Application for Downhole Commingling
Jerome P. McHugh - Native Son #2 Well
T-25-N, R-2-W, NMPM
Sec. 27: Unit N, 1020' FSL & 1670' FWL
Rio Arriba County, New Mexico
Case No. 8041, Exhibit No. 6

Table No. 3
Jerome P. McHugh
Native Son No. 2

Estimate of Ultimate Recovery

A. Commingled well stream - projected performance:

1. Reference Figure No. 5 and No. 6.

2. Anticipated sustained production performance - 1st month's average
    = 42% of IP and declining at 40% per year then stabilize at 9%.

3. IP Summary

	BOPD	MCFD	BWPD	GOR
Mancos	233	440	34	1,882
Dakota	58	223	34	3,824
Total	291	663	68	2,278

4. 42% of IP = 291 BOPD x .42 = 122 BOPD
    = 3,700 BO/Month.

5. Economic Limit - operating expense approx. $1,350/month.
    At end of life GOR will be approx. 10,000;
    therefore, approx. revenue per bbl. oil approx.
    (1 BO x 29.60) + (10 MCF x 2.82 x 1.20)
    = $63.44 with gas sales.
    Opex = 1,350 / 63.44 x .85 x .92 x 30.4 = 0.9 BOPD

Ultimate recovery: (3,700 - 620) x 23.5 + (620 - 30) 127.2
                    = 72,380 + 75,020
                    = 147,400 BO

B. Split of production between zones:

1. Volumetric calculations do not give realistic results in the Mancos
    interval, however, are believed to be fairly accurate in the Dakota.

2. Mancos recovery will be greatly influenced by natural fracturing
    and the natural fractures may, to a lesser degree influence production
    in the Dakota.

3. Volumetric recovery factors:

	Mancos	Dakota
Mid-perf Datum	7,144'	7,932'
BHP at Datum,[a] psig	1,690	2,674
BH temperature at Datum - °F	166	179
Estimated Solution GOR - SCF/B	500	1,000
Estimated oil FVF - RB/STB	1.33	1.52
Oil Recovery Factor[b] - % OIP		
Primary Pay	?	5%
Secondary Pay	?	0.5%

Notes: a - Mancos BHP determined to be 1,663 psig at 7,200'
            from build up in Gavilan #1. Dakota BHP was
            measured to be approximately 2,600 psi at 7,900'
            on a 132 hr build up in the Gavilan #1.

        b - estimated for Solution gas drive.

Dakota Rsrv: [7,758 x 320A x 4' x .0825 x (1 - .40) / 1.52] .05 +
              [7,758 x 320A x 11 x .061 x (1 - .40) / 1.52] .005
              = 16,170 + 3,290
              = 19,460 STB ⟶ 19,500 STB

Table No. 3 (Continued)

Native Son No. 2

Gas Rsrv: An overall average GOR of 3500 SCF/STB is estimated
           based upon testing of the Dakota in the Gavilan area.
           Therefore, ultimate gas recoveries = 19,500 x 3.5
                                               = 68.2 MMCF

Mancos Rsrv: Ultimate recovery - Dakota volumetric Rsrv
           : 147,400 - 19,500
           = 127,900 STB

Gas Rsrv: An overall average GOR of 10,200 SCF/STB is estimated
           based upon performance of wells in Gavilan area and
           in Lindrith Gallup (gas) Field.
           Therefore, ultimate gas recoveries = 127,900 STB x 10,200
                                               = 1,304.6 MMSCF

RESERVE SUMMARY:

	Mancos	Dakota	Total
Oil	127,900 (87%)	19,500 (13%)	147,400
Gas	1,304.6 (95%)	68.2 (5%)	1,372.8

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Table No. 2
Open Hole Log Evaluation
Jerome P. McHugh - Native Son #2

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DAKOTA

Perforations	Pay ft.	$\emptyset$ %	S_w %	Primary-Secondary	Remarks
7886-88	2	5	?	S	
7919	1	11	"	S	
7930	2	6	"	S	
7938	1	6	"	S	
7955	1	8	"	S	
7963-69	4	5	"	S	
"	2	7½	$\leq$ 48%	P	gas effect on FDC/CNL
7975-77	2	9	$\leq$ 51%	P	

Total	15	$\bar{\emptyset}$ = 6.7%		4 ft. primary w/ $\bar{\emptyset}$ = 8.25%	
				11 ft. secondary w/ $\bar{\emptyset}$ = 6.10%	

MANCOS

Perforations	Pay ft.	$\bar{\emptyset}$ %	Primary Secondary	Remarks
6802	1	16	S	Shaley
6816	1	13	S	
6836	2	13	S	
6844	1	12	S	
6849	1	15	S	
6853	1	14	S	
6869-75	5	?	P	Lost 400 bbl. mud - fractured.
6881	2	?	P	
6898-6904	5	?	P	
6913	2	11	P	
6927-31	2	?	S	
6939-41	2	?	S	
6953	2	21	S	Shaley
6965	1	?	S	
6977	2	11	P)	
6983-91	2	15	P)	Lost 1350 bbl. mud - fractured -
"	2	14	P)	GR indicates to be shaley.
7023	2	10	P	
7029-39	1	17	S	Shaley
"	1	16	S	"
"	1	17	S	"
"	1	15	S	"
7049	1	15	S	"
7053	1	15	S	"
7061	1	15	S	"
7066	2	27?	S	Dolomite? by Log x-plot.
7070	1	15	S	Shaley
7073	1	15	S	"
7080	1	14	S	Dolomite by Log x-plot.
7087	1	9	S	
7326	1	17	P	Lost 1000 bbl. mud - fractured.
7394	1	14	S	
7436	2	?	P	Lost some mud - volume not reported.
7466	2	8?	S	Shaley
7475	1	12?	S	"
7478	1	5?	S	"
7485	1	3?	S	"

Total	58	$\bar{\emptyset}$ = 14%. (Actually only 39' included in average as 19' had questionable $\emptyset$ due to hole rugosity.)	

25 ft. primary w/ $\bar{\emptyset}$ = 12.6% (14 ft. w/ questionable $\emptyset$)
33 ft. secondary w/ $\bar{\emptyset}$ = 15.1%

Table No. 2 (Continued)

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NOTES:

1. The distinction between primary and secondary pay was based upon
   several factors: sample description, drilling breaks, SP development,
   sample shows, and shale content based upon the GR curve.

   Primary pay is expected to contribute significantly to productivity.

   Secondary pay is not expected to significantly contribute to
   production, but exhibits sufficient potential to perforate.

2. In both Mancos and Dakota intervals, there are no sands thick enough
   to accurately measure R_t (thin bed effect). This is complicated
   by a fairly high shale content in most intervals. An average S_w of
   40% is believed to be typical to both zones in other fields and
   where S_w calculations could be approximated, values of 40% were
   indicated.