

EXAMINER HEARING

Application of V. H. Westbrook
for a pressure maintenance
project, Eddy County, New Mexico

Case No. 4588

TRANSCRIPT OF HEARING

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Journal of Management Studies, 19(6), 709-728.

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Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains.

100.15 100.16 100.17 100.18 100.19 100.20

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

1. *Chlorophyll a* (Chl *a*)

[illegible]

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(c) 2. The following information was obtained from the records of the Department of Health and Human Services:

MR. NUTTER: Case No. 4588

MR. HATCH: Case No. 4588. Application of
V. H. Westbrook for a pressure maintenance project,
Eddy County, New Mexico.

(Whereupon, Applicant's
Exhibit Nos. 1, 2 and 3 were
marked for identification.)

MR. STEVENS: Mr. Examiner, I am Don Stevens
with McDermott, Connelly and Stevens, Santa Fe, repre-
senting the Applicant in this case and we have one witness.

(Witness sworn.)

VIRGIL H. WESTBROOK

called as a witness, having been first duly sworn, was
examined and testified as follows:

DIRECT EXAMINATION

BY MR. STEVENS:

Q Would you state your name for the record, your
residence and your capacity in this case?

A My name is Virgil H. Westbrook, Hobbs, New Mexico.
I am the owner of the lease -- operator.

Q And you are the Applicant?

A I am the Applicant in this case.

Q Have you ever testified before the New Mexico
Oil Conservation Commission?

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A No, sir, I haven't.

Q Could you give us a brief summary of your experience in the oil business and your qualifications?

A Yes. I was employed by Continental Oil Company in field operations for five years, for Tret-o-Lite Chemical Company as chemical sales engineer for three years. For the past 11 years, I have been employed as chemical sales engineer and consultant for United Chemical Company of Hobbs, and for the past four years I have been an independent oil operator in all phases of the operation.

Q Does your operation include the operation and production of oil and gas wells?

A Yes, sir, they do, in both Texas and New Mexico.

Q In that capacity you handle all of the operations, facilities and operations for your --

A (Interrupting) Yes, I do.

MR. STEVENS: Are the witness' qualifications acceptable to the Commission?

MR. NUTTER: Yes, they are.

BY MR. STEVENS:

Q Would you briefly state what you seek in this Application before we get into our exhibits?

A I seek authorization to institute a pressure

1870-1871, 1872-1873, 1874-1875

1876-1877, 1878-1879, 1880-1881, 1882-1883, 1884-1885

1886-1887, 1888-1889, 1890-1891, 1892-1893, 1894-1895

1896-1897, 1898-1899, 1900-1901, 1902-1903, 1904-1905

1906-1907, 1908-1909, 1910-1911, 1912-1913, 1914-1915

1916-1917, 1918-1919, 1920-1921, 1922-1923, 1924-1925

1926-1927, 1928-1929, 1930-1931, 1932-1933, 1934-1935

1936-1937, 1938-1939, 1940-1941, 1942-1943, 1944-1945

1946-1947, 1948-1949, 1950-1951, 1952-1953, 1954-1955

1956-1957, 1958-1959, 1960-1961, 1962-1963, 1964-1965

1966-1967, 1968-1969, 1970-1971, 1972-1973, 1974-1975

1976-1977, 1978-1979, 1980-1981, 1982-1983, 1984-1985

1986-1987, 1988-1989, 1990-1991, 1992-1993, 1994-1995

1996-1997, 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

maintenance project on the Guy A. Reed Lease, Well No. 2.

I seek authority to inject the water from the Guy Reed No. 1 into the Guy Reed No. 2.

Q Referring to what has been marked as Exhibit No. 1, could you explain its significance to the Commission?

A Exhibit No. 1 is a plat of the Malaga-Delaware area. The proposed injection well is circled in red. The small circles of this plat is -- the well is located in Section 24, Township 24 South, Range 28 East. The proposed pressure maintenance well is in the south of the NW/4 of the SW/4 of Section 24. The water would be coming from the NW -- the SW/4 of the NW/4 located in Reed No. 1. The small circle is a half-mile circle showing the off-set operators in all directions. The large red circle is a two-mile circle showing all operators within this two-mile area. The only producing wells in this large circle is in Antweil's Malaga-Delaware plug, and I understand that Mr. Antweil has no objection to this.

Q What is the producing formation under which you propose to inject?

A Into the whole -- Delaware.

Q Of the Delaware formation?

A Yes, sir.

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Q What is the formation from which this water will come?

A From the oil sand.

Q In other words, it is the same. You will be taking water out of it and putting it back in a dry hole offsetting your one producing well, is that correct?

A That is correct.

Q Could you give us your understanding of the geology of the area?

A Well, I am not a geologist, but my understanding of the Malaga-Delaware is just a stratographic trap with no relation to structure with possible exception of minor nosing.

Q The wells in the one-half mile area within your circle I note two dry holes -- three counting your injection well -- can you tell us what they recovered?

A My best information was water was all that they recovered.

Q And that is the well in the NW/4 -- NW-NW of Section 24, is that correct?

A Yes, sir.

Q And the SE and NE of Section 23?

A Yes.

1911. 1912. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1920.

1921

1922. 1923. 1924. 1925.

1926. 1927. 1928. 1929. 1930. 1931. 1932. 1933. 1934. 1935.

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2070. 2071.

2072. 2073. 2074. 2075. 2076. 2077. 2078. 2079. 2080. 2081.

2082.

Q Township 24 South, Range 28 East. Could you give us the completion and the production history of your Well No. 1?

A Well No. 1 was drilled with a rotary rig to the depth of 2650. Of course, at that time, they moved the rotary off and then moved the cable to the rig again and continued drilling on down to the depth of 2700 feet. It was completed in open-hole from 2650 down to 2700. This Well No. 1 was fraced a couple of months ago -- I guess back in June -- let's see -- July-- a hydromat plug was set in the bottom 15-foot of the hole and 2000 gallons of kerosene in sand track was done on it. The production of this well is now 70 barrels of oil and 60 barrels of water approximately.

Q What is your present disposition of that water?

A Well, we are hauling the water as of now.

Q What is your cost for the hauling of that water?

A The cost of hauling water is 41¢ a barrel and this cost will be reduced.

Q When you start injecting this water into your Well No. 2, is that correct?

A. That is correct.

Q Referring to what has been marked as Exhibit No. 2,

to the same level as the other two.

The first two are the same as the other two.

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could you explain it to the Commissioner?

A Exhibit No. 2 is the schematics of what is proposed to be done on the Guy Reed Well No. 2; 8 and 5/8 casings was set at a depth of 353 and cement was circulating. 4 and 1/2 casing was rammed to the depth of 2730 and by temperature survey on the top of the cement was 2062 feet. We propose to run two-inch tubing to a depth of 2669 with a model A.D. Baker packer and set at that depth and in annular space, inert fluid would be placed with corrosion resistant additives which would be -- the fluid itself would be treated water.

Q Where do you plan to inject this water, into what part of the formation?

A We plan to inject the water into where it is mainly perforated at 2681, 2682 and 2683 with one jet shot to the foot.

Q Is this water you propose to inject very corrosive?

A It is not corrosive to my knowledge.

Q Do you know its salt content?

A The chlorides run around 80 to 90,000 parts per million.

Q Do you plan any treatment for injected water prior to injection?

could not explain it as a contamination

1. Examine No. 2 is the analysis of what is proposed

to be done on the two lines No. 2; 3 and 4; 5 and 6; 7 and 8

and see if it is possible to find any connection.

2. and 3; 4 and 5; 6 and 7; 8 and 9; 10 and 11; 12 and 13

by comparison of the two lines No. 2; 3 and 4; 5 and 6; 7 and 8

12; 13 and 14; 15 and 16; 17 and 18; 19 and 20; 21 and 22

23; 24 and 25; 26 and 27; 28 and 29; 30 and 31; 32 and 33

and in another way, which would be placed in

consecutive positions, which would be -- the

line itself, which would be a very

3. Where is the line to which this water, into which

part of the formation

4. we have to follow the water line where it is

mainly continuous, as No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

to the level.

5. In this case, we propose to follow the water line

6. It is not possible to find any connection.

7. In this case, we propose to follow the water line

8. It is not possible to find any connection.

per million.

9. In this case, we propose to follow the water line

which is the line

A Yes, I do. I do intend to inject continuously corrosion inhibitors to protect the tubing in the injection well.

Q What pressure do you propose for this injection well?

A I anticipate 450 to 500 pounds of pressure.

Q Is this on the basis of the Malaga field?

A This is on the basis of the Malaga field where Antweil is now flooding.

Q Referring to Exhibit No. 3, can you explain that for the Commission?

A Exhibit No. 3 is bore-hole compensated sonic gamma ray log in the Guy Reed Well, No. 2. This log indicates the top of the range of sand, forward shale and old sand. The sand which we seek authority to inject into the top is 2673. The best porosity and permeability is at 2681 and 2682 and 2683 where it is now perforated. This well never produced any oil. It produced for around, I think, 19 days of water.

Q This was when?

A This was back in 1967 when --

Q (Interrupting) When the well was originally completed?

the following conditions: (i) \mathcal{C} is a collection of
 subsets of \mathcal{C} such that $\mathcal{C} \subseteq \mathcal{C}$ and $\mathcal{C} \subseteq \mathcal{C}$.
 (ii) $\mathcal{C} \subseteq \mathcal{C}$ and $\mathcal{C} \subseteq \mathcal{C}$.

Let \mathcal{C} be a collection of subsets of \mathcal{C} such that
 $\mathcal{C} \subseteq \mathcal{C}$ and $\mathcal{C} \subseteq \mathcal{C}$.

Let \mathcal{C} be a collection of subsets of \mathcal{C} such that

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A When the well was originally completed.

Q What was the recovery on the completion attempt?

A There was no oil recovery on the completion attempt. Only water, salt water.

Q Do you have an estimate of the volume that was recovered?

A No. I think it was approximately 40 barrels a day of water, by pumping.

Q By pumping. And on the basis of this, it is your opinion that you would be able to inject into this formation some 60 barrels of water a day from your No. 1 well?

A It is my opinion that I would be, yes, sir.

Q Were Exhibits 1, 2 and 3 prepared by you or under your direction?

A Yes, they were.

Q In your opinion in this case, will the granting of the Application protect correlative rights and help to prevent waste?

A Yes, it would.

MR. STEVENS: At this time, Mr. Examiner, we would like to introduce into evidence, Exhibits 1, 2 and 3.

MR. NUTTER: Applicant's Exhibits 1 through 3

1. The first step is to identify the problem.

2. The second step is to define the objectives.

3. The third step is to develop a plan.

4. The fourth step is to implement the plan.

5. The fifth step is to evaluate the results.

6. The sixth step is to report the findings.

7. The seventh step is to draw conclusions.

8. The eighth step is to make recommendations.

9. The ninth step is to monitor the progress.

10. The tenth step is to review the process.

11. The eleventh step is to document the results.

12. The twelfth step is to disseminate the information.

13. The thirteenth step is to evaluate the impact.

14. The fourteenth step is to make adjustments.

15. The fifteenth step is to conclude the study.

16. The sixteenth step is to publish the results.

17. The seventeenth step is to share the findings.

18. The eighteenth step is to use the results.

19. The nineteenth step is to reflect on the process.

20. The twentieth step is to end the study.

21. The twenty-first step is to thank the participants.

22. The twenty-second step is to provide feedback.

23. The twenty-third step is to close the study.

will be admitted in evidence.

(Whereupon, Applicant's Exhibits
Nos. 1, 2 and 3 were offered
and admitted in evidence.)

MR. STEVENS: We have no further questions.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Westbrook, as I understand it, you won't run a plastic line tubing, but you will continuously treat the water?

A Yes, sir.

Q To protect the tubing?

A Yes, sir.

Q And the tubing will be installed in a packer?

A Yes, sir.

Q And the annulus between the tubing and the casing will be loaded with a corrosion-inhibited fluid?

A Yes, sir.

Q Will you equip that with a pressure guage to determine leakage in the tubing or packing?

A Yes, sir, I certainly will.

Q And at the present time your No. 1 well is making 70 barrels of oil per day and 60 barrels of water. Is it anticipated that the water production will

go up or down or is it fairly stable at this point?

A Well, it is fairly stable at this time.

Q At the present time you are having to haul water so this not only gives you a means of disposing of it, but you may enhance your production as well?

A Yes, sir, that is what I hope for.

MR. NUTTER: Are there further questions of Mr. Westbrook?

You may be excused.

(Witness dismissed.)

MR. NUTTER: Does anyone have anything further to offer in Case No. 4588.

MR. HATCH: Mr. Examiner, the Commission has received a telegram from Morris Antweil offering no objections to the Application.

MR. NUTTER: If there is nothing further in Case No. 4588, we will take the case under advisement.

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STATE OF NEW MEXICO)
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 COUNTY OF SANTA FE)

I, RICHARD L. NYE, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.


 COURT REPORTER

My commission expires March 25, 1975.

I do hereby certify that the foregoing is a true and correct record of the proceedings in the examiner hearing of Case No. 4588, dated by me on 9/15, 1971.

 Examiner
 New Mexico Oil Conservation Commission

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