

BLACKWOOD & NICHOLS CO.  
A LIMITED PARTNERSHIP  
P.O. BOX 1237  
DURANGO, COLORADO 81302-1237  
(303) 247-0728

April 5, 1991

RECEIVED  
APR 05 1991  
OIL CON. DIV.  
DIST. 3

Mr. Frank Chavez  
Oil Conservation Division  
1000 Rio Brazos Drive  
Aztec, New Mexico 87410

Re: Pump Mesa SWD #1 Surface Pressure Variance

Dear Frank:

I have compiled the results of the Pump Mesa SWD #1 Step Rate Test, Temperature and Tracer survey for your review. Blackwood & Nichols believes the new data supports the proposed request for an increase in our surface injection pressure.

Current Needs

The Pump Mesa gathering system consists of sixteen (16) Fruitland coal wells. Six (6) of the coal wells are shut-in and ten (10) are curtailed by 40% due to the 1620 psig surface injection limit.

The week ending 3-31-91, Pump Mesa Gathering System produced a daily average of 8931 mcf/d gas and 3380 BWPD. Daily injection pressures at the disposal well averaged 1503 psig.

Our estimated average daily production could reach 16,000 BWPD if wells were allowed to produce at pipeline pressures. An increase to 2250 psig surface pressure may not meet total field demands but it will help dispose of water resulting from initial flush production.

The Step Rate Test indicated no parting occurs between the Morrison and Entrada formations when flowing bottom hole pressures @ 8985' remain below 5487 psig.

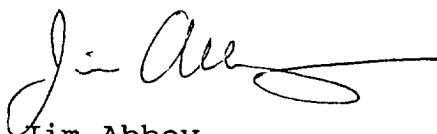
Mr. Frank Chavez  
April 5, 1991  
Page two

Temperature and Tracer logs support water containment between top and bottom zones. Also the Frac Height and Radio Active Tracer logs are consistent in predicting fluid migration and fracture growth.

Based on the above information, Blackwood & Nichols finds no evidence or reason to believe increased injection pressures will result in fluid contamination outside the Morrison-Entrada interval.

Thank you for the time to review our proposal. Please advise if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jim Abbey", with a long horizontal flourish extending to the right.

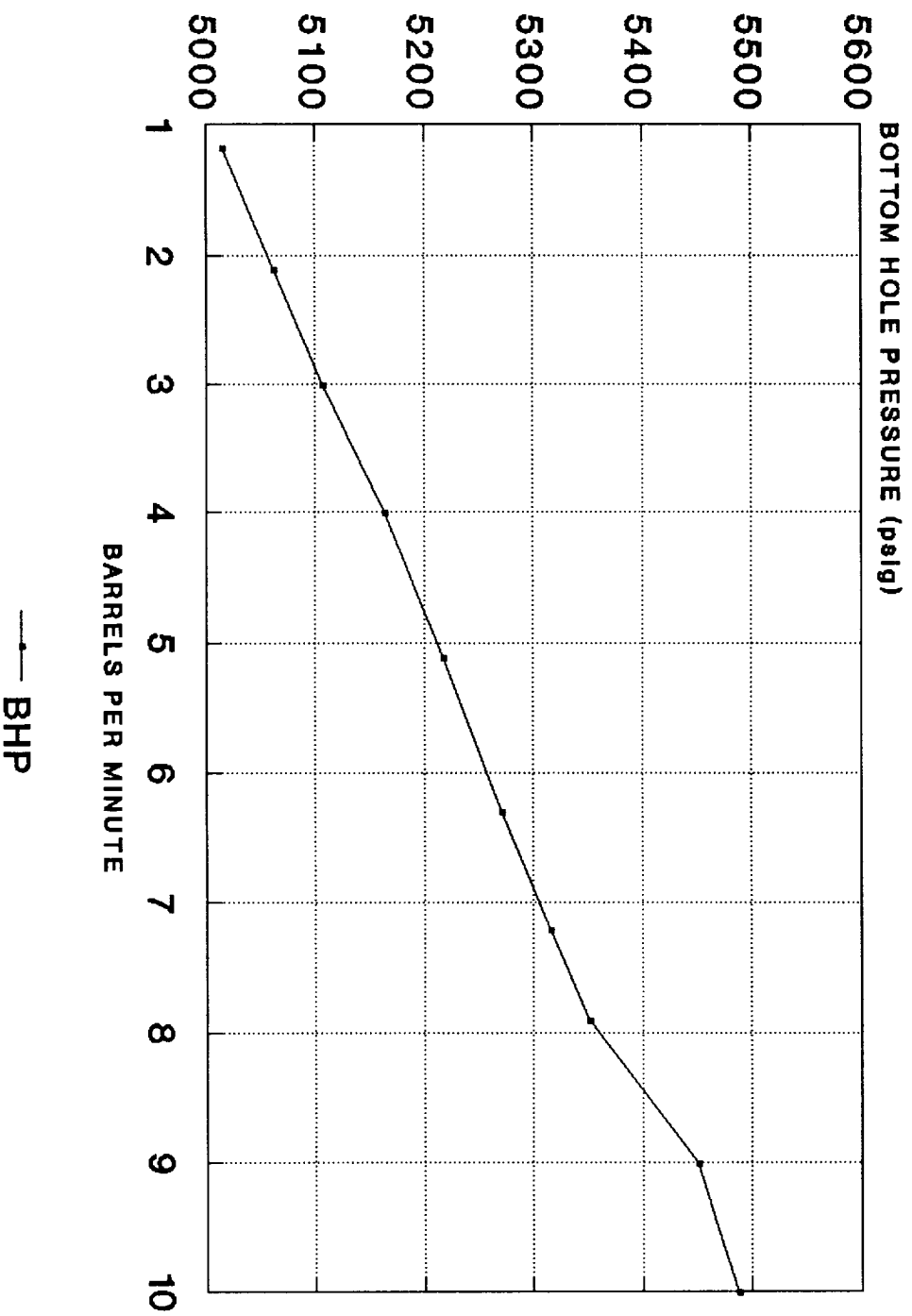
Jim Abbey  
Operations Engineer  
BLACKWOOD & NICHOLS CO., LTD

JKA/avd

cc: Mack Duckworth  
Mark Manson

# PUMP MESA SWD 1 STEP RATE TEST

BLACKWOOD & NICHOLS



4-2-91  
Depth of recorder - 8985'

Blackwood & Nichols Co. Ltd.

Date: 4-2-91

Pump Mesa SWD #1

Step rate test.

Morrison, Bluff, Entrada

Top perforation at 8152', bottom at 8970'.

Bottom hole recorder depth: 8985'

STAGE	TIME	RATE bpm	SURFACE psig	BHP psig	FRICTION psig	HP psig
1	12:46:42	1.17	1117	5015	-8	3890
2	13:01:24	2.10	1200	5062	28	3890
3	13:16:24	3.00	1317	5107	100	3890
4	13:31:24	4.00	1450	5164	176	3890
5	13:46:06	5.10	1660	5217	333	3890
6	14:01:06	6.30	1860	5271	479	3890
7	14:16:24	7.20	2050	5315	625	3890
8	14:31:06	7.90	2240	5351	779	3890
9	15:05:54	9.00	2549	5450	989	3890
10	15:19:24	10.00	2824	5487	1227	3890

