of record in behalf of El Paso Natural Gas Products Company in the above cause which I understand will come on for hearing at Roswell, New Mexico, on Wednesday, October 18. A representative of El Paso Products Company will be present to make a statement.

Very truly yours,

GRANTHAM, SPANN AND SANCHEZ

By:



CCS:rr

ATWOOD & MALONE
LAWYERS

JEFF D. ATWOOD (1883-1960)
ROSS L. MALONE
CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER

P. O. DRAWER 700
TELEPHONE MAIN 2-6221
ROSWELL PETROLEUM BUILDING
ROSWELL, NEW MEXICO

October 16, 1961

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

Re: Case No. 2069 before the Oil Conservation
Commission of the State of New Mexico

Gentlemen:

We are local counsel for Pan American Petroleum Corporation and as such wish to enter our appearance in the captioned case. Pan American will also be represented by Guy Buell, a member of the Texas Bar, and a company employee. The actual presentation for Pan American will be made by Mr. Buell.

Very truly yours,

ATWOOD & MALONE

By: *Bob F. Turner*

BFT:ps

cc: Mr. Guy Buell
Mr. J. K. Smith, Esq.

TEXACO
INC.

PETROLEUM PRODUCTS

DOMESTIC PRODUCING DEPARTMENT
MIDLAND DIVISION



P. O. BOX 3109
MIDLAND, TEXAS

October 10, 1961

Reference: Case No. 2069
Cha Cha Gallup Oil Pool
San Juan County, New Mexico

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attn: Mr. A. L. Porter, Jr.

Gentlemen:

TEXACO Inc., as a prospective operator in the Cha Cha Gallup Oil Pool, wishes to concur with the application of Benson-Montin-Greer Drilling Corporation for the establishment of 80-acre oil proration units for the subject pool. TEXACO wishes to recommend the continuance of 80-acre proration units and the spacing rules as provided for in Order No. R-1800 adopting temporary operating rules for the Cha Cha Gallup Oil Pool, San Juan County, New Mexico.

Yours very truly,


B. L. Francis
Assistant Division Manager

CRB-MM

GOVERNOR
JOHN BURROUGHS
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
MURRAY E. MORGAN
MEMBER



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

P. O. BOX 871
SANTA FE

October 3, 1960

Mr. George Verity
152 Petroleum Center Building
Farmington, New Mexico

Re: Case No. 2069
Order No. R-1800
Applicant:
Benson-Montin-Greer Drilling
Corporation

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.,
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC X
Artesia OCC
Aztec OCC X

Other Mr. Chas. C. Span
1031 Simms Bldg.
Albuquerque, New Mexico

Mr. Alex Clarke, Jr.,
Pan American Petroleum
P. O. Box 1410
Fort Worth, Texas

PERTINENT RESERVOIR AND FIELD DATA

CHA CHA GALLUP FIELD

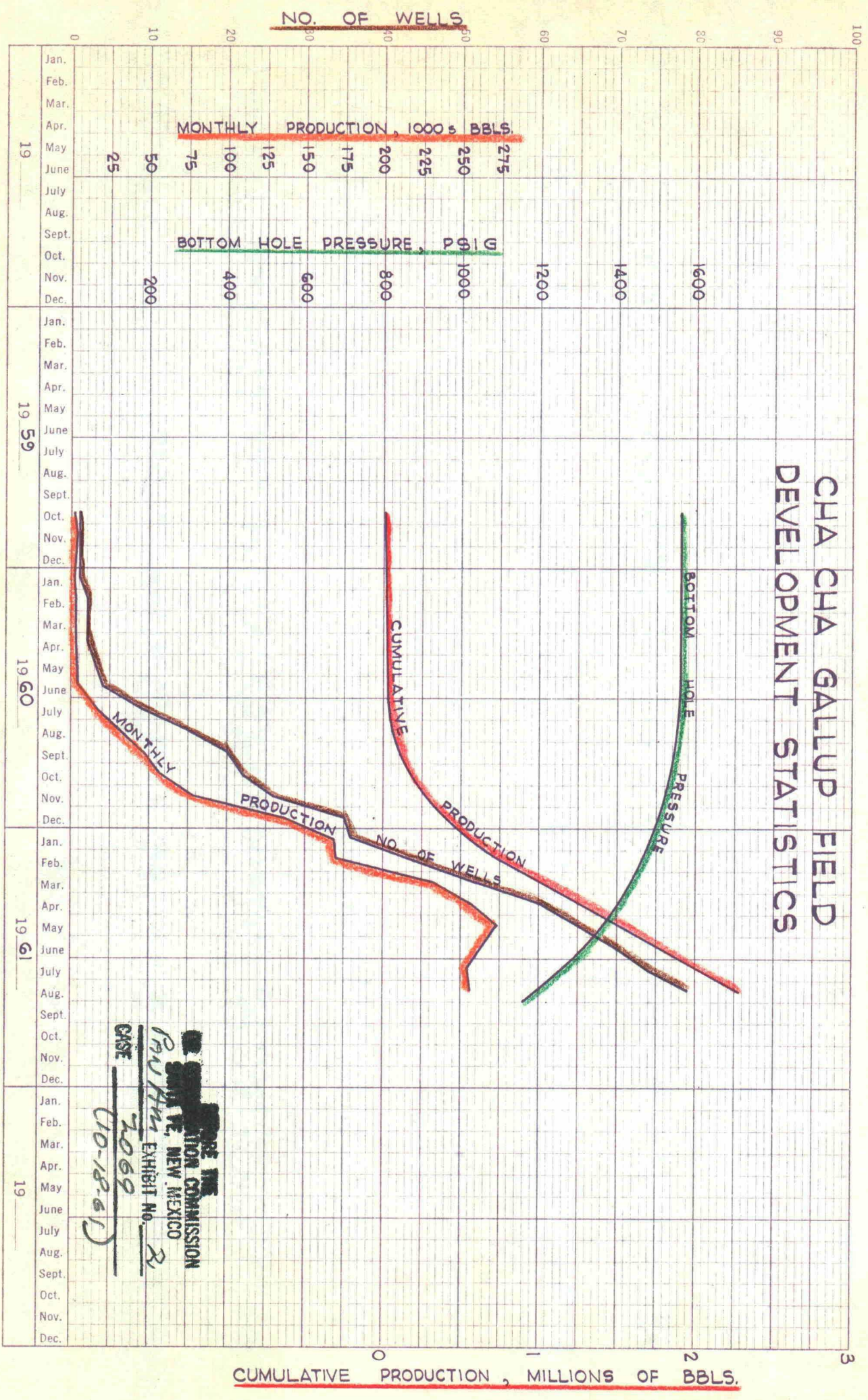
Original Reservoir Pressure, psig	1,560
Reservoir Temperature, °F	158
Saturation Pressure, psig	1,560
Solution Gas-Oil Ratio, Cu. Ft./Bbl.	649
Formation Volume Factor	1.392
Crude Viscosity At Bubble Point Pressure, cp.	0.415
Average Crude Gravity, °API	43.0
Producing Mechanism	Solution Gas Drive
Average Porosity, %	15.0
Average Permeability, Md.	53.7
Average Water Saturation, %	30.0
Average Net Pay Thickness, ft.	6.5
Type Accumulation	Sand Bar
Length of Field, miles (as of 10-1-61)	12
Width of Field, miles	2
Total Number of Wells as of 10-1-61	81
Current Allowable, BOPD	164
GOR Limit, Cu. Ft./Bbl.	2,000
Cumulative Oil Production, Bbls. (as of 9-1-61)	2,291,648
August, 1961 Production, Bbls.	256,043

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
PAN AM EXHIBIT No. 1
CASE 2069
(10-18-61)

V-1

359-192 KEUFFEL & ESSER CO.
Five Years by Months on Long Slide X 100 Divisions.
MADE IN U.S.A.

CHA CHA GALLUP FIELD DEVELOPMENT STATISTICS

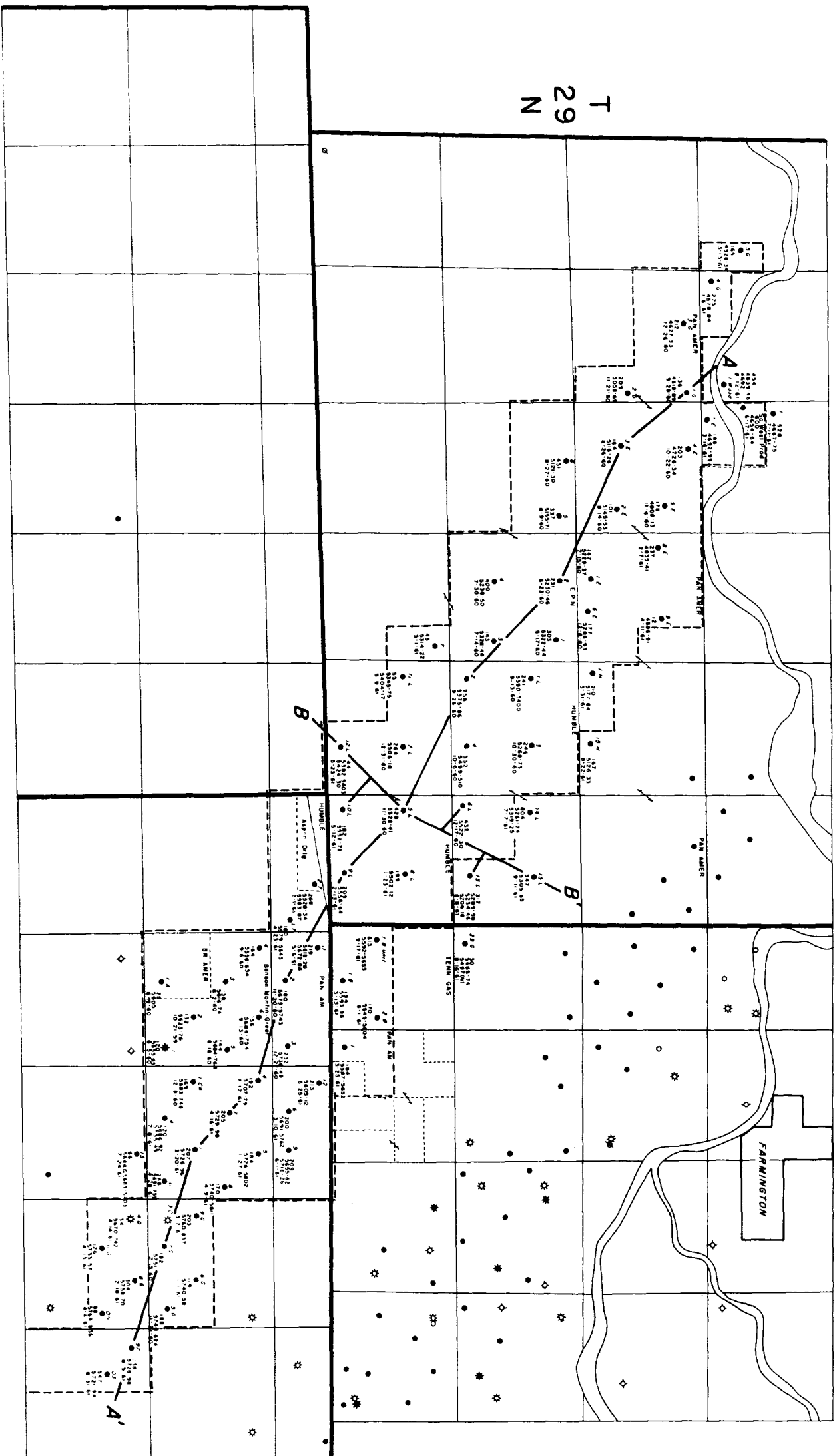


THE
SEALING COMMISSION
SAN ANTONIO, NEW MEXICO
EXHIBIT NO. 2
CASE 7069
(10-18-61)

X-2

R 14 W

R 13 W



T 28 N

T 29 N

HUMBLE OIL & REFINING COMPANY

DENVER AREA

Humble Exhibit I

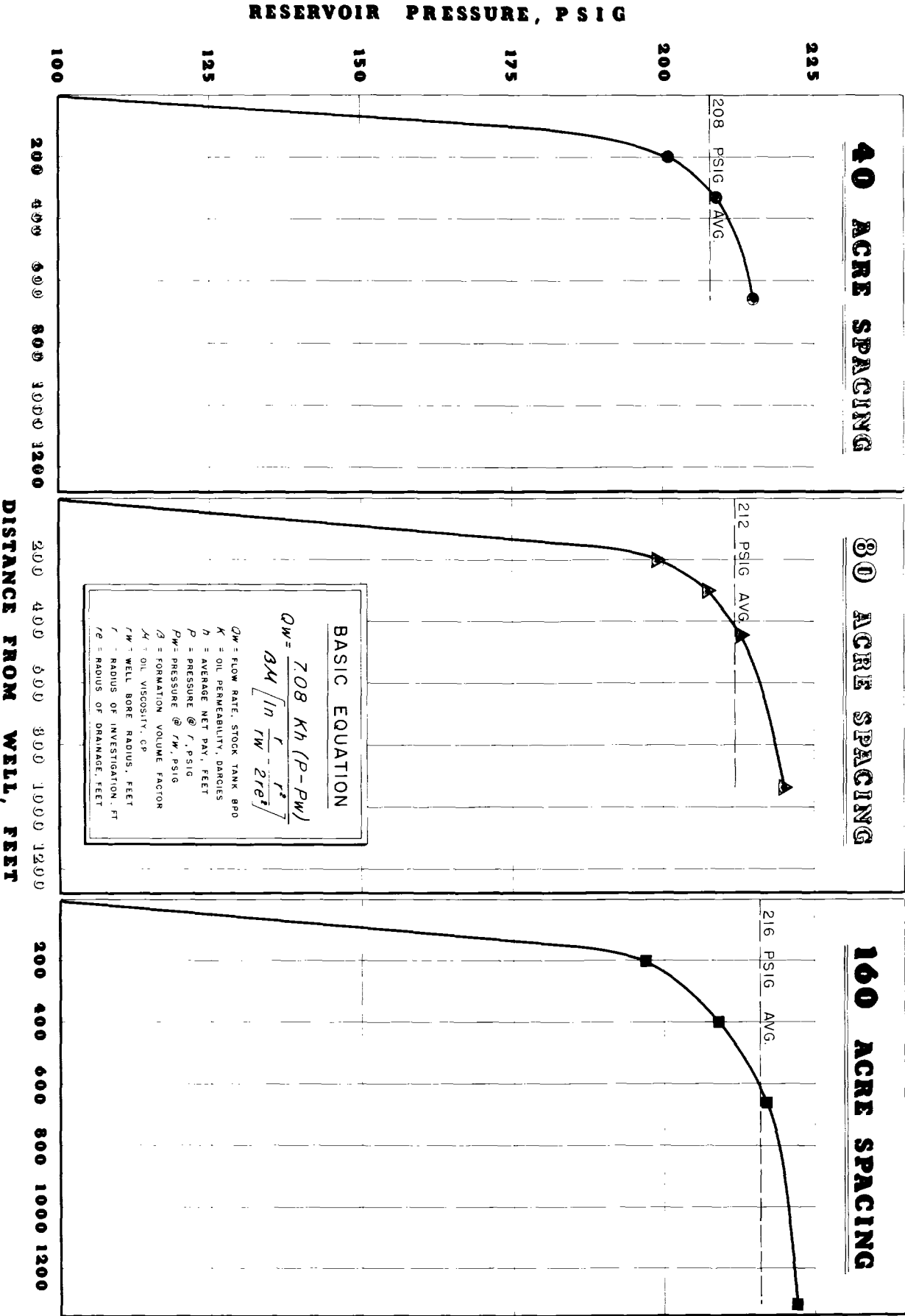
CHA CHA GALLUP FIELD

San Juan County, New Mexico

Legend

- I.P. of Wells
- CHA CHA GALLUP Pool Limits
- Through Order R-2048 9-1-61

RESERVOIR PRESSURE AT ABANDONMENT
CHA CHA CALLUP FIELD
SAN JUAN COUNTY, NEW MEXICO

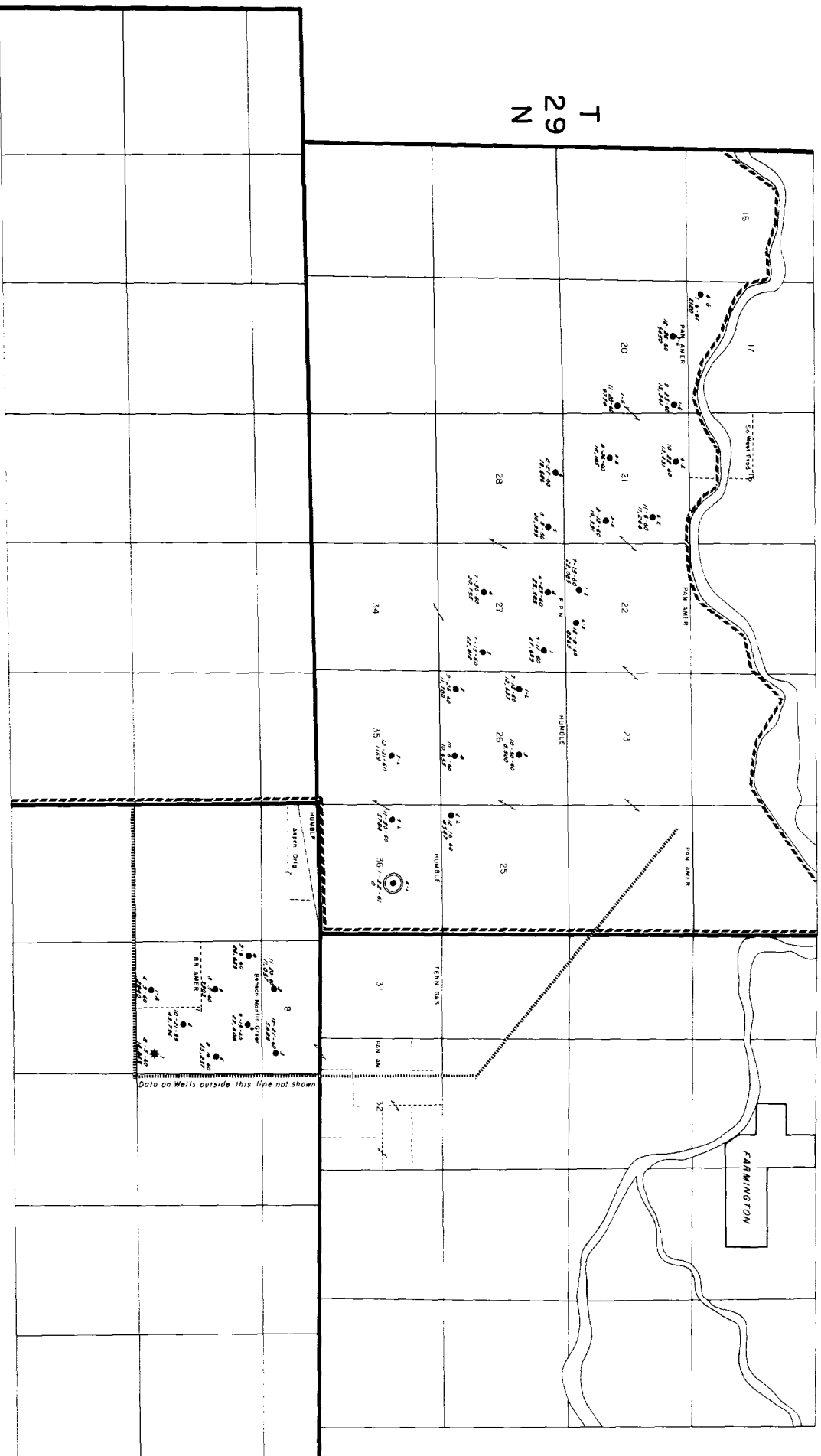


HUMBLE EXHIBIT VII

EVALUATION OF 40 ACRE SPACING ONE WELL ECONOMICS - CHA CHA GALLUP FIELD, NEW MEXICO

	Lower Horseshoe Sand	Cha Cha Sand	Total
Productive Area, Acres	40	40	
<u>RESERVOIR DATA</u>			
Porosity, Percent	14.7	7.7	
Connate Water, Percent	35	40	
F.V.F. (Orig.)	1.334	1.334	
Pay, Feet	6.8	2.9	
Primary Sand Volume, Acre-Feet	272	116	
<u>PRIMARY RECOVERY</u>			
Est. Ult. Production, Bbl/Acre-Ft	82	40	
Est. Ult. Production, Gross Bbls.	22,304	4,640	26,944
Est. Ult. Production, Net Bbls(.875)			23,576
<u>EARNINGS</u>			
Oil Earnings @ \$2.70/NB			\$ 63,660
Gas Earnings @ \$0.17/NB			\$ 4,010
Total Humble Earnings			\$ 67,670
<u>OPERATING EXPENSES</u>			
Lease & Well Expense (\$264/WM X 6 yrs)			\$ 19,010
Overhead @ \$0.16 PNB			\$ 3,770
Taxes @ 6% of Earnings			\$ 4,060
Total Operating Expense			\$ 26,840
<u>OPERATING PROFIT</u>			\$ 40,830
<u>INVESTMENT</u>			
Drilling and Completion			\$ 53,300
Pump Equipment			\$ 11,000
Lease Equipment			\$ 6,100
Total Investment			\$ 70,400
<u>ULTIMATE STATUS</u>			(\$ 29,570)

R 13 W



Notes:

Total Accum. Oil Prod. (1-22-61)
OF Wells Shown = 475, 330 BBL'S

Total Accum. Oil Prod. (1-22-61)
OF CHA CHA Gallup Field = 507, 798 BBL'S

Status on Jan 22, 1961

Completion Date 1-8 : 1-22-61

Legend:

1 Well No.
5-17-60 Completion Date
27,699 Accum. Oil Prod. BBL'S (1-22-61)

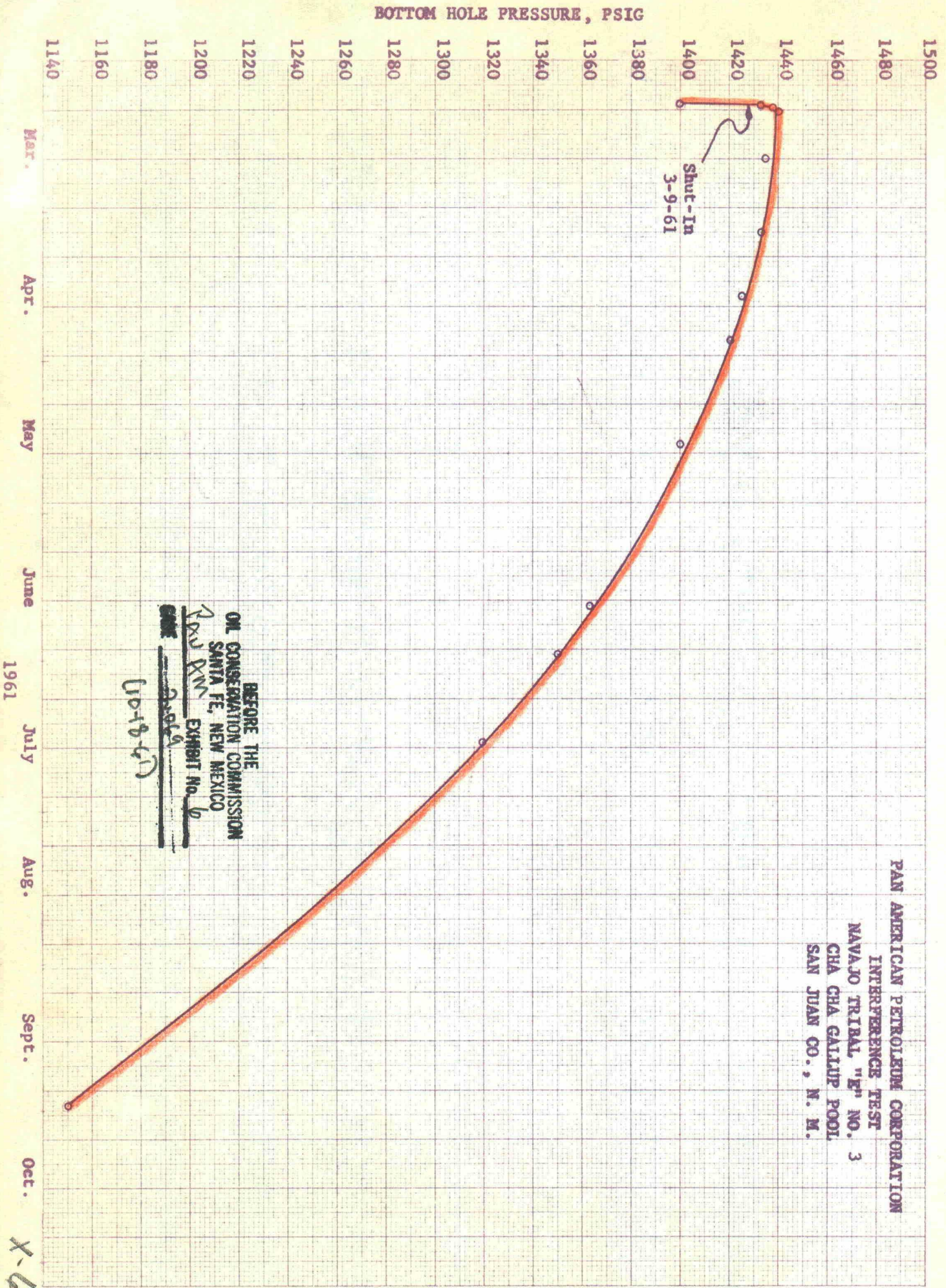
PAN AMERICAN PETROLEUM CORPORATION
INTERFERENCE TEST
NAVAJO TRIBAL "E" No. 3
CHA CHA GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO

<u>Date Pressure</u> <u>Measured</u>	<u>Time</u> <u>Shut In</u>	<u>Bottom Hole</u> <u>Pressure, PSIG</u>
March 9, 1961	1/2 hour	1400
	1 hour	1410
	6 hours	1429
	12 hours	1433
March 10, 1961	1 day	1438
March 11, 1961	2 days	1440
March 20, 1961	10 days	1435
April 4, 1961	25 days	1433
April 17, 1961	38 days	1425
April 24, 1961	45 days	1420
May 17, 1961	68 days	1400
June 19, 1961	91 days	1363
June 29, 1961	101 days	1350
July 17, 1961	119 days	1320
September 29, 1961	193 days	1150

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
PAN AM EXHIBIT No. 6-A
CASE 2069
(10-18-61)

V. L. F.

K&E 10 X 10 TO THE CM. 359-14
KEUFFEL & ESSER CO. MADE IN U.S.A.



CHA CHA GALLUP POOL
SAN JUAN COUNTY, NEW MEXICO
BOTTOM HOLE PRESSURES ON NEW WELLS

WOOD OIL UNIT NO. 1

Completed August 26, 1961
Shut-in September 2, 1961

<u>Shut-in Time, hours</u>	<u>Pressure at +400, psig</u>
1/12	468
1/6	708
1/3	793
1/2	818
2/3	828
5/6	911
1	968
2	1023
3	1083
4	1141
5	1208
6	1228
7	1243
8	1250
9	1258
10	1265
30	1267
76	1267

GALLEGOS CANYON UNIT NO. 103

Completed September 1, 1961
Shut-in September 2, 1961
72 hour shut-in pressure @ +400' - 1340 psig

TENNECO CALLOW "B" OIL UNIT

Completed September 16, 1961 and immediately shut-in
74.5 hour shut-in pressure @ +1400 - 1288 psig

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
PAN Am EXHIBIT No. 5
CASE 2069
(10-18-61)

X-5

SUMMARY OF OIL PRODUCTION
BENSON-MONTIN-GREER DRILLING CORP. JONES LEASE
CHA CHA-GALLUP POOL

<u>DATE</u>	<u>CUM. PROD.</u>	<u>PRESSURE AT 350</u>	<u>REMARKS</u>
8-31-60	29,882	1485	
9-10-60	34,916	1516	Production extrapolat-
10-18-60	57,967	1526	ed.
10-31-60	65,916	1523	"
11-25-60	91,183	1499	"
12-12-60	106,956	1478	"
12-21-60	114,516	1469	"
1-23-61	140,471	1438	"
2-15-61	158,720	1399	"
3- 8-61	173,196	1357	"
3-31-61	188,371	1304	

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
10-18-61 EXHIBIT No. 5
CASE 2069

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

ALBERT R. GREER

DATE	TIME	DAYS SHUT IN	PRESSURE AT DEPTH OF 5600' (psig)	PRESSURE CORRECTED TO DATUM OF 4350 (psig)	CASING PRESSURE DWT (psig)	TUBING PRESSURE DWT (psig)	REMARKS
12- 5-60		108	1463	1483	1015	1030	B-M-G #1234 bomb
12-12-60		115	1458	1478	1004	1015	"
12-19-60		122	1452	1472	992	1004	"
12-21-60		124	1449	1469	989	1000	"
1- 3-61		137	1435	1455	970	984	"
1- 7-61		141	1427	1447	964	977	"
1-11-61		145	1416	1436	956	969	"
1-17-61		151	1423	1444	944	945	"
1-23-61		157	1418	1438	928	913	"
2- 8-61		173	1390	1410	-	-	"
2-15-61		180	1379	1399	-	-	"
3- 8-61		201	1337	1357	790	756	"
3-15-61		208	1315	1335	771	722	"
3-20-61		213	1307	1327	756	721	"
3-24-61		217	1300	1320	747	713	"
3-31-61		224	1284	1304	732	717	"

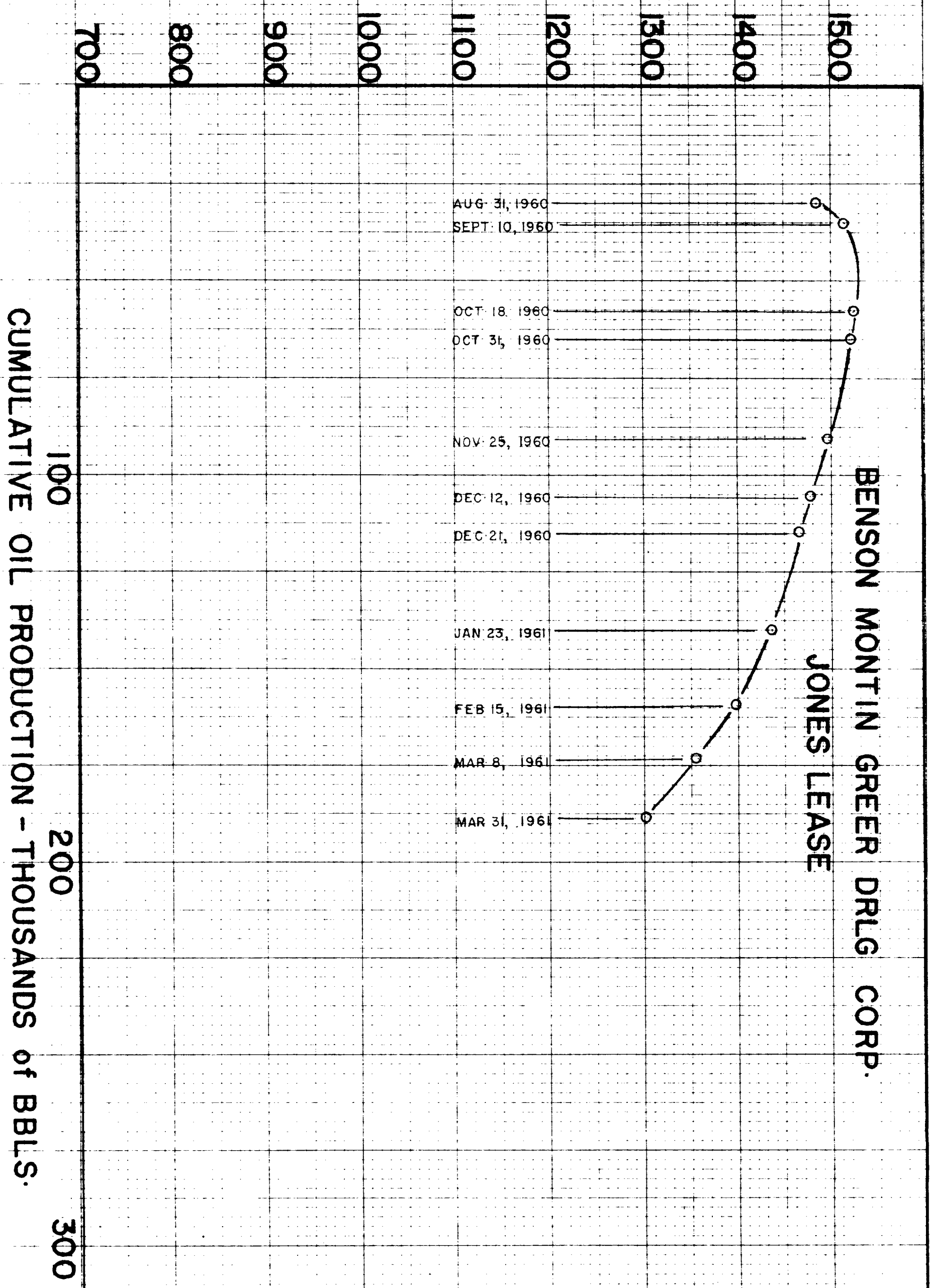
BEFORE THE
 JAMES H. HARRIS, JR.
 JUDGE, SAN JOSE, CALIF. DISTRICT COURT
 10/18/61 EXHIBIT No. A
 CASE 2069

SUMMARY OF BOTTOM HOLE PRESSURES
 BENSON-MONTIN-GREER DRILLING CORP. #3 JONES
 CHA-CHA-GALLUP POOL

DATE	TIME	DAYS SHUT IN	PRESSURE AT DEPTH OF 5600' (psig)	PRESSURE CORRECTED TO DATUM OF + 350 (psig)	CASING PRESSURE DWT (psig)	TUBING PRESSURE DWT (psig)	REMARKS
9-1-60	2:00 PM	13	1465	1485	1241	671	B-M-G 7/8" Humble bomb 2000# element
9-2-60	3:30 PM	14	1476	1496	1295	686	
9-3-60	9:00 AM	15	1470	1490	1248	676	
9-4-60	2:00 PM	16	1467	1487	1251	675	B-M-G bomb #272 M.K. 2000# element
9-5-60	2:00 PM	17	1479	1499	1255	693	
9-6-60	2:00 PM	18	1479	1499	1256	688	
9-8-60	2:00 PM	20	1487	1507	1260	714	B-M-G bomb #254 M.K. 4000# element
9-9-60	2:00 PM	21	1496	1516	1261	728	
9-10-60	12 Noon	22	1496	1516	1263	732	
9-11-60	12 Noon	23	1497	1517	1263	752	
10-18-60		60	1506	1526	1142	1045	B-M-G bomb #1234
10-21-60		63	1508	1528	1128	1061	
10-24-60		66	1502	1522	1116	1064	
10-26-60		68	1502	1522	1109	1065	
10-31-60		73	1503	1523	1095	1068	
11-4-60		77	1500	1520	1078	1067	
11-7-60		80	1497	1517	1073	1069	
11-11-60		84	1495	1515	1059	1064	
11-15-60		88	1489	1509	1050	1061	
11-18-60		91	1483	1503	1041	1056	
11-21-60		94	1482	1502	1035	1052	
11-25-60		98	1477	1499	1032	1047	

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

BOTTOM HOLE PRESSURE - JONES #3 - DATUM +350 ft.



Index 20669

12-18-61

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
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BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

Case No.

Benson-Martin Gallup
Cha-Cha Gallup

2069

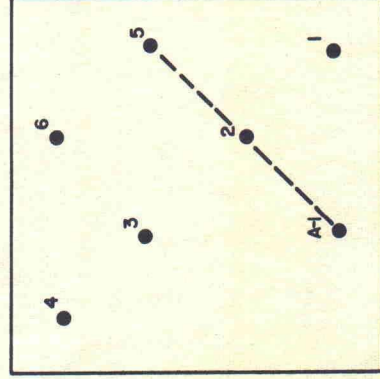
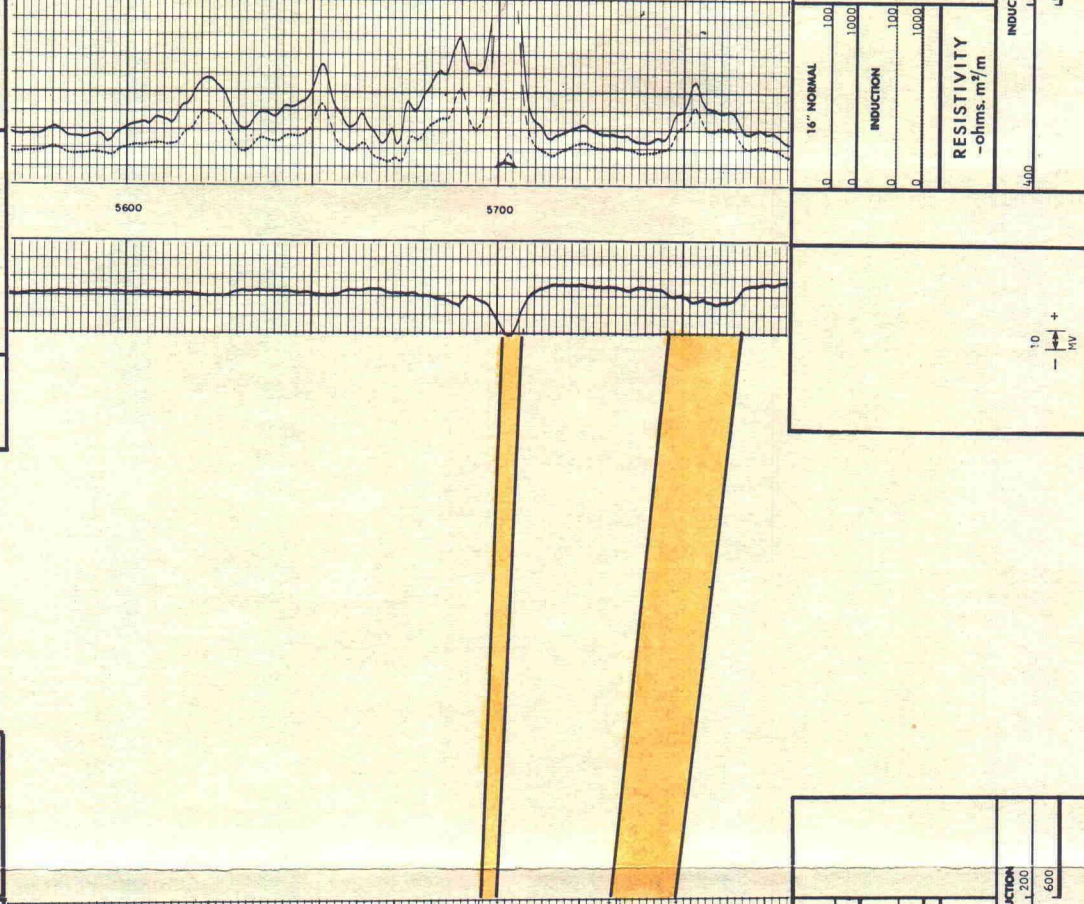
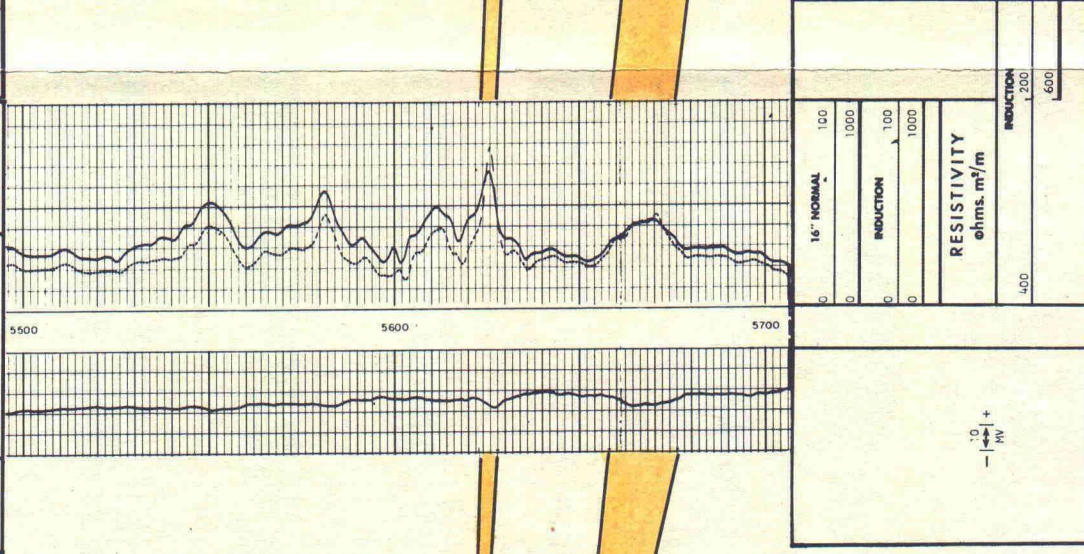
Large Exhibits

NO. 2 JONES

NO. A-1 JONES

[illegible]

 SCHULMBERGER WELL SIREWING CORPORATION A DIVISION OF <i>Induction-Electrical Log</i>	RUN No. 8-5-60		ONE
	Start Reading 220		2
	Last Reading 250		3
	Test Measured 258		4
	Test Measured 267		5
	Core Driller 217		6
	Depth Reached 58.04		7
	Bottom Driller 58.17		8
	Bottom Time 58.17		9
	Used Mud Chem Gel		10
Wash Visc. 70		11	
Wash Bit 70		12	
Wash Bit 70		13	
Wash Bit 70		14	
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Wash Bit 70		76	
Wash Bit 70		77	
Wash Bit 70		78	
Wash Bit 70		79	
Wash Bit 70		80	
Wash Bit 70		81	
Wash Bit 70			



GALLUP FORMATION
BENSON - MONTIN - GREER DRILLING CORP
JONES LEASE
SECTION 17, T 28N - R3W
SAN JUAN COUNTY, NEW MEXICO

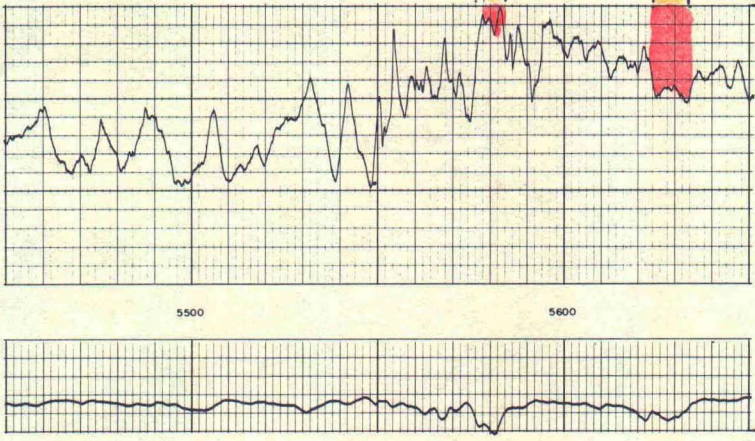
NO. 4 JONES

NO. 3 JONES

NO. 2 JONES

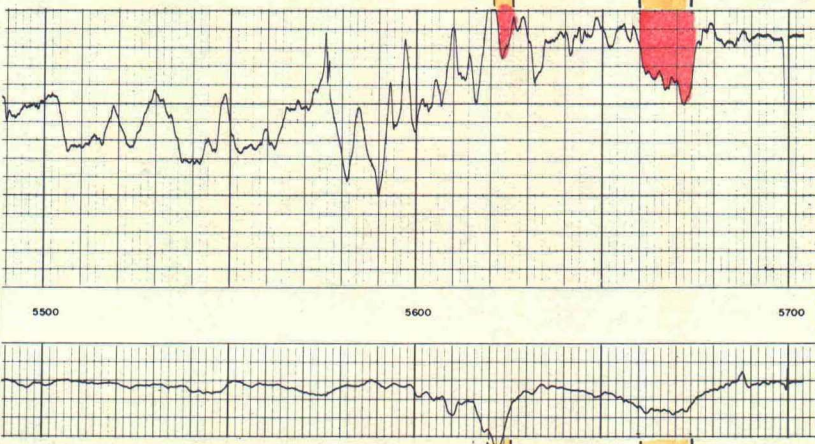
NO. 1 JONES

	SCHLUMBERGER WELL SERVICES WORLDWIDE		Sonic Log		Other Surveys	
	COMPANY: BENSON, MONTI & OPER: DRILLING CORPORATION		INC: ES Location of Well SEC. 17-28N-13W		Depth Reached: 5710 Best. Visc. 8.1 Mud Resist. 3.0 Rht 17.7 Wt. Loss -- Annul (C) 2.6 Size Spaced 3'	
COUNTY: SAN JUAN, N. M. LOCATION: WILDCAT		JONES NO. 4 FIELD: WILDECAT LOCATION SEC. 17-28N-13W		Date Reading 8-17-60 Log Reading 2200 Feet Measured 472 Log. Interval 252 Cor. Driller Depth Reached 1632		Log Depth Measured From K/L ORE 8-17-60 2200 472 252 5710 8.1 3.0 17.7 -- 2.6 3' To T.D. To 1-1/2 MI 1588' APT Recorded By WILLY
COUNTY: SAN JUAN STATE: NEW MEXICO		Elevation K.B.: 5088' D.F.: -- e-CL: 2527'				



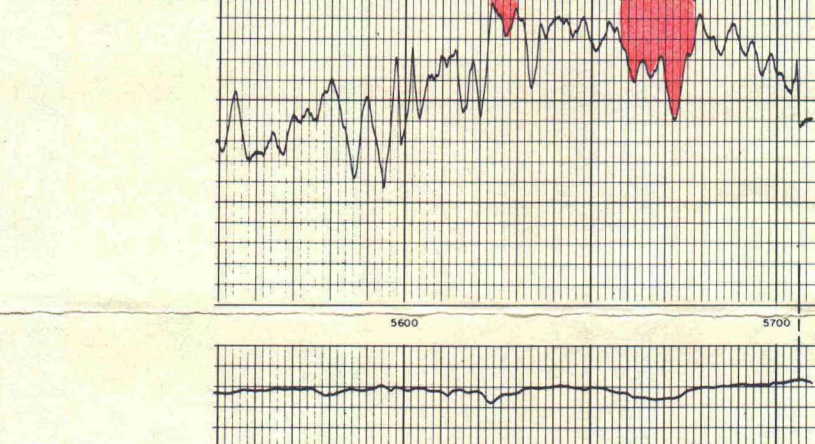
SPONTANEOUS-POTENTIAL millivolts	$\frac{10}{- m } +$	DEPTHS	INTERVAL TRANSIT TIME
		5' - 100'	96 $T = R - R_2$ increases 76 56
		L.P. 5200'	

SULLIMBERGER WELL SUREVING CORPORATION		Sonic Log	
Address		Address	
City		City	
State		State	
County		County	
Location		Location	
Well		Well	
Company		Company	
Drilling		Drilling	
Log		Log	
Date		Date	
Time		Time	
Weather		Weather	
Tide		Tide	
Wind		Wind	
Current		Current	
Bottom		Bottom	
Soundings		Soundings	
Remarks		Remarks	
Drawings		Drawings	
Notes		Notes	
Log		Log	
Sheet		Sheet	
Scale		Scale	
Projection		Projection	
Datum		Datum	
Elevation		Elevation	
Reference		Reference	
Witness		Witness	
Signature		Signature	
Print Name		Print Name	
Title		Title	
Firm		Firm	
Address		Address	
City		City	
State		State	
County		County	
Location		Location	
Well		Well	
Company		Company	
Drilling		Drilling	
Log		Log	
Date		Date	
Time		Time	
Weather		Weather	
Tide		Tide	
Wind		Wind	
Current		Current	
Bottom		Bottom	
Soundings		Soundings	
Remarks		Remarks	
Drawings		Drawings	
Notes		Notes	
Log		Log	
Sheet		Sheet	
Scale		Scale	
Projection		Projection	
Datum		Datum	
Elevation		Elevation	
Reference		Reference	
Witness		Witness	
Signature		Signature	
Print Name		Print Name	
Title		Title	
Firm		Firm	
Address		Address	
City		City	
State		State	
County		County	
Location		Location	
Well		Well	
Company		Company	
Drilling		Drilling	
Log		Log	
Date		Date	
Time		Time	
Weather		Weather	
Tide		Tide	
Wind		Wind	
Current		Current	
Bottom		Bottom	
Soundings		Soundings	
Remarks		Remarks	
Drawings		Drawings	
Notes		Notes	
Log		Log	
Sheet		Sheet	
Scale		Scale	
Projection		Projection	
Datum		Datum	
Elevation		Elevation	
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Witness		Witness	
Signature		Signature	
Print Name		Print Name	
Title		Title	
Firm		Firm	
Address		Address	
City		City	
State		State	
County		County	
Location		Location	
Well		Well	
Company		Company	
Drilling		Drilling	
Log		Log	
Date		Date	
Time		Time	
Weather		Weather	
Tide		Tide	
Wind		Wind	
Current		Current	
Bottom		Bottom	
Soundings		Soundings	
Remarks		Remarks	
Drawings		Drawings	
Notes		Notes	
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Sheet		Sheet	
Scale		Scale	
Projection		Projection	
Datum		Datum	
Elevation		Elevation	
Reference		Reference	
Witness		Witness	
Signature		Signature	
Print Name		Print Name	
Title		Title	
Firm		Firm	
Address		Address	
City		City	
State		State	
County		County	
Location		Location	
Well		Well	
Company		Company	
Drilling		Drilling	
Log		Log	
Date		Date	
Time		Time	
Weather		Weather	
Tide		Tide	
Wind		Wind	
Current		Current	
Bottom		Bottom	
Soundings		Soundings	
Remarks		Remarks	
Drawings		Drawings	
Notes			



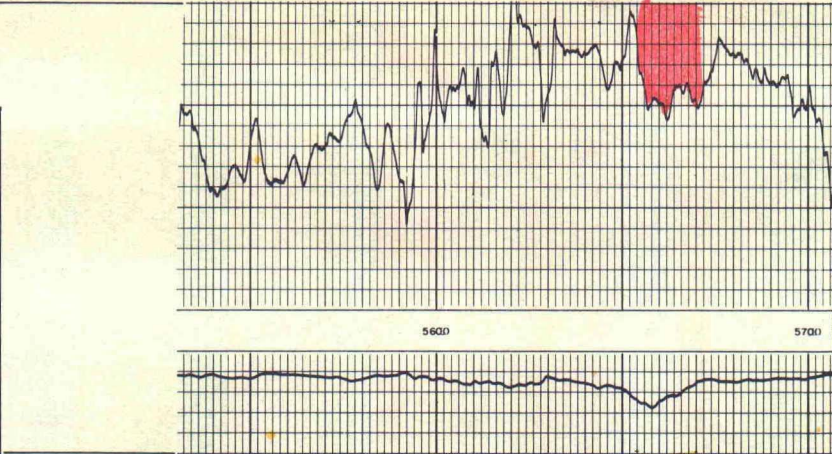
SPONTANEOUS-POTENTIAL millivolts	DEPTHS	INTERVAL TRANSIT TIME			
		microseconds per foot ← T ₁ T ₂ T ₃ T ₄ →			
10		5.6	7.6	5.6	

SCULLINBRGER WELL SINKING CORPORATION		Other Surveys		Log Depths Measured From	
14001 N. 10th St. Tulsa, Okla.		1 - ES, ML		K.B.	
COMPANY: BENSON MONTIN &		Location of Well		BUN No.	
GRIER		SEC. 17-28N-13W		9-23-59	
WELL: JONES #2		1980 FR S/L		Date	
FIFTH		1980 FR S/L		First Reading 5706	
LOCATION: WILLGAT		1980 FR S/L		Last Reading 4106	
FIELD LOCATION SEC. 17-28N-13W		1980 FR S/L		Bottom 4200	
COUNTY: SAN JUAN		1980 FR S/L		Csg. Drillers 229	
STATE: NEW MEXICO		1980 FR S/L		Csg. Sillman 5720	
		1980 FR S/L		Bottom Driller 5720	
		1980 FR S/L		Mud Nat. GEL-CHEN	
		1980 FR S/L		Dens. Grav. 9.2	
		1980 FR S/L		Vis. 65	
		1980 FR S/L		Rings BHT 1.2	
		1980 FR S/L		pH 13.2 F	
		1980 FR S/L		" " 8.5	
		1980 FR S/L		" " 3.4	
		1980 FR S/L		" " 6.3	
		1980 FR S/L		" " 13.2 F	
		1980 FR S/L		Bar Size 7/7.8	
		1980 FR S/L		Spinn. 3'	
		1980 FR S/L		4200	
		1980 FR S/L		to	
		1980 FR S/L		Opr. Rig Time 11 HOURS	
		1980 FR S/L		Towed No. 2517	
		1980 FR S/L		FARM 77	
		1980 FR S/L		ABOLLY BY	
		1980 FR S/L		WITNESS	
		1980 FR S/L		or G.L. 60325	

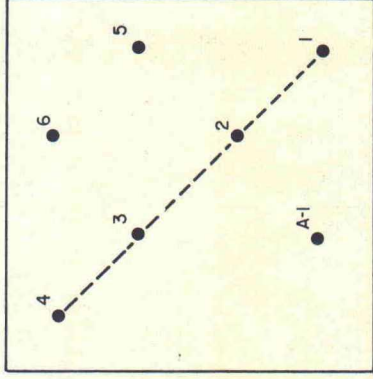


SPONTANEOUS-POTENTIAL millivolts	$-\frac{10}{10} +$	96 76 36
		196 146 36
INTERVAL TRANSIT TIME		
← microseconds, per foot →		
Span: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 20		

SCHUMBERGER WELL SURVEYING CORPORATION		Log Depths Measured from KB	
HILLTOP, TEX.			
		BURN NO.	
		5670-59	
		Penetration	
		First Reading 6346	
		Last Reading 5300	
		Cable Current 2.2	
		Cable Suction 2.2	
		Cable Driller 2.2	
		Depth Reached 5320	
		Actual Penetration 67	
		GEL CHEM OIL	
		Dens. 1 Visc. 9.1 @ 67° F	
Water Content 1.1			
pH 8.0 @ 147° F			
" " pH 8.0 @ " " "			
" " pH test 4.4 @ 30 mi			
" " Visc. 7.2 @ 147° F			
" " " "			
Spdm.		31	5300 To 5500
		Opn. Rig time	2 HOURS
		Truck No.	2515 FARM
		Recorded by	PARSON
		Checked by	
		Elevation K.B.	4626' ±
		Well No.	60127
		County	NEW JUAN
		State	NEW MEXICO
		Location	WEST GALLEGOS DAK.
		Field	17-28N-13W
		Location Sec.	17-28N-13W
		Well	JONES #1
		Other Surveys	
		Location of Well	790° FR S/L 790° FR E/L SEC. 17-28N-13W
		Company	S. GREER
		County	SAN JUAN
		State	NEW MEXICO
		Location	WEST GALLEGOS DAKOTA
		Well	JONES #1
		County	SAN JUAN, NEW MEXICO
		Location	WEST GALLEGOS DAKOTA
		Company	SCHUMBERGER WELLS SURVEYING CORP.



$- \left \frac{10}{M} \right +$	96	76	56
	SPONTANEOUS-POTENTIAL millivolts		
196		186	96
INTERVAL TRANSIT TIME microseconds per foot		← $\frac{\text{INCREASES}}$ Spas. 3 Fr. 2 Reagents	



SONIC LOG CROSS - SECTION NORTHWEST TO SOUTHEAST
GALLUP FORMATION
BENSON - MONTIN - GREER DRILLING CORP
JONES LEASE
SECTION 17, T 28N - R13W
SAN JUAN COUNTY, NEW MEXICO

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE