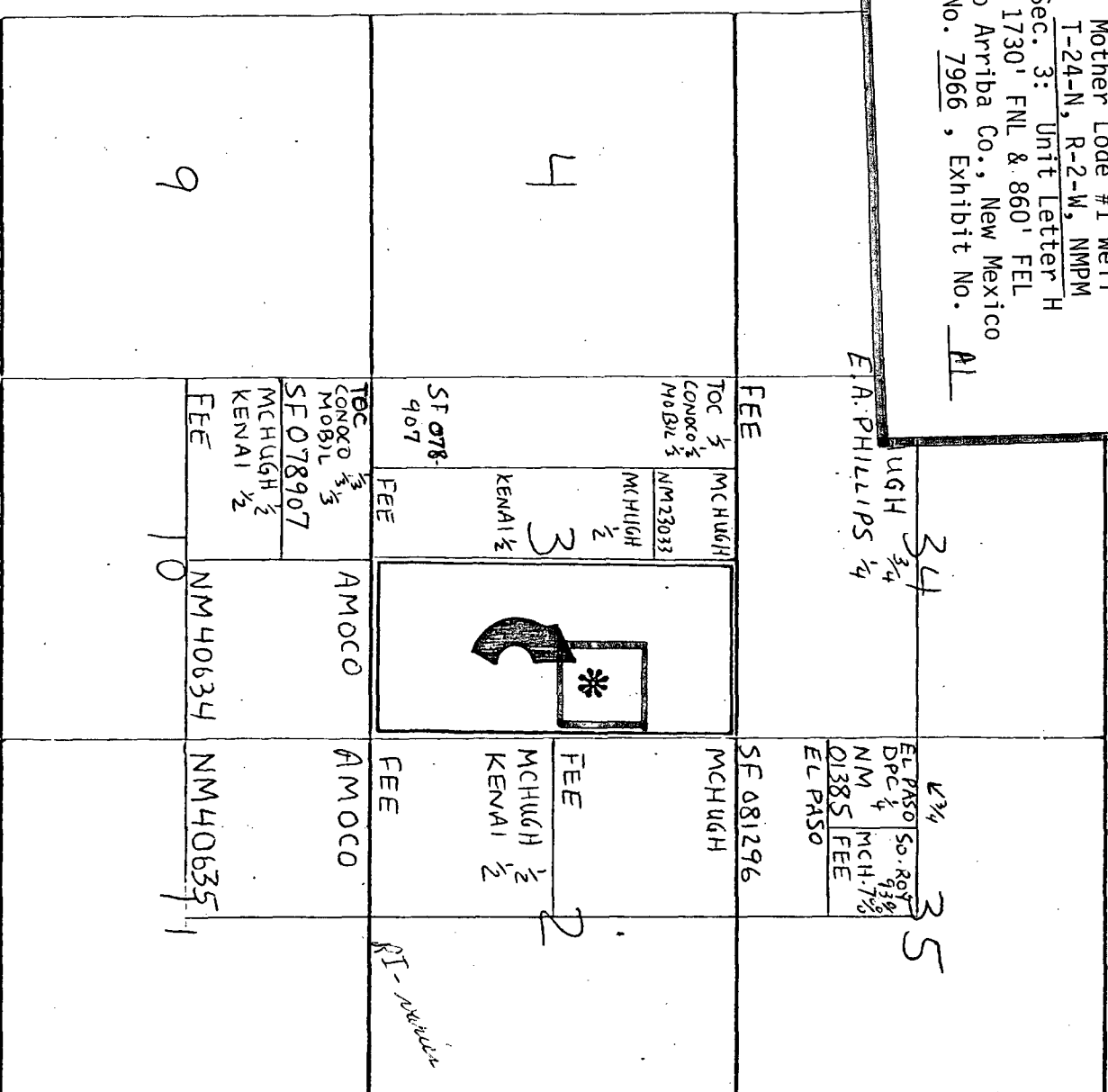


Application for Downhole Commingling

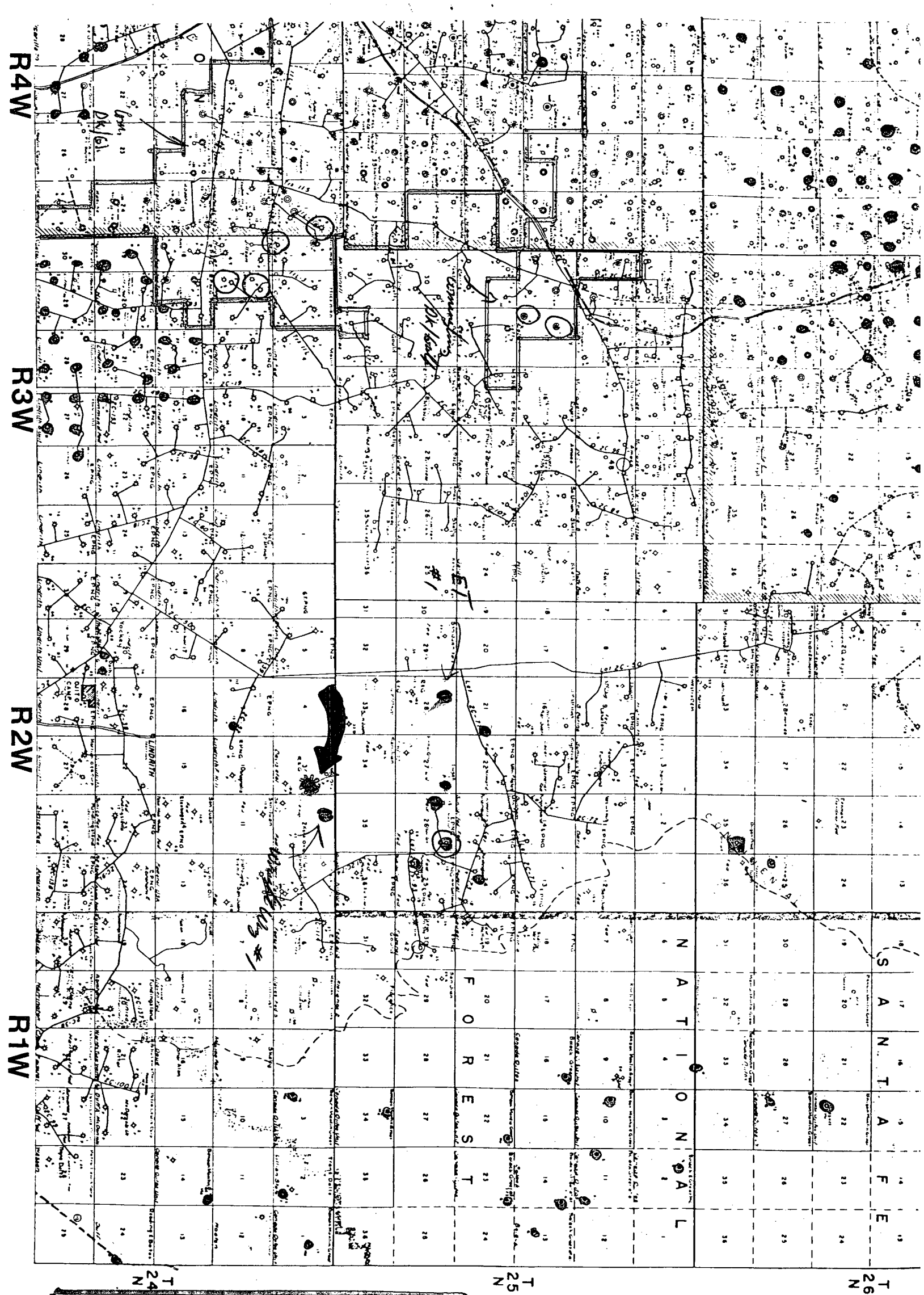
Jerome P. McHugh
Mother Lode #1 Well
T-24-N, R-2-W, NMPM
Sec. 3: Unit Letter H
1730' FNL & 860' FEL
Rio Arriba Co., New Mexico
Case No. 7966, Exhibit No. A1



T-24-N, R-2-W, NMPM
Rio Arriba County, New Mexico

OFFSET OPERATORS

- | | |
|---|---|
| Jerome P. McHugh (McHugh)
650 S. Cherry St., #1225
Denver, CO 80222 | Tenneco Oil Company (TOC)
P.O. Box 3249
Englewood, CO 80155 |
| E.A. Phillips (Phillips)
1200 Philltower Bldg.
Tulsa, OK 74103 | Conoco, Inc. (Conoco)
P.O. Box 1267
Ponca City, OK 74601 |
| El Paso Natural Gas Company (El Paso)
P.O. Box 1492
El Paso, TX 79978 | |
| Dugan Production Corp. (DPC)
P.O. Box 208
Farmington, NM 87499 | |
| Southland Royalty Company (So. Roy)
801 Cherry Str.
Ft. Worth, TX 76102 | |
| Kenai Oil and Gas Inc. (Kenai)
One Barclay Plaza
1675 Larimer Str., Suite 500
Denver, CO 80202 | |
| Amoco Production Company (Amoco)
Amoco Bldg.
17th and Broadway
Denver, CO 80202 | |
| Mobil Producing Texas and New Mexico (Mobil)
Nine Greenway Plaza East #2700
Houston, TX 77046 | |



Application for Downhole Commingling
 Jerome P. McHugh
 Mother Lode #1 Well
 T-24-N, R-2-W, NMPM
 Sec. 3: Unit Letter H
 1730' FNL & 860' FEL
 Rio Arriba Co., New Mexico
 Case No. 7966 , Exhibit No. A2

KEY

- Subject Well
- West Lindrith Gallup-Dakota Pool
- Ojito (Gallup)-Dakota Pool
- Commingled Gallup-Dakota Well
- Dakota Well
- Gallup Well
- Well completed in Gallup & Dakota
- Uncompleted Gallup Well
- Plugged & Abandoned Gallup or Dakota
- Wells used for production data

Application for Downhole Commingling
 Jerome P. McHugh
 Mother Lode #1 Well
 T-24-N, R-2-W, NMPM
 Sec. 3: Unit Letter H
 1730' FNL & 860' FEL
 Rio Arriba Co., New Mexico
 Case No. 7966, Exhibit No. A3

Welex Induction-Electric Log
 6-30-83
 Elev. = 7333' KDB

6700
 Gallup
 6704

← lost 300 bbl mud @ 6976'

← lost 200 bbl mud @ 6974'

2"=100'

GAMMA RAY

200

S.P.

10

IEL
 depths
 Ave 2-3'
 Low to
 FDC-CNL
 in Gallup
 interval

400

CONDUCTIVITY

DEEP RES.

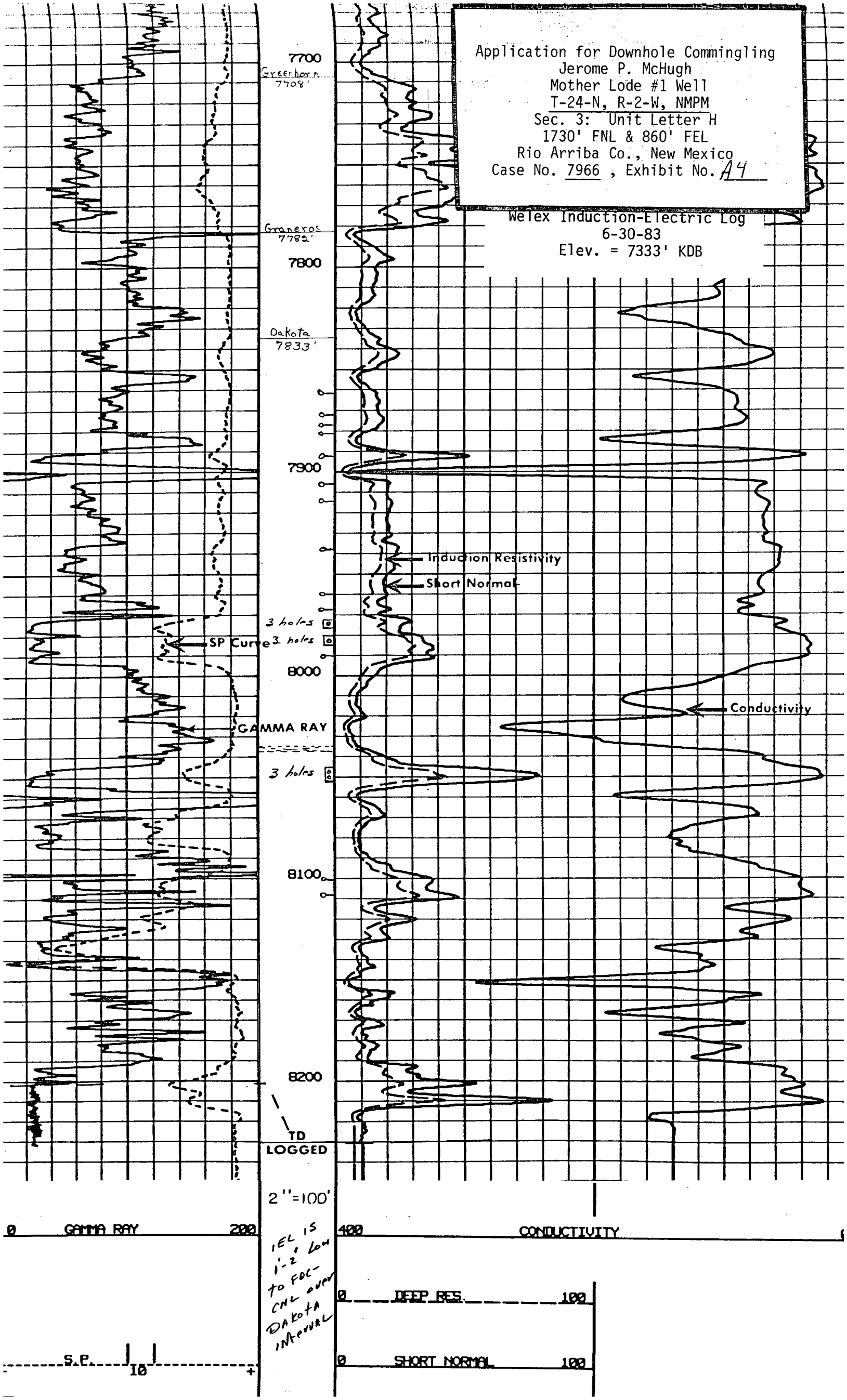
100

SHORT NORMAL

100

Application for Downhole Correlating
 Jerome P. McHugh
 Mother Lode #1 Well
 T-24-N, R-2-W, NMPM
 Sec. 3: Unit Letter H
 1730' FNL & 860' FEL
 Rio Arriba Co., New Mexico
 Case No. 7966, Exhibit No. A4

Welex Induction-Electric Log
 6-30-83
 Elev. = 7333' KDB



IEL IS
 1-2' Low
 to FOC-
 CNL over
 DAKOTA
 INTERVAL

S.P.

10

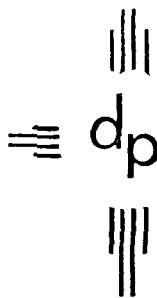
+

DEEP RES.

100

SHORT NORMAL

100



dugan production

Application for Downhole Commingling
Jerome P. McHugh
Mother Lode #1 Well
T-24-N, R-2-W, NMPM
Sec. 3: Unit Letter H
1730' FNL & 860' FEL
Rio Arriba Co., New Mexico
Case No. 7966, Exhibit No. A5

JEROME P. McHUGH
Mother Lode #1
1730' FNL - 860' FEL
Sec. 3, T24N R2W
Rio Arriba County, NM

MORNING REPORT

6-14-83 MI & RU Four Corners Drilling Co. Rig ~~#4~~ ^{#10} Spudded 12 $\frac{1}{4}$ " hole at 4:45 p.m. 6-13-83. Drilled to 237'. Ran 5 jts. 9-5/8" O.D., 47#, 8 Rd, ST&C casing. T.E. 212' set at 224' RKB. Cemented with 125 sx class "B" plus 2% CaCl. (147.5 cf slurry) Good cement to surface. P.O.B. at 10:00 p.m. 6-13-83. W.O.C.

4-1/2 hrs - MI & RU
1-1/4 hrs - drill rat and mouse holes
3-1/4 hrs - drill 12 $\frac{1}{4}$ " hole
1/4 hr - trip
3/4 hr - run 9-5/8" casing
1 hr - cement casing
8 hrs - W.O.C.

6-15-83 1785' - Drilling Wt. 8.8 Vis 28 W.L. 10
1° at 505'; 1 $\frac{1}{2}$ ° at 769'; 2° at 1041'; 2 $\frac{1}{2}$ ° at 1290'; 3° at 1440'; 2-3/4° at 1580'; 2-1/4° at 1739'

1-1/4 hrs - trip
15-1/2 hrs - drilling
2-1/4 hrs - survey
4 hrs - W.O.C.
1 hr - repairs

Pressure tested surface casing at 800 psi for 30 min. Held OK.

6-16-83 2950' - trip Wt. 8.7 Vis 28 W.L. 10.0
2 $\frac{1}{2}$ ° at 1833'; 1-3/4° at 1986'; 1-3/4° at 2076'; 1-3/4° at 2200';
2° at 2355'; 1-3/4° at 2527'; 2° at 2677'; 2° at 2835'

3 hrs - trip
18-1/4 hrs - drilling
1/4 hr - rig service
2-1/4 hrs - survey
1/4 hr - wash to bottom

JEROME P. McHUGH
Mother Lode #1
Page 2

6-17-83 3636' - Drilling Wt. 8.8 Vis 38 W.L. 10
4% L.C.M.; 2% 3071', 2° at 3197'; 2¼° at 3347'; 2½° at 3478'

2 hrs - trip
17-1/4 hrs - drilling
1 hr - survey
3 hrs - lost circ. (lost 250 bbls. at 3432')
3/4 hr - wash to bottom

6-18-83 4020' - Drilling Wt. 8.8 Vis 45 W.L. 10.5
5% L.C.M.. 1-3/4° at 3676'; 1-3/4° at 3840'; 1-3/4° at 3942'.

4-1/4 hrs - trip
13 hrs - drilling
1-1/4 hrs - survey
3-1/4 hrs - lost circ.
1-3/4 hrs - washing bridges 2856-3942'
1/2 hr - cut drilling

6-19-83 4547' - Drilling Wt. 9.0 Vis 40 W.L. 10.0
3/4° at 4410'.

23 hrs - drilling
1/2 hr - rig service
1/2 hr - survey

6-20-83 5015' - Drilling Wt. 9.0 Vis 41 W.L. 10.0
3/4° at 4648'.

3-1/2 hrs - trip
19 hrs - drilling
1/4 hr - rig service
1 hr - survey
1/4 hr - wash to bottom

6-21-83 5653' - Drilling Wt. 9.1 Vis 42 W.L. 10 ¼° at 5157'

23 hrs - drilling
1/2 hr - rig service
1/2 hr - survey

6-22-83 6068' - Drilling Wt. 9.0 Vis 42 W.L. 5.5 8% L.C.M.
½° at 5620' (Lost 150 bbls. at 5872')

20-3/4 hrs - drilling
1/2 hr - rig service
1/4 hr - survey
1/2 hr - pull 5 stds
1-1/2 hrs - mix mud
1/4 hr - pump L.C.M.
1/4 hr - trip in hole

6-28-83 7895' - Trip Wt. 9.0 Vis 45 W.L. 10.5 Tr. L.C.M.

23-1/2 hr - drilling
1/4 hr - rig service
1/4 hr - survey

6-23-83 6249' - Drilling Wt. 9.0 Vis 41 W.L. 10 2% LCM
3/4° at 6151'

8-1/2 hrs - trip
11-1/2 hrs - drilling
1/2 hr - survey
1 hr - wash to bottom and fish for cone
2 hrs - W.O. magnet
1/2 hr - repairs

6-24-83 6670' - Drilling Wt. 9.0 Vis 39 W.L. 11 1° at
6619'.

23-1/4 hrs - drilling
1/4 hr - rig service
1/2 hr - survey

6-25-83 6974' - Repairs Wt. 9.1 Vis 44 W.L. 10.5 15% LCM
1° at 6619'

15-1/4 hrs - drilling
1/2 hr - survey
5-1/4 hrs - lost circ. (lost 300 bbl. at 6916' & 200 bbls. at 6974')
3 hrs - repairs

6-26-83 7221' - Drilling Wt. 9.0 Vis 41 W.L. 11.0 2% LCM
1 1/4° at 7129'

1/4 hr - trip
13-3/4 hrs - drilling
1/4 hr - rig service
1/2 hr - survey
8-1/4 hrs - rig repair
3/4 hr - mix mud
1/4 hr - wash to bottom

6-27-83 7525' - drilling Wt. 9.0 Vis 40 W.L. 10.0 4% LCM
3/4° at 7421'

5 hrs - trip
17-1/4 hrs - drilling
1/4 hr - rig service
1/4 hr - survey
3/4 hr - lost circ. (200 bbls. at 7324')
1/2 hr - wash to bottom

6-28-83 7895' - Trip Wt. 9.0 Vis 45 W.L. 10.5 Tr. L.C.M.

23-1/2 hr - drilling
1/4 hr - rig service
1/4 hr - survey

6-29-83 8029' - Drilling Wt. 9.0 Vis 60 W.L. 10.0 $\frac{1}{2}^{\circ}$ at 7895'

10-3/4 hrs - trip
11-1/2 hrs - drilling
1 hr - wash to bottom
3/4 hr - cut drilling line

6-30-83 T.D. 8220' - Logging Wt. 9.1 Vis 63 W.L. 10.5

4 hrs - trip
14 hrs - drilling
1/4 hr - rig service
2 hrs - circ.
3-3/4 hrs - logging

7-1-83 T.D. 8250' - Running 4 $\frac{1}{2}$ " casing. Wt. 9.0 Vis 47 W.L. 10.5
 $1\frac{1}{2}^{\circ}$ at 8250'

3-1/2 hrs - trip
5-1/4 hrs - drilling
8 hrs - logging
1/4 hr - wash to bottom
5-1/4 hrs - lay down drill pipe
1-1/2 hrs - circ.
1/4 hr - rig up casing crew

7-2-83 Ran 208 jts. 4 $\frac{1}{2}$ " O.D., 11.6#, N-80, 8 Rd, LT&C casing. T.E. 8239' set at 8248' RKB.

Cemented 1st stage with 10 bbl. mud flush, 315 sx 50-50 poz + 2% gel + 6 $\frac{1}{2}$ # gilsonite + $\frac{1}{4}$ # flocele/sk (mixed 12.9#/gal. - slurry yield 1.4 cf/sk) followed by 125 sx class "B" neat w/ $\frac{1}{4}$ # flocele/sk (mixed 15.6#/gal. - slurry yield 1.18 cf per sk). Total slurry 589 cf. Reciprocated pipe and had good circulation during cementing operations. Bumped plug with 1400 psi. Held OK. P.O.B. at 12:00 noon, 7-1-83. Opened D.V. tool at 5935' with 800 psi. Circulated with rig pumps for 3 hrs.

Cemented 2nd stage with 10 bbls. mud flush, 200 sx 65-35 poz with 12% gel + 6 $\frac{1}{2}$ # gilsonite + $\frac{1}{4}$ # flocele/sk (mixed 11.7#/gal. - slurry yield 2.34 cf/sk) followed by 315 sx 50-50 poz w/ 2% gel + $\frac{1}{4}$ # flocele per sk (mixed at 13.4#/gal. - slurry yield 1.27 cf/sk). Total slurry 868 ft. Had good circulation while cementing. Bumped plug with 2100 psi. Held OK. P.O.B. at 3:45 p.m. 7-1-83. Opened DV tool at 3524' with 800 psi. Circulated with rig pumps for 1 hour.

7-2-83 Cemented 3rd stage with 10 bbl. mud flush, 480 sx 65-35 poz +
(cont.) 12% gel & 1# flocele/sk (mixed at 11.8#/gal. - slurry yield
2.21 cf/sk) followed by 75 sx 50-50 poz with 2% gel + 1# flocele/sk
(mixed at 13.4#/gal. - slurry yield 1.27 cf/sk). Total slurry
1156 cf. Lost circulation one half way thru displacement.
Bumped plug with 2500 psi. Held OK. P.O.B. at 6:00 p.m.
Nipple down BOP. Set slips. Cut off casing. Rig released at
7:30 p.m. 7-1-83.

DAILY REPORT

7-7-83 Moved in & Rigged up Farmington Well Service unit. Installed BOP.
Picked up 3-7/8" bit+sub and ran in 2-3/8" tubing. Cleaned out
cement and rubber on D.V. tool at 3524'. Bit plugged while
drilling rubber plug. Pulled tubing off bottom and unplugged bit.
Shut down for night.

7-8-83 Finish Drilling D.V. tool. G. I. H. to $\pm$ 5900'. Drilling cement
and D.V. tool @ $\pm$ 5935'. G. I. H. to 8088'. Clean out to $\pm$ 8152'
loggers depth; tubing measurement 8125'. Circulate clean.

7-9-83 Rig up Western Co. Pressure test to 4000 psi; okay. Spot 250 gal.
7 1/2% H.C.L. P. O. H. Rig up Basin Perforators. Ran GR-CCL with
3.771" O.D. Gauge Ring from PBTD 8152' to 7700', 7100 to 6700',
5850-5100'. Perforate Dakota formation with 3-1/8" gun as follows:
7861, 72, 77, 80 1/2, 92, 7905, 14, 37, 60, 66, 72, 74, 76, 80, 82, 84,
90, 8045, 48, 51, 8100, 08, Total 22 holes (0.34"). Break down
formation with 2800 psi. Drop 33 RCN ball sealers. Good ball action.
Ball off with 4000 psi. Ran 4 1/2" junk basket. Recovered 22 balls
(20 hits). Shut down.

7-10-83 Shut down.

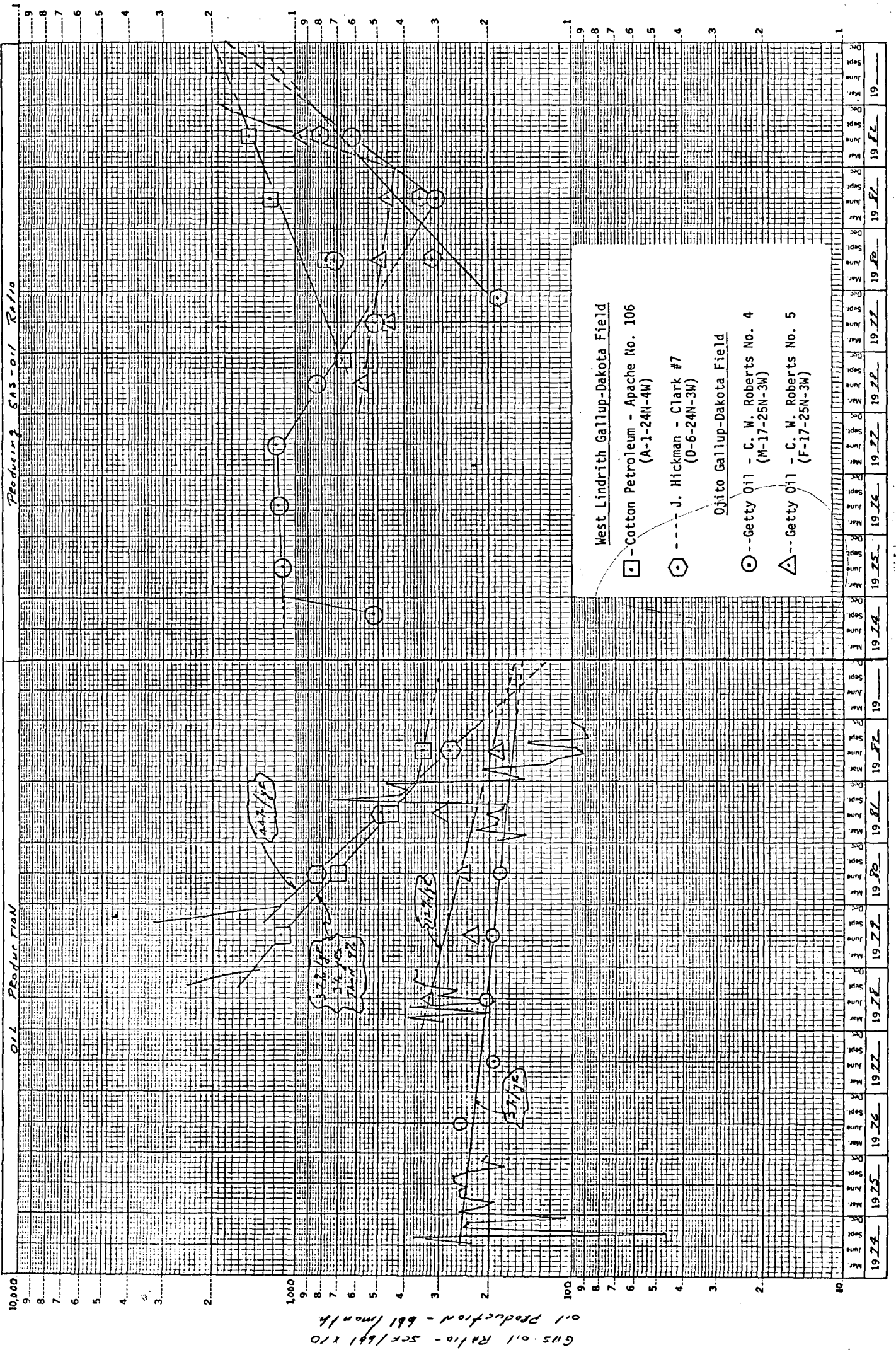
7-11-83 Rig up Western Co. Frac Dakota Perfs as follows:

10,000 gal. Mini-max III - 30 + 2% diesel - pad
15,000 gal. Mini-max III - 30 + 2% diesel + 1# ppg 20/40 sand
8,000 gal. Mini-max III - 30 + 2% diesel + 2# ppg 20/40 sand
8,000 gal. Mini-max III - 30 + 2% diesel + 3# ppg 20/40 sand
5,082 gal. H₂O flush
ISDP - 1600 psi
15 min. - 1300 psi
Maximum treating pressure - 4000 psi
Minimum treating pressure - 3000 psi
Average treating pressure - 3200 psi @ 24 bbl/min.

Totals:
54,000 # 20/40 sand; 41,000 gal. Mini-max III-30;
820 gal. Diesel; 41 Gal. Aquaflo.

- 7-22-83 MI & RU Ponderosa Oilfield Service swabbing unit. Casing pressure 1100 psi. Tubing pressure zero. Made 16 swab runs to tank. Swabbed estimated 75 bbls. frac fluid and 10 bbls. oil. Casing pressure at end of day 1125 psi. Well gassing good last 6 runs. S.D.O.N.
- 1st run
out to
tank*
- 7-23-83 Casing pressure 1225 psi. Tubing pressure 300 psi. Opened well to tank. Did not unload. Made 15 swab runs. Fluid level first run 2400'. Well kicked off at 1:25 p.m. when casing pressure built up to 1275 psi. Flowed 2 hrs. and 35 min. Shut well in at 4:00 p.m. Casing pressure 925 psi. Drained all water from tank. Made 38 bbls. oil and estimated 100 bbls. frac fluid.
- 7-24-83 Shut down - Sunday.
- 7-25-83 Casing pressure 1300 psi. Tubing pressure 500 psi. Well would not unload. Fluid level first run 2800'. Made 15 swab runs. Well kicked off at 1:20 p.m. Flowed 1 hr. and 40 min. Released swabbing unit. Casing at 950 psi when rigging down. Well died after one more hour. Casing pressure 1050 psi. Shut well in and equalized casing and tubing pressures.
- 7-27-83 Rigged up Ponderosa swab unit. SICP = 1150 psi and SITP = 1125 psi. Opened tubing to tank and ran in with swab. Fluid level at 2600'. Made 10 swab runs in 2½ hrs., recovering approximately 1 B0 and 39 BW. Well kicked off and flowed 15 min. at 10% oil and casing pressure at 1175 psi. Made 10 more swab runs in 3 hrs. with fluid level 2200 to 1500 ft. and casing pressure increasing to 1225 psi. Recovered approximately 65 bbl. gas-cut fluid, averaging 10% oil. Well gassing after each swab run. Shut in for night. Total recovery during day = 16 B0 to tank and approx. 175 bbl. water.
- 7-28-83 SITP 180 psi. SICP 1325 psi. Made nine swab runs. Well kicked off flowing gas and oil-cut water (oil cut averaged approx. 10%). Left flowing overnight.
- 7-29-83 Well dead. Tubing pressure = 0, and Casing pressure = 1475 psi. Plan to equalize and try to kick off again Monday. Tank 6'3" Total fluid. (approximately 2' water).
- 7-30 to
8-28-83 Attempting to get well to flow; did not kick off.
- 8-29-83 MI & RU Hinson Service swabbing unit. Casing pressure 1190 psi. Fluid level at 1500' first run. Made 3 swab runs. Well did not kick off, but blows after each run. S.D.O.N.

- 8-30-83 Casing pressure 1220 psi. Tubing pressure TSTM. Fluid level 1650'. Made 11 swab runs, over 99% water after 1st run. Well kicked off and flowed to tank for 1 hr. 15 minutes and died. Made two swab runs. Well flowed 20 minutes, lifting fluid and died. Made 1 swab run. Well flowed 30 minutes. S.D.O.N. Casing pressure 1270 psi. Made total of 12 bbls. oil to tank and estimated 80 bbls. water.
- 8-31-83 Casing pressure 1340 psi. Tubing pressure 50 psi. Blew tubing down. Fluid level first swab run 1500'. Made 8 swab runs. Well kicked off and flowed 45 minutes and died. Made two swab runs and well kicked off. Flowed 30 minutes and died. Made 1 swab run. Well kicked off and flowed 20 minutes and died. Kicked well off with one more swab run. Well died. S.D.O.N. Made estimated 75 bbls. total fluid during day with total of 10 bbls. oil.
- 9-1-83 Rig shut down
- 9-2-83 Casing pressure 1270 psi. Opened well thru prod. unit. Well kicked off and flowed 1½ hrs., making estimated 207 MCFPD and 10 bbls. oil. Well died. Made 5 swab runs. Swabbed 8 bbls. oil and estimated 25 bbls. water. Well kicked off. Released swabbing unit and moved to E.T. #1.
- 9-3-83 Well dead. Had made 37 bbls. oil in undetermined time. Total oil in tank 195 bbls.
- 9-19-83 SITP = 30 psi and SICP = 1280 psi. Tubing bled to zero in one minute. Shut in.



WELL DATA

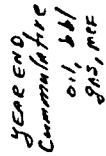
Comminglel Gallup-Dakota Wells
General Area of Jerome P. McHugh's Wells in
Townships 24 and 25 North, Range 2 West
Rio Arriba County, New Mexico

Operator	Well Name	Location U-S-T-R	Oil Production				Gas Production			Estimated Ultimate Recovery-Bbl	
			Initial Potential BOPD-GOR	Actual Init.Prod. BOPD-GOR	Production Factor Actual/IP	Initial Decline %/Yr-Yrs	Stabilized Decline % / Yr	Gas Prod. Factor Actual/IP	Incline Rate %/Yr		
west Lindrith Gallup-Dakota Field											
Cotton Petroleum	- Apache No. 106	A-1-24N-4W	97 - 1526	53 - 6400	55%	37 - 3½	9	4.19	25	41,254	76,800
J. Hickman	- Clark No. 7	O-6-24N-3W	150 - 2666	43 - 1800	29%	44 - --	-	0.68	57	30,597	51,600*
Mobil Oil	- W.D. Hughes No.5	M-8-24N-3W	28 - 179	9 - 1670	32%	29 - --	-	9.33	19	3,896	12,200*
Mobil Oil	- Jillson No. 4	E-8-24N-3W	35 - 857	18 - 840	51%	21 - --	-	0.98	39	7,822	38,500*
Ojito Gallup-Dakota Field											
Getty Oil	- C.W. Roberts No. 4	M-17-25N-3W	9 - 12,220	8 - 11,000	-	5 - --	5	0.90	5	21,031	48,000
Getty Oil	- C.W. Roberts No. 5	F-17-25N-3W	NR - 4,850	12 - 5,800	-	12 - --	12	1.20	-	14,894	28,000
6 Well Average											
			64 - 3,716	24 - 4,585	42%	33 - --	9	1.23	29		42,500

* Estimated assuming maintaining initial decline rate for a total of 3½ years from the date of first production and then stabilizing at an annual decline rate of 9%

47 6840
GAS PRODUCTION - 100 MCF/MONTH
011 PRODUCTION - 661 /MONTH

K-E 20 YEARS BY MONTHS X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.



7100 15210 AS of 8-1-83

1130	12,200	"	"
12108	148,907	"	"

1120 12,260
12108 148.907

1150
13108

RESERVES AND ALLOCATION FACTORS FOR
 COMMINGLED GALLUP-DAKOTA WELLS
 Townships 24 and 25 North, Range 2 West
 Rio Arriba County, New Mexico

Application for Downhole Commingling
 Jerome P. McHugh
 Mother Lode #1 Well
 T-24-N, R-2-W, NMPM
 Sec. 3: Unit Letter H
 1730' FNL & 860' FEL
 Rio Arriba Co., New Mexico
 Case No. 7966 , Exhibit No. A7

	Janet No. 1 <u>R-7258</u>	Janet No. 2 <u>R-7312</u>	E. T. No. 1 <u>Proposed</u>	Mother Lode No. 1 <u>Proposed</u>	Wright Way No. 1 <u>Proposed</u>
<u>OIL</u> (Reserves in bbl.)					
Gallup	39,200 (63%)	35,600 (75%)	40,600 (84%)	43,900 (79%)	28,000 (67%)
Dakota	<u>22,600</u> (37%)	<u>12,000</u> (25%)	<u>7,800</u> (16%)	<u>11,900</u> (21%)	<u>14,100</u> (33%)
TOTAL	61,800	47,600	48,400	55,800	42,100
<u>GAS</u> (Reserves in MMCF)					
Gallup	372.4 (82%)	363.1 (90%)	414.1 (94%)	447.8 (91%)	285.6 (85%)
Dakota	<u>79.1</u> (18%)	<u>42.0</u> (10%)	<u>27.3</u> (6%)	<u>41.7</u> (9%)	<u>49.4</u> (15%)
TOTAL	451.5	405.1	441.4	489.5	335.0
Indicated Initial Potential Commingled Stream	116 BOPD	86 BOPD	86 BOPD	78 BOPD	78 BOPD
Predicted Initial Production	49 BOPD	36 BOPD	36 BOPD	33 BOPD	33 BOPD