

# El Paso Natural Gas Company /

El Paso, Texas

July 2, 1957

DIRECT REPLY TO:  
P. O. BOX 997  
FARMINGTON, NEW MEXICO

Mr. A. L. Porter  
Secretary and Director  
Oil Conservation Commission  
Box 871  
Santa Fe, New Mexico



Dear Sir:

This is a request for administrative approval for a well dually completed in the Blanco Mesa Verde Pool and the Aztec Pictured Cliffs Extension Pool. The El Paso Natural Gas Company Calloway Pool Unit No. 2 (FM) is located 1840 feet from the North line and 800 feet from the East line of Section 34, Township 31 North, Range 11 West, N.M.P.M., San Juan County, New Mexico.

This well has been completed in the Point Lookout section of the Mesa Verde formation and the Pictured Cliffs formation. Completion has been accomplished in the following manner:

1. 10-3/4" surface casing set at 171' with 150 sacks of cement circulated to the surface.
2. 7" intermediate casing set at 4385' and cemented with a two stage cementing procedure, 150 sacks at the base of the casing and 150 sacks across the Pictured Cliffs formation.
3. 5-1/2" liner set from 4320' to 4702' with 100 sacks of cement.
4. The casing and liner were tested for leaks before perforating.
5. The Point Lookout section was perforated in five intervals and water-sand fractured.
6. The Pictured Cliffs section was perforated in two intervals and water-sand fractured.
7. All perforations were cleaned after treatment and completion was accomplished by setting a Baker Model EGJ production packer on 2" EUE tubing at 4401' with the tubing perforations set opposite the Point Lookout perforations. 1-1/4" EUE tubing was run, with the tubing perforations set opposite the Pictured Cliffs perforations, as a siphon string. The Point Lookout gas will be produced through the 2" tubing and the Pictured Cliffs gas through the casing.

C O P Y

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

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[illegible]

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group and the experimental group. The control group was divided into two subgroups: the control group and the control group. The experimental group was divided into two subgroups: the experimental group and the experimental group.

8. A Garrett sidedoor flow nipple was installed in the 2" tubing string just below the Pictured Cliffs perforations. This flow nipple will enable bottom hole pressure tests to be taken if it is required at a future date.
9. Initial potential tests have been run and commercial production has been found in both zones. A packer leakage test has been run and witnessed by the Artec office of the Oil Conservation Commission. This test shows no communication in the well bore between the two producing formations.

Administrative approval is requested for this dual completion to allow production from both known producing formations eliminating the high initial cost of drilling two separate wells.

Since the only offset operator to this dual completion also has acreage involved in communitization agreement with the acreage dedicated to the drilling unit of this well, they have not been specifically notified. Enclosed are the following:

- (a) Two copies of the schematic diagram of the mechanical installations.
- (b) Two copies of the plats showing the location of this well and the offset operators.
- (c) Two copies of the affidavit from the packer setting company stating that the packer used was set at the depth shown.
- (d) Two copies of the packer leakage test as observed by a member of the Oil Conservation Commission.
- (e) Two copies of the initial potential tests showing commercial production from the two formations.

It is intended to dedicate the NE 1/4 of Section 34, Township 31 North, Range 11 West to the Pictured Cliffs formation, and the E/2 of Section 34, Township 31 North, Range 11 West to the Mesa Verde formation.

Any further information required will be furnished upon your request. Thank you for your consideration of this matter.

Yours truly,

ORIGINAL SIGNED E. J. COEL  
E. J. Coel  
Senior Petroleum Engineer

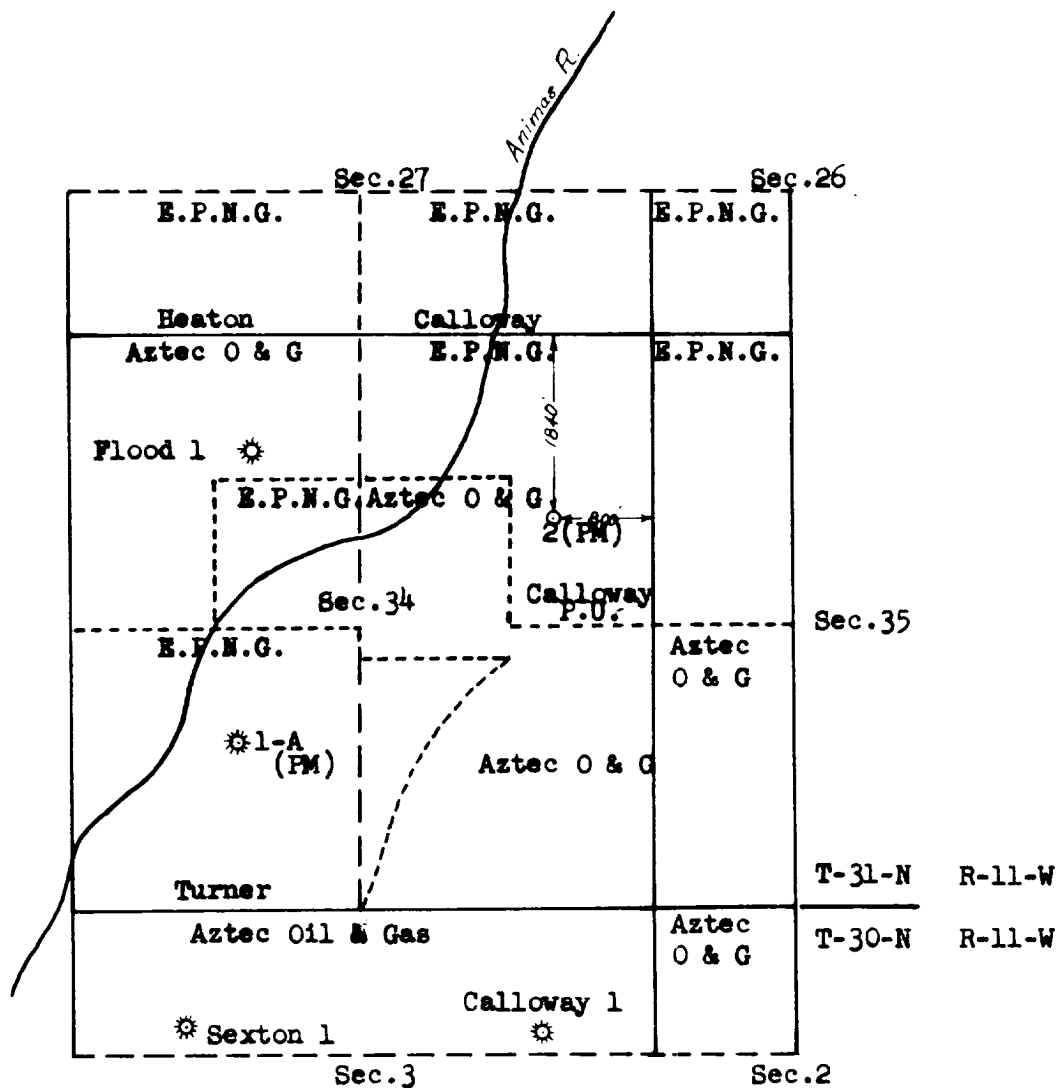
EJC/gks

Encl.

cc: Emery Arnold ✓  
R. L. Hamblin  
Phil McGrath

100-443689-100

PLAT SHOWING LOCATION OF DUALY COMPLETED  
EL PASO NATURAL GAS CALLOWAY POOL UNIT NO. 2 (FM)  
AND OFFSET ACREAGE



EL PASO NATURAL GAS COMPANY  
EL PASO, TEXAS

SCALE

DATE

No.

DRAWN BY

CHECKED BY

EL PASO NATURAL GAS COMPANY  
GAS WELL TESTTo: **Mr. E. E. Alsop**Date: **June 4, 1957**

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETIONSubject: **TEST DATA ON EL PASO NATURAL GAS COMPANY WELL CALLOWAY POOL UNIT #2, SAN JUAN COUNTY, NEW MEXICO**Tested By: **S. V. Roberts** WITNESSED BY: **E. C. Arnold ( New Mexico Oil Conversation Commission)**Location ..... Sec. **34** T. **31N** R. **11W** , **1840N, 800E**Shut-In Pressure ..... **PC** SIPC **722** psig ; (Shut-in **30** days)  
SIPT **949** psig0.750" Choke Volume ..... **4281** MCF/D @ 14.7 ps a and 60° F. for 0.6 gravity gas. Flow through **tubing** for 3 hours.Calculated 3 Hour Absolute Open Flow ..... **7,109** MCF/DWorking Pressure On ..... **Calculated** = **662** PsigProducing Formation ..... **MV**Stimulation Method ..... **Sand-Water Frac**Total Depth ..... **4707 c/o 4620**Field ..... **Blanco**H2S ..... **Sweet** to lead acetate.**Ending Pictured Cliffs SIPC 728 PSIG**

cc: D. H. Tucker

~~XXXXXXXX~~ **H. H. Lines**

W. T. Hollis

~~XXXXXXXX~~ **Dean Rittmann**

W. M. Rodgers

~~XXXXXXXX~~ **Bill Parrish**

Drilling Department

B. D. Adams

Roland Hamblin

Jack Purvis

W. V. Holik

C. C. Kennedy

E. J. Coel, Jr. **(6)**

A. J. Dudenhoeffer

File

*Lewis D. Galloway*  
**L. D. Galloway**

EL PASO NATURAL GAS COMPANY  
GAS WELL TEST

To: Mr. E. E. Alsup

Date: May 17, 1957

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: TEST DATA ON EPNG WELL, CALLOWAY POOL UNIT #2, SAN JUAN COUNTY, NEW MEXICO

Tested By: K. C. McBride

Location ..... Sec. 34 T. 31 R. 11 1840 N, 800 E.

|                        |    |          |                          |
|------------------------|----|----------|--------------------------|
|                        | PC | SIPT 711 |                          |
| Shut-In Pressure ..... | PC | SIPC 711 | psig ; (Shut-in 12 days) |
|                        | MV | SIPT 898 | psig                     |

0.750" Choke Volume ..... 1501 MCF/D @ 14.7 psia and 60° F. for 0.6 gravity gas. Flow through Casing for 3 hours.

Calculated 3 Hour Absolute Open Flow ..... 1545 MCF/D

Working Pressure On Tubing ..... = 120 Psig

Producing Formation ..... Pictured Cliffs

Stimulation Method ..... Sand Water Frac

Total Depth ..... 4707 c/o 4620 Packer @ 4401

Field ..... Undesignated

H<sub>2</sub>S ..... Sweet to lead acetate.

SIPT (MV) 898 psig Enging SIPT (MV) 900 psig

cc: D. H. Tucker

~~XXXXXXXX~~ H. H. Lines

W. T. Hollis

~~XXXXXXXX~~ Dean Rittmann

W. M. Rodgers

~~XXXXXXXX~~ Bill Parrish

Drilling Department

B. D. Adams

Roland Hamblin

Jack Purvis

~~XXXXXXXX~~

C. C. Kennedy

E. J. Coel, Jr. (6)

A. J. Dudenhoefter

File

*Lewis D. Galloway*  
L. D. Galloway

EL PASO NATURAL GAS COMPANY

P. O. Box 997  
Farmington, N.M.

June 5, 1957

Mr. E. C. Arnold  
Oil Conservation Commission  
120 East Chaco  
Aztec, New Mexico

Re: Packer Leakage Test on the El Paso Natural  
Gas Company Well, Calloway Pool Unit No. 2,  
NE 34-31-11, San Juan County, New Mexico.

Dear Mr. Arnold:

This well was dually completed in the Pictured Cliffs and Mesa Verde formations. Production packer was set at 4401 feet. The Pictured Cliff zone was tested May 17, 1957 with the following results:

Pictured Cliff SIPC - 711 psig  
Pictured Cliff SIPT - 711 psig; shut-in 12 days.  
Mesa Verde SIPT - 898 psig

The casing was opened at 10:40 A.M. May 17, 1957 after being shut-in 12 days and flowed three hours through a 3/4" choke.

| <u>Time</u> | <u>Casing Choke<br/>Pressure Psig</u> | <u>Temp. °F</u> | <u>Tubing Pressure<br/>Psig</u> |
|-------------|---------------------------------------|-----------------|---------------------------------|
| 10:40       | Opened casing                         |                 | 898                             |
| 10:55       | 206                                   |                 | 897                             |
| 11:10       | 154                                   |                 | 898                             |
| 11:25       | 141                                   |                 | 898                             |
| 11:40       | 135                                   |                 | 898                             |
| 1:40        | 115                                   | 66              | 900                             |

The calculated choke volume was 1501 MCF/Day. After the well was shut-in 30 days, the Mesa Verde zone was tested with the following results:

Pictured Cliff SIPC - 722 psig  
Mesa Verde SIPT - 949 psig; shut-in 30 days.

The tubing was opened at 11:20 A.M. through a 3/4" positive choke and flowed for three hours.




| <u>Time</u> | <u>Tubing Choke<br/>Pressure Psig</u> | <u>Temp. °F</u> | <u>Casing Pressure<br/>Psig</u> |
|-------------|---------------------------------------|-----------------|---------------------------------|
| 11:35       | 413                                   |                 | 724                             |
| 11:50       | 393                                   |                 | 727                             |
| 12:05       | 377                                   |                 | 727                             |
| 12:20       | 381                                   |                 | 727                             |
| 12:50       | 370                                   |                 | 727                             |
| 1:20        | 362                                   |                 | 727                             |
| 1:50        | 356                                   |                 | 729                             |
| 2:20        | 349                                   | 77              | 728                             |

The calculated choke volume was 4281 MCF/D. The results of the tests obtained indicate that there is no packer leakage.

The test on the Mesa Verde side was witnessed by Mr. E. C. Arnold, New Mexico Oil Conservation Commission.

Very truly yours,

  
\_\_\_\_\_  
S. V. Roberts  
Gas Engineer

SVR/jla

cc: W. T. Hollis  
W. M. Rodgers  
E. J. Coel, Jr. (6)  
File

# DUAL COMPLETION

## EL PASO NATURAL GAS COMPANY OPEN FLOW TEST DATA

DATE June 4, 1957

|  |                             |                                       |                                 |
|--|-----------------------------|---------------------------------------|---------------------------------|
| Operator<br><b>EL PASO NATURAL GAS COMPANY</b> |                             | Lease<br><b>CALLOWAY POOL UNIT #2</b> |                                 |
| Location<br><b>1840 N, 800 E; NE 34-31-11</b>  |                             | County<br><b>SAN JUAN</b>             | State<br><b>NEW MEXICO</b>      |
| Formation<br><b>MESAVERDE</b>                  |                             | Pool<br><b>BLANCO</b>                 |                                 |
| Casing: Diameter<br><b>7"</b>                  | Set At: Feet<br><b>4375</b> | Tubing: Diameter<br><b>2"</b>         | Set At: Feet<br><b>4557</b>     |
| Pay Zone: From<br><b>4485</b>                  | To<br><b>4590</b>           | Total Depth<br><b>4707 c/o 460</b>    |                                 |
| Stimulation Method<br><b>Sand-Water Frac.</b>  |                             | Flow Through Casing                   | Flow Through Tubing<br><b>X</b> |

|   |                           |  |   |                           |  |
|---|---------------------------|--|---|---------------------------|--|
| Choke Size, Inches<br><b>0.750</b>                |                           | Choke Constant: C<br><b>12.365</b>           |   | 5 1/2" Liner 4320 - 4702  |  |
| Shut-In Pressure, Casing, PSIG<br><b>722 (PC)</b> | - 12 = PSIA<br><b>734</b> | Days Shut-In<br><b>30</b>                    | Shut-In Pressure, Tubing, PSIG<br><b>949 (MV)</b> | - 12 = PSIA<br><b>961</b> |  |
| Flowing Pressure: P, PSIG<br><b>349</b>           | - 12 = PSIA<br><b>361</b> | Working Pressure: Pw, PSIG<br><b>(Calc.)</b> | - 12 = PSIA<br><b>(Calc.) 674</b>                 |                           |  |
| Temperature: T, F<br><b>77</b>                    | F<br><b>.75</b>           | Fpv: From Tables<br><b>1.034</b>             | Gravity<br><b>.678</b>                            |                           |  |

CHOKE VOLUME  $Q = C \times P_r \times F_r \times F_g \times F_{pv}$

$$Q = (12.365)(361)(.9840)(.9427)(1.034) = 4,281 \text{ MCF/D}$$

$$\text{OPEN FLOW } Aof = Q \left( \frac{923,521}{\frac{P_c^2}{P_r^2 - P_c^2}} \right)^n = (1.968)^{.75} = 1.6605$$

$$Aof \left( \frac{923,521}{469,245} \right)^n (1.968)^{.75} = (1.6605)(4,281) = 7,109$$

Aof 7,109. MCF/D **Ending Pictured Cliffs shut-in 728 psig**

TESTED BY S. V. Roberts

WITNESSED BY E. C. Arnold (NMOCC)

*L. D. Galloway*  
L. D. Galloway

cc: E. J. Coel (6)

EL PASO NATURAL GAS COMPANY  
OPEN FLOW TEST DATA

DUAL COMPLETION

DATE May 17, 1957

|  |                             |  |                             |
|--|-----------------------------|--|-----------------------------|
| Operator<br><b>El Paso Natural Gas Company</b> |                             | Lease<br><b>Calloway Pool Unit #2</b>              |                             |
| Location<br><b>1840 N. 800 E. 34-31-11</b>     |                             | County<br><b>San Juan</b>                          | State<br><b>New Mexico</b>  |
| Formation<br><b>Pictured Cliffs</b>            |                             | Pool<br><b>Undesignated</b>                        |                             |
| Casing: Diameter<br><b>7"</b>                  | Set At: Feet<br><b>4375</b> | Tubing: Diameter<br><b>1 1/4</b>                   | Set At: Feet<br><b>2275</b> |
| Pay Zone: From<br><b>2238</b>                  | To<br><b>2284</b>           | Total Depth:<br><b>4707 c/o 4620 Packer @ 4401</b> |                             |
| Stimulation Method<br><b>Sand water frac</b>   |                             | Flow Through Casing<br><b>X</b>                    | Flow Through Tubing         |

|  |                           |                                    |   |                                 |  |
|--|---------------------------|------------------------------------|---|---------------------------------|--|
| Choke Size, Inches<br><b>1750</b>            |                           | Choke Constant: C<br><b>12.365</b> |   | <b>5 1/2 liner 4320 to 4702</b> |  |
| Shut-In Pressure, Casing, PSIG<br><b>711</b> | - 12 = PSIA<br><b>723</b> | Days Shut-In<br><b>12</b>          | Shut-In Pressure, Tubing, PSIG<br><b>711</b>          | - 12 = PSIA<br><b>723</b>       |  |
| Flowing Pressure: P, PSIG<br><b>115</b>      | - 12 = PSIA<br><b>127</b> |                                    | Working Pressure: P <sub>w</sub> , PSIG<br><b>120</b> | - 12 = PSIA<br><b>132</b>       |  |
| Temperature: T<br><b>66</b>                  | F<br><b>.85</b>           |                                    | F <sub>pv</sub> (From Tables)<br><b>1.012</b>         | Gravity<br><b>.668</b>          |  |

Mesaverde SIPT = 898 PSIG. Ending Mesaverde SIPT = 900 PSIG

CHOKE VOLUME = Q C x P<sub>i</sub> x F<sub>i</sub> x F<sub>g</sub> x F<sub>av</sub>

Q 12.365 x 127 x .9943 x .9498 x 1.012 1501 MCF D

$$\text{OPEN FLOW } A_{of} = Q \left( \frac{P_c^2}{P_c^2 - P_w^2} \right)^n$$

$$A_{of} = \left( \frac{522729}{505305} \right)^n \cdot 1.0344^{.85} \cdot 1501 = 1.0292 \cdot 1501$$

A<sub>of</sub> 1545 MCF D

TESTED BY K. C. McBride &amp; S. V. Roberts

WITNESSED BY

cc: E. J. Coel Jr. (6)

*L. D. Galloway*  
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