MERRION
OIL & GAS

Certified Mail 7006 0100 0007 2050 4712

January 10, 2006

Will Jones
NMOCD
1220 S. St. Francis St.
Santa Fe, NM 87505

SUBJECT: PRETTY LADY 30-11-34 NO. 1 STEP RATE TEST

30-045-30922

Dear Mr. Jones:

Merrion Oil & Gas is submitting the attached step rate test data for your consideration in assigning a maximum surface pressure limit for the subject SWD well.

If you have questions about this project, please call me at 505.324.5326 or email me at cdinning@merrion.bz.

Sincerely,

Connie S. Dinning
Production Engineer

Enclosures

csd

Cc: NMOCD Aztec Office, Well File

Merrion Oil & Gas
Pretty Lady No. 1, Section 34, T30N, R11W
San Juan County, New Mexico
Step Rate Test Results
December 28, 2006

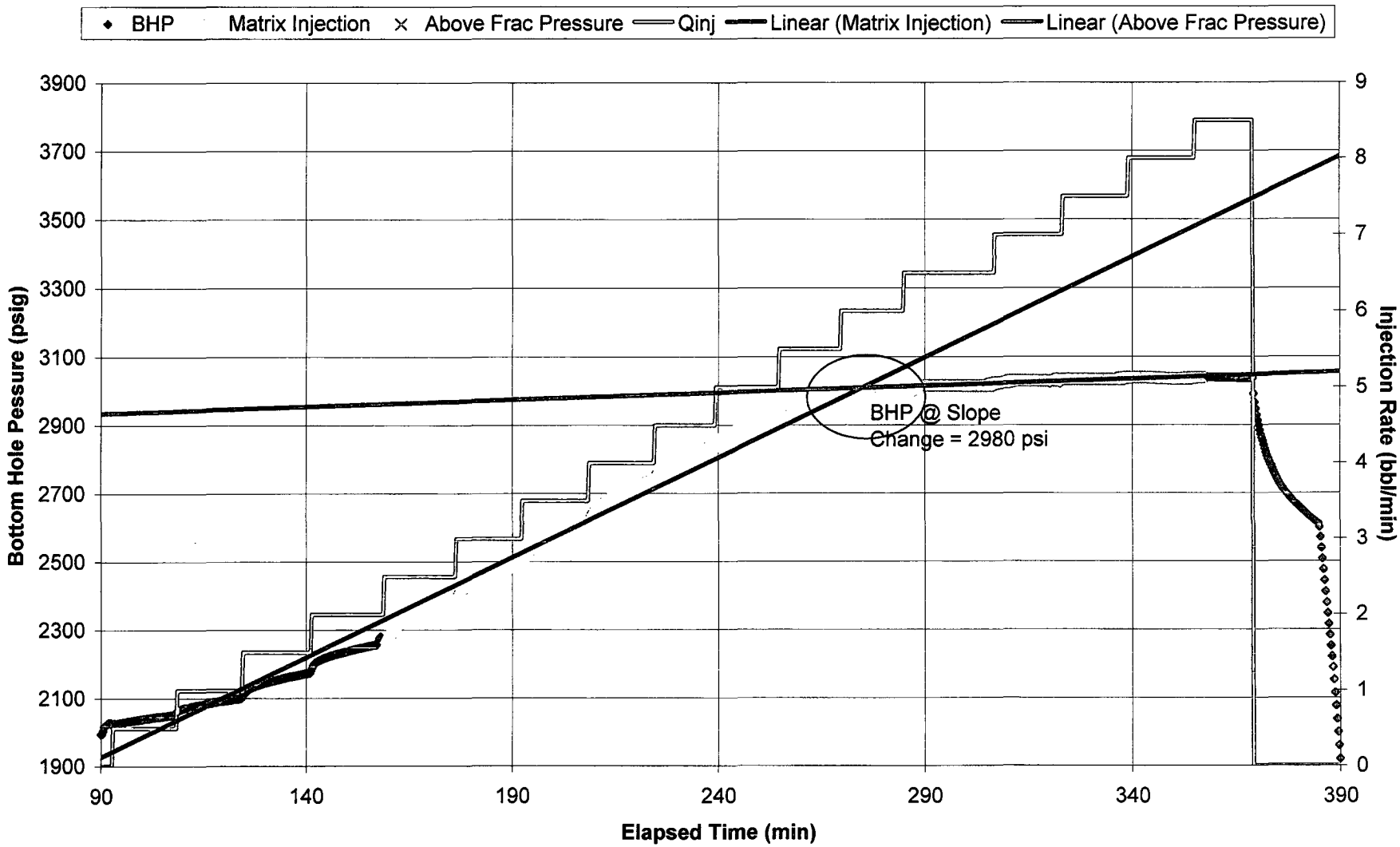
Based on the results of the step rate test for the Pretty Lady No. 1 conducted December 28, 2006, Merrion Oil & Gas requests the maximum allowable injection pressure be set at 1400 psi.

The information below is provided in support of this request:

1. **Test Procedure** - The test was completed as planned. The downhole and surface time recorders were not synchronized, however, they correspond well and can be tied together with pump rate data.
2. **Frac Gradient (FG)** – The FG calculated from the step rate test data was 0.79. This FG is in the same ballpark as the two other Mesaverde injection wells in the area, the McGrath No. 4, section 34, T30N, R12W and the Disposal No. 1, section 3, T29N, R11W. The McGrath No. 4 has a maximum surface pressure limit of 2370 psig and a calculated FG of 0.74. The Disposal No. 1 has a maximum surface pressure limit of 1600 psig and a calculated FG of 0.92 (based on NMOCD records from 1988).
3. **Bottom Hole Pressure** - The actual bottom hole pressure data (Table 1) will be emailed in an Excel file, the curve provided by Tefteller (Chart 1) is attached. The inflection point where the slope changes from matrix injection to injection at fracture pressure is circled. The bottom hole pressure at that point is about 2980 psi.
4. **Surface Pressure** – The actual surface pressure data (Table 2) will be emailed in an Excel file, the curve provided by Key Energy (Chart 2) is attached. Slope change as described in the bottom hole pressure data occurs in the surface data at 1400 psi.
5. **Surface vs. Bottom Hole Pressure** – The top Mesaverde perf is at 3,762' resulting in a hydrostatic pressure of 1629 psi. Subtracting the hydrostatic from the bottom hole pressure results in a calculated surface pressure of 1351 psi. There is little friction pressure loss in the 5 ½" 15.5# tubing, but at 6 BPM, the friction is calculated at 7 psi/1000ft, which results in a friction loss of 26 psi, or a calculated surface pressure of 1377 psi. This number agrees closely with the actual measured surface pressure of 1400 psi.
6. **Rate vs. Surface Pressure** – Surface pressure vs. rate is plotted on the attached Chart 3. The inflection point on this plot occurs at 1400 psi at a rate of 5.5 BPM.

Chart 1

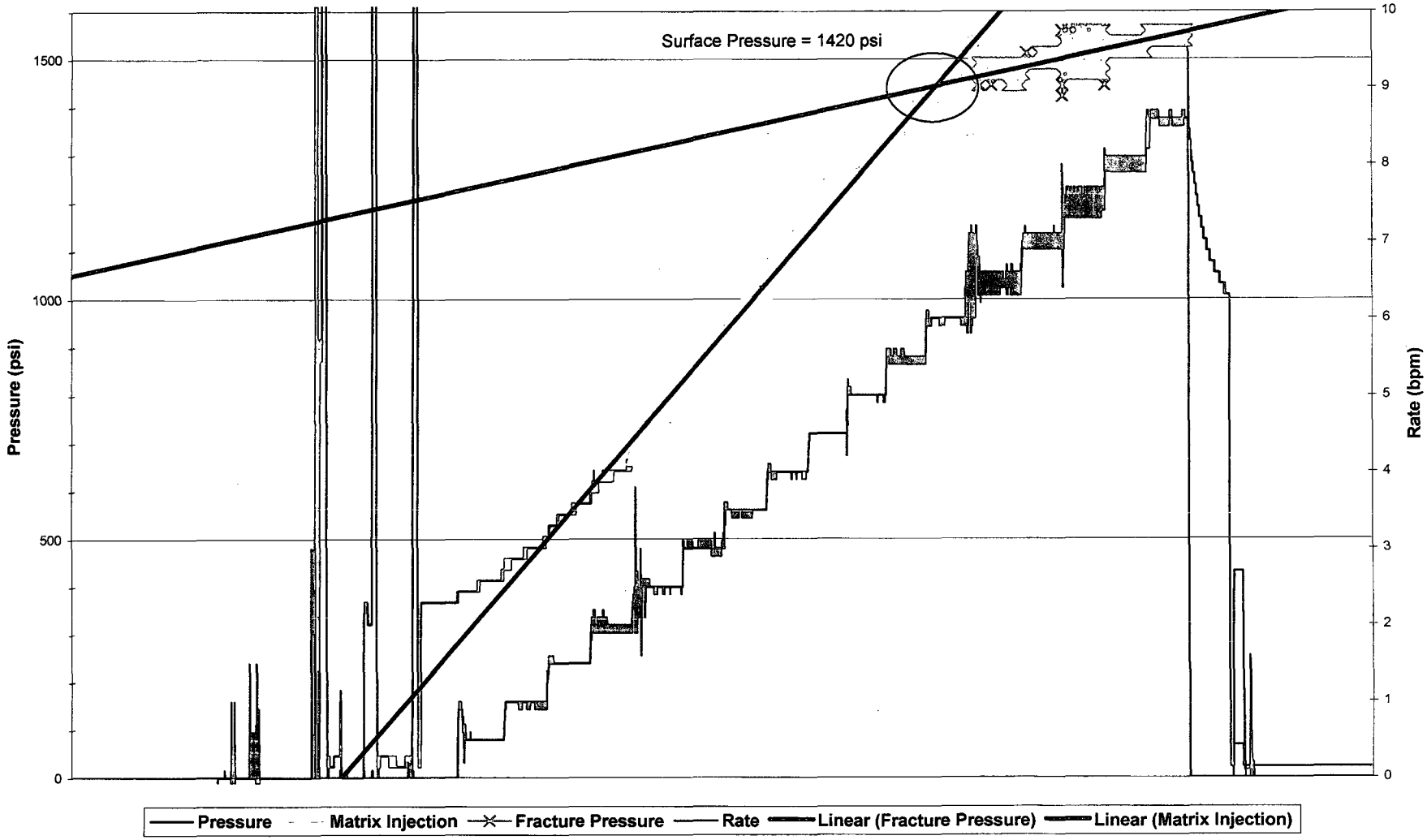
Pretty Lady 30-11-34 #1
Step Rate Test



Key Pressure Pumping Services

Merrion Oil & Gas
Pretty Lady 30-11-34
Step Rate Test
Dec. 28, 2006

Chart 2



Rate vs. Surface Pressure

Chart 3