

CASE 6247 & 6248

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
State Land Office Building  
Santa Fe, New Mexico  
7 June, 1978

EXAMINER HEARING

-----  
IN THE MATTER OF: (Consolidated)

Application of Mobil Oil Corporation	)	CASE
for a unit agreement, Lea County, New	)	6247
Mexico, or statutory unitization.	)	

AND

Application of Mobil Oil Corporation	)	CASE
for a pressure maintenance project, Lea	)	6248
County, New Mexico.	)	

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BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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SALLY WALTON BOYD  
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Santa Fe, New Mexico 87501

1. *Journal of the American Medical Association*, 277, 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, 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,

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1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Sponholz (1980).

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The number of transformed cells was determined by the number of colonies growing on the selective medium. The results are the mean of three independent experiments. Error bars represent standard deviation.

— *Journal of the American Medical Association*, 1997

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1 MR. NUTTER: Call Case Number 6247, which is  
2 actually two applications in one.

3 The first is the application of Mobil Oil  
4 Corporation for a voluntary unit agreement in Lea County,  
5 New Mexico.

6 The second portion of the application is the  
7 application of Mobil Oil Corporation for statutory uniti-  
8 zation of its North Vacuum Abo East Unit Area in Township  
9 17 South, Range 35 East, Lea County, New Mexico.

10 MR. SPERLING: James E. Sperling of Modrall,  
11 Sperling, Roehl, Harris and Sisk, appearing for the appli-  
12 cant.

13 We'd like to request, Mr. Examiner, that the  
14 two cases to which you referred be combined for purposes  
15 of the hearing.

16 MR. NUTTER: Off the record.

17 (There followed a discussion  
18 off the record.)

19 MR. NUTTER: Back on the record. We have,  
20 as I mentioned, we have the two cases in Case Number 6247,  
21 one for voluntary unitization; the other for statutory  
22 unitization.

23 MR. SPERLING: I would like to request at  
24 this time, Mr. Examiner, that for the purposes of the  
25 hearing Case 6247 and Case 6248 be combined, consolidated.



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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 MR. NUTTER: We'll call now Case 6248, which  
2 is in the application of Mobil Oil Corporation for a pres-  
3 sure maintenance project, Lea County, New Mexico.

4 And you do have 100 percent voluntary uniti-  
5 zation in Case Number 6247, so you have requested the  
6 statutory unitization portion of that application be dis-  
7 missed.

8 MR. SPERLING: Yes, sir.

9 MR. NUTTER: And we'll proceed, then, with the  
10 hearing for the voluntary unitization and the pressure  
11 maintenance project.

12 MR. SPERLING: Yes, sir, we have two witnesses,  
13 one whose testimony will be with respect to 6247 and one  
14 with respect to 6248.

15 MR. NUTTER: Will they both stand and be  
16 sworn, please.

17 (Witnesses sworn.)

18 MR. KELLAHIN: If the Examiner please, I de-  
19 sire to enter my appearance in both these cases on behalf  
20 of Pennzoil Corporation.

21 Pennzoil Corporation is a working interest  
22 owner in the adjoining North Vacuum Abo Unit. We are an  
23 interested party in this proceeding and we don't know  
24 that we are objecting to what -- what Mobil's doing.  
25 We're seeking information at this point but we did want

1. *Journal of the American Medical Association*, 1997; 277: 1033-1036.

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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, 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, 26

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

the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion. The number of people aged 65 and over is expected to increase from 200 million to 400 million. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion.

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1 to participate and be able to ask the witnesses some  
2 questions about the unit.

3 MR. NUTTER: You're not sure whether you're  
4 friend or foe, is that right?

5 MR. KELLAHIN: That's right.

6 MR. SPERLING: Mr. Examiner, before we begin,  
7 at the time of the submission of the application we were  
8 one log short with respect to an injection well, and I  
9 would like to have added to the file, with respect to  
10 Case Number 6247, the log of Texaco, Inc., New Mexico  
11 State VJ No. 3 Well.

12 MR. NUTTER: Thank you, Mr. Sperling.

13  
14 E. R. FRAZIER

15 being called as a witness and having been duly sworn upon  
16 his oath, testified as follows, to-wit:

17  
18 DIRECT EXAMINATION

19 BY MR. SPERLING:

20 Q Would you please state for the record your  
21 name, your place of residence, the name of your employer,  
22 the capacity in which you are employed?

23 A Yes. I'm E. R. Frazier, employed by Mobil  
24 Oil Corporation in Houston, Texas, as Joint Interest Ad-  
25 ministrator.

...and the ... ..  
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1 Q What do your duties consist of in connection  
2 with being Joint Interest Administrator?

3 A Well, it consists of, among other things, of  
4 negotiating unit agreements and the preparation of unit  
5 agreements such as we're considering here today.

6 Q In that connection, Mr. Frazier, have you on  
7 any previous occasions testified as a witness before the  
8 Commission and have your qualifications in the capacity  
9 that you have described been accepted?

10 A Yes.

11 Q As a part of the application originally filed  
12 in this matter, there was submitted a copy of the unit  
13 agreement, proposed unit agreement. We have also marked  
14 the Unit Agreement as an exhibit in 6247.

15 Would you please refer to Exhibit Number One  
16 in that case at this time? And describe for the record  
17 what the Unit Agreement consists of and some of its  
18 features?

19 MR. KELLAHIN: Excuse me, Mr. Sperling, do  
20 you have an extra copy of that we might look at?

21 MR. SPERLING: Yeah, I'll get you one.

22 MR. KELLAHIN: Thank you.

23 MR. NUTTER: Is that Unit Agreement there  
24 identical with the one that was submitted with the appli-  
25 cation?

[illegible]

Figure 1. The effect of the concentration of the *Agaricus bisporus* spores on the growth of *Agaricus bisporus* and *Agaricus bisporus* spores on the growth of *Agaricus bisporus* spores.

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1 MR. SPERLING: Yes, sir.

2 A Shall I --

3 Q (Mr. Sperling continuing.) Yes, go ahead.

4 A Exhibit One is a copy of the Unit Agreement of  
5 the North Vacuum Abo East Unit, and the Unit Agreement is  
6 for the unitization of the Abo formation only, and the  
7 interval being unitized is described in Section 2 (j),  
8 page 2 of the Unit Agreement, and that's the same interval  
9 that was described on the call of the hearing.

10 Exhibit "A" of the Unit Agreement is a map  
11 of the Unit Area, showing the Unit outline and the tract  
12 numbers.

13 Q How many acres does the unit area consist of?

14 A The unit consists of 865.74 acres and the  
15 working interest owners owning 100 percent of the working  
16 interests in the unit have approved the Unit Agreement  
17 and the Unit Operating Agreement.

18 The State of New Mexico has all the mineral  
19 interest ownership in the proposed unit and the New Mexico  
20 State Land Office has reviewed this Unit Agreement.

21 Exhibit Two is a letter from the Public  
22 Lands Office Oil and Gas Division, which indicates that  
23 it meets with their approval. All tracts in the unit area  
24 qualify for inclusion in the unit and there is one over-  
25 riding royalty interest in Tract Seven which has also been



Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The number of transformed cells was determined by the number of colonies obtained on the selective medium. The results are the mean of three independent experiments. Error bars represent the standard deviation.

[illegible]

Concentration of inhibitor (mole/l)	Rate of polymerization (mole/l·hr)
0.0001	100
0.0002	80
0.0004	60
0.0006	40
0.0008	20

1 committed to the unit.

2 I'd like to call the attention to an ipso facto  
3 termination date in Article 26, page 14 of the Unit Agree-  
4 ment. That ipso facto date was July 1, 1978, and Mobil  
5 has requested approval from the working interest owners  
6 to extend this termination date one year and working in-  
7 terest owners owing 95+ percent have approved this ex-  
8 tension, will extend the ipso facto termination date to  
9 July 1, 1979.

10 And pending approval of the Commission and  
11 the State Public Lands Office, we anticipate making the  
12 unit effective August the 1st of '78.

13 It is respectfully requested that the Com-  
14 mission approve the North Vacuum Abo East Unit as proposed  
15 in the Unit Agreement.

16 Q Do you have anything further with respect to  
17 the Unit Agreement?

18 A I don't think I have unless there's some  
19 questions.

20 Q All right.

21 MR. SPERLING: We would offer Exhibits One  
22 and Two in Case Number 6247 at this time, Mr. Examiner.

23 MR. NUTTER: Mobil Exhibits One and Two will  
24 be admitted in evidence.  
25

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CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Frazier, you mentioned that the ipso facto termination date has been proposed to be changed to 7-1-79.

A That's right.

Q Did you state that 95 percent of the working interest has --

A That's right.

Q -- approved that proposition?

A That's correct.

Q Has the State Land Office approved it yet?

A No, sir, it has not been submitted to them.

Q Uh-huh.

A I guess I overlooked that.

Q Okay.

MR. NUTTER: Are there any further questions of Mr. Frazier?

MR. KELLAHIN: If the Examiner please.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Frazier, what if any working relationship do you have with the North Vacuum Abo Unit to the west of this subject unit?

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1 A Mobil is the operator of that unit as well.

2 Q Let me -- let me show you what I have marked  
3 as Pennzoil Exhibit One, and ask you if you can identify  
4 that exhibit?

5 A Yes, I believe I can.

6 Q That's the boundary for the North Vacuum Abo  
7 Unit that adjoins this subject unit, is it not, sir?

8 A That appears to be, yes.

9 Q Let me trade copies with you, Mr. Frazier.  
10 It appears from looking at this exhibit, Mr. Frazier, that  
11 the subject unit for which you seek approval consists of  
12 the south half of Section 7, the north half of Section 8,  
13 the southwest quarter of 18 and the west half of the  
14 southeast quarter of 18. Is that all of it?

15 A Yes. That's all of it.

16 Q As opposed to creating a new separate unit,  
17 Mr. Frazier, what if any efforts have you made to expand  
18 the existing North Vacuum Abo Unit to include this area?

19 A Well, there was not any effort made to expand  
20 the North Vacuum Abo Unit. You want to know the reason  
21 why?

22 Q Yes, sir.

23 A Okay. The reason why that there had been some  
24 response already in the North Vacuum Abo Unit and we felt  
25 like it would be easier and expedite matters by forming

There is a large number of people who are

very much interested in the

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They are very much interested in the

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1 a new unit rather than expanding the old unit.

2 Q You indicate it would be easier. In what  
3 ways, Mr. Frazier?

4 A Well, the fact that we could -- we would nego-  
5 tiate participation for the new unit and would not have to  
6 go into all the production history, and so forth, of the  
7 unit that was already in effect, and the fact that the  
8 production -- we had production increases in the old unit.

9 Q Now, all the wells in the subject unit, they  
10 were all in existence prior to November of '76, were they  
11 not, sir?

12 A Well, that I can't say without checking the  
13 records out, but you probably know more about that than  
14 I do. I don't know offhand.

15 Q When was the last time you expanded the North  
16 Vacuum Abo Unit?

17 A Let's see, the last time was when they ex-  
18 panded it to take in the Texaco tract there in the south-  
19 east quarter of 13, and I believe at that same time there  
20 was a Shell Tract 19 -- let's see, it would be -- okay,  
21 it's now Tract 19 in the North Vacuum Abo Unit, it's in  
22 the southwest quarter of Section 10, 34 East, 17 South.  
23 Those two tracts, I believe, were expanded. I believe  
24 that's the last time it was expanded.

25 Q That expansion of the North Vacuum Abo Unit



[illegible]

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, 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, 26

the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.2 billion to 1.5 billion. The number of people aged 65 and over is expected to increase from 200 million to 400 million. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion.

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were grown in the YEA medium for 24 h at 28 °C. The cell concentration of the strains was adjusted to 1.0 × 10<sup>8</sup> cells/ml. The cell suspension was mixed with the plant tissue and the transformation efficiency was determined. The results were expressed as the mean ± SD of three independent experiments. The asterisks indicate the significant difference between the strains at the same concentration of the cell suspension.

[illegible]

1 took place about November of 1976, did it not?

2 A I believe that's probably true.

3 Q And at the time you made that expansion you  
4 had to work out different parameters for the unit itself  
5 to include those tracts.

6 A Yes, sir, I believe so.

7 Q In addition, you made investment adjustments  
8 at that time.

9 A That's correct.

10 Q Now, prior to that date, with regards to the  
11 North Vacuum Abo Unit, did you ever propose and consider  
12 the expansion of the existing unit to include any portion  
13 of that acreage now proposed for the new unit?

14 A No, it never was proposed for expansion.

15 Q To the best of your recollection, then, in  
16 August of 1973, none of this acreage now in question was  
17 considered for expansion to inclusion in the existing  
18 North Vacuum Abo Unit.

19 A You mean August of '73 or '76?

20 Q Yes, sir, I believe '73.

21 A '73?

22 Q Yes, sir.

23 A Well, to my recollection, all of these wells  
24 were not drilled then in August of '73. They're in the  
25 new unit.

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, 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, 26

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971) using a Shimadzu 1601 UV-Visible Spectrophotometer.

— *Journal of the American Medical Association*, 1997

1 Q To the best of your memory, none of the existing  
2 acreage now under consideration for this unit was ever  
3 proposed for inclusion in the North Vacuum Abo Unit.

4 MR. SPERLING: Not of 1973, as you asked him.

5 A I don't believe so, no.

6 Q Other than '73 at any time?

7 A We never proposed this for an expansion in  
8 '73. The reason is that this was being developed over  
9 here and I would have to, like I say, I don't recall exactly  
10 when every well was drilled, but this was developed later  
11 than the part that's in the North Vacuum Abo Unit.

12 Q If I understand you by your answer, Mr. Frazier,  
13 you then have not made any feasibility studies to consider  
14 whether the existing unit could have been expanded to  
15 include any of the acreage now under consideration?

16 A Well, I guess that would be hard to answer just  
17 yes or no. We considered that, expanding the unit, but  
18 the main reason we didn't try to expand it was the fact  
19 that we felt like it would be more expedient and that it  
20 would be more difficult to expand the unit than it would  
21 be to form a new unit.

22 Q Is the area of the North Vacuum Abo Unit and  
23 the new unit all within the Abo Pool?

24 A Yes.

25 Q You said you, in response to a question, I

[illegible]

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971) using a Shimadzu 1010 spectrophotometer.

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 believe, asked earlier, that the existing unit was re-  
2 ceiving some response from the offset acreage on the east  
3 side?

4 A No. You mean -- which unit are you talking  
5 about now?

6 Q Well, I'm not sure and that was --

7 A Oh.

8 Q -- the question.

9 A The one I'm talking about the response was in  
10 the old unit, in the North Vacuum Abo Unit.

11 Q The North Vacuum Abo Unit as it now exists  
12 was receiving response from the injection --

13 A In that unit. See, we haven't started in-  
14 jection in the new unit yet.

15 Q All right. What if any lease line agreements  
16 do you anticipate between the two units in order to protect  
17 the correlative rights of each?

18 A We anticipate protecting the correlative  
19 rights by maintaining corresponding injection wells across  
20 the line. In other words, protect the equity across the  
21 lease line of the two units, and I would suppose we would  
22 make a unit -- a cooperative agreement to that effect,  
23 but anyway, we do anticipate protecting correlative rights  
24 of the two units by corresponding injection across the  
25 two -- across the common lease line.

$\frac{d}{dt} \left( \frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

Q Mobil, as the unit operator for the North Vacuum Abo Unit, has not called a working interest owners meeting in order to accomplish that at this point?

A That's right.

Q You've never made demand upon any of the working interest owners of the existing unit to expand, or proposed to expand, in this easterly direction?

A That's correct.

Q I don't recall exactly what you said, Mr. Frazier, you have or you have not made any economic studies to determine whether this acreage could be reasonably included in the existing unit?

A I don't believe -- to my knowledge there wasn't any economic studies made just for that purpose. There have been economic studies made for the new unit but to my knowledge we didn't compare one to the other.

Q And again, why didn't you make that comparison?

A Well, the reason is that we intend to protect the correlative rights of the two units across that common boundary and that we felt like it would be more expedient and easier to form a new unit than it would to expand the old one.

Q Do you have any particular lease problems within the acreage included in the new unit?

A Lease problems?



1. The first part of the document is a letter from the

author to the reader, explaining the purpose of the study.

2. The second part is a review of the literature on the

topic of the study.

3. The third part is a description of the methodology

used in the study, including the sample size and the

data collection methods.

4. The fourth part is a presentation of the results

of the study, including the main findings.

5. The fifth part is a discussion of the results and

their implications for future research.

6. The sixth part is a conclusion of the study.

7. The seventh part is a list of references.

8. The eighth part is an appendix containing

additional information related to the study.

9. The ninth part is a bibliography of the study.

10. The tenth part is a list of figures and

tables included in the study.

11. The eleventh part is a list of abbreviations

used in the study.

12. The twelfth part is a list of symbols and

units.

13. The thirteenth part is a list of footnotes.

14. The fourteenth part is a list of appendices.

15. The fifteenth part is a list of references.

1 Q Yeah, you running into the end of the primary  
2 term on any of your leases?

3 A No, sir.

4 MR. KELLAHIN: Mr. Examiner, I have nothing  
5 else. Thank you, Mr. Frazier.

6 MR. NUTTER: Are there any further questions  
7 of Mr. Frazier?

8 MR. SPERLING: I have one question.

9

10 REDIRECT EXAMINATION

11 BY MR. SPERLING:

12 Q I believe the application, Mr. Frazier, showed  
13 the percentage working interest of Mobil to have been  
14 50.05455. What is the correct working interest percentage  
15 attributable to Mobil's ownership?

16 A In the unit under discussion?

17 Q The unit under discussion, which is the North  
18 Vacuum Abo --

19 A The East unit?

20 Q Yes.

21 A It has two phases, Mr. Sperling, and the  
22 Phase One participation is 52.05455 and the Phase Two is  
23 52.32657.

24 Q What is the most significant feature with --  
25 that causes the percentage interest to vary as between

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters.

2. The second part outlines the specific procedures for recording transactions. It details the steps involved in identifying, documenting, and verifying each entry, ensuring that all relevant information is captured and stored securely.

3. The third part addresses the challenges associated with record-keeping, such as data loss, corruption, and unauthorized access. It provides strategies to mitigate these risks, including regular backups, access controls, and disaster recovery plans.

4. The fourth part discusses the legal and regulatory requirements governing record-keeping. It highlights the importance of compliance with applicable laws and standards, which may vary depending on the industry and jurisdiction.

5. The fifth part explores the role of technology in enhancing record-keeping processes. It mentions various tools and systems, such as databases, cloud storage, and automated reporting, that can streamline and improve the accuracy of records.

6. The sixth part focuses on the importance of training and education for staff involved in record-keeping. It stresses that personnel must be well-versed in the procedures and best practices to ensure the integrity and reliability of the records.

7. The seventh part discusses the periodic review and audit of records. It explains how regular audits can help identify discrepancies, errors, and areas for improvement, ensuring that the record-keeping system remains effective and up-to-date.

8. The eighth part concludes by reiterating the overall significance of maintaining accurate and complete records. It states that a robust record-keeping system is a cornerstone of good governance and operational excellence.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters.

1 Phase One and Phase Two?

2 A Well, it's almost exactly the same for Mobil.  
3 The basis of participation was Phase One was 50 percent  
4 current production and 50 percent remaining primary, and  
5 the basis of Phase Two was the ultimate primary recovery  
6 estimated from each tract.

7 Q Was -- is there any difference in the parti-  
8 cipation factor as between the existing North Vacuum Abo  
9 Unit and the proposed unit?

10 A I believe that there is a difference. I  
11 don't recall exactly what the basis was on the old unit.  
12 Do you have it there?

13 MR. KELLAHIN: Yes, sir, I believe it --

14 MR. RAINEY: I don't know whether you can read  
15 my writing. Can I read it for him?

16 MR. NUTTER: Read it into the record.

17 MR. RAINEY: Okay. The initial parameters  
18 for the -- before the unit was ever expanded, was 65 per-  
19 cent net pore -- net hydrocarbon pore volume; 17-1/2 per-  
20 cent current production, which was the first six months  
21 of '71; 17-1/2 percent remaining primary.

22 On the first expansion the parameters remained  
23 the same.

24 On the second expansion, which included the  
25 Texaco and Shell acreage, as effective on 11-1-76, the



1 parameters were 24 percent primary reserve, 38 percent  
2 ultimate primary production, and 38 percent net hydrocarbon  
3 pore volume.

4 MR. NUTTER: Would you state for the record  
5 your name, Mr. Rainey?

6 MR. RAINEY: J. C. Rainey, Petroleum Engineer  
7 with Pennzoil.

8 MR. NUTTER: Thank you.

9  
10 RE CROSS EXAMINATION

11 BY MR. NUTTER:

12 Q Mr. Frazier, in response to Mr. Sperling's  
13 question on that Mobil interest, would you repeat those  
14 figures you gave again?

15 A Okay. Phase One participation, Mobil's interest  
16 if 52.05455.

17 Q Wait just a minute, 52.0 --

18 A 5455.

19 Q Phase One, huh?

20 A Yes, sir. Phase Two is 52.32657.

21 MR. NUTTER: Did you want to amend your appli-  
22 cation, Mr. Sperling, to reflect that combined figure  
23 rather than the --

24 MR. SPERLING: Yes, we do make that request.

25 MR. NUTTER: -- figure that you gave?



1 MR. SPERLING: Yes.

2 MR. NUTTER: Okay, fine, thank you. The ap-  
3 plication is being amended.

4 Are there any further questions of Mr. Frazier?  
5 He may be excused.

6  
7 A. J. HANKINSON

8 being called as a witness and having been duly sworn upon  
9 his oath, testified as follows, to-wit:

10  
11 DIRECT EXAMINATION

12 BY MR. SPERLING:

13 Q Would you please state your name, your place  
14 of residence, your occupation, and by whom you're employed?

15 A My name is Jim Hankinson. My place of residence  
16 is now Denver, Colorado. I'm employed by Mobil Oil and  
17 I'm a Staff Engineer.

18 Q Have you on any prior occasions testified  
19 before the Commission as an expert witness and have you  
20 made your qualifications in that capacity a matter of  
21 record? And have those qualifications been accepted?

22 A Yes, sir.

23 MR. SPERLING: Is the witness considered  
24 qualified, Mr. Edaminer?

25 MR. NUTTER: Yes, he is.





1 Q (Mr. Sperling continuing.) You, as a matter  
2 of fact, were a witness at the time of the hearing on the  
3 application for approval of the North Vacuum Abo Unit,  
4 the existing unit?

5 A Yes, sir, I was.

6 Q Would you now please refer to what has been  
7 marked as Exhibit One and describe for the record what  
8 that exhibit is supposed to show?

9 MR. KELLAHIN: Excuse me, do you have another  
10 one of those?

11 MR. HANKINSON: I think so.

12 A Exhibit Number One is a map showing the well-  
13 bores in the area that we're proposing unitization and  
14 color coded to mark the reservoir that they have or are  
15 completed in. And as you will notice from this map, the  
16 red color, which is what we've used to designate the Abo  
17 formation, is rather extensive and continues on across  
18 from the older North Vacuum Abo Unit to the proposed unit  
19 area.

20 Q The legend in the lower lefthand corner of  
21 the exhibit is color coded to indicate the conclusions  
22 that you have described?

23 A Yes, sir, these are the reservoirs they have  
24 or are currently completed in.

25 Q And also shown are existing injection wells?



1 A Yes, both the Abo injectors and San Andres  
2 injectors.

3 Q Okay. Now would you please refer to what's  
4 been marked as Exhibit Two and describe the purpose of  
5 that exhibit, what is shown upon it?

6 A To clarify the situation, Exhibit Two is a  
7 map of the project showing only the wells which have  
8 penetrated the Abo or deeper horizons. It also shows the  
9 proposed injectors in the new unit area and the proposed  
10 unit well numbers.

11 Q Now would you review for us a brief history  
12 of the North Vacuum Abo Pool in Lea County, New Mexico?

13 A Yes, sir. The North Vacuum Abo Pool is  
14 located about 25 miles northwest of Hobbs, New Mexico,  
15 in Lea County.

16 The first well was completed in the proposed  
17 unit interval was Mobil's Bridges-State No. 112 for a  
18 flowing potential of 312 barrels per day on June 15th,  
19 1966. The original pressure was 3230 psi and the bubble  
20 point was 2800 psi. Oil gravity is 36 API. The reservoir  
21 produces by solution gas drive, although a large portion  
22 of the field has been unitized and is under, now, pres-  
23 sure maintenance by water injection.

24 The Mobil operated North Vacuum Abo Unit  
25 became effective 12-1-72 and has responded very favorably

1977

1. The first of the following is a true statement.

2. The second is false.

3. The third is true.

4. The fourth is false.

5. The fifth is true.

6. The sixth is false.

7. The seventh is true.

8. The eighth is false.

9. The ninth is true.

10. The tenth is false.

11. The eleventh is true.

12. The twelfth is false.

13. The thirteenth is true.

14. The fourteenth is false.

15. The fifteenth is true.

16. The sixteenth is false.

17. The seventeenth is true.

18. The eighteenth is false.

19. The nineteenth is true.

20. The twentieth is false.

21. The twenty-first is true.

22. The twenty-second is false.

23. The twenty-third is true.

24. The twenty-fourth is false.

25. The twenty-fifth is true.

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1 to water injection using a 5-spot pattern. Current pro-  
2 duction of this older unit is 4100 barrels of oil and 76  
3 barrels of water per day.

4 Q Now would you describe for us by reference to  
5 Exhibit Number Three the characteristics of the reservoir  
6 in which the proposed unit is located?

7 A Yes, sir. Exhibit Number Three is a structure  
8 map on top of the Abo pay. It's a north/south trending  
9 anticline and shows that the old unit and the new unit  
10 are on the same Abo structure, just a continuation to the  
11 east.

12 Exhibit Number Four is an east/west cross  
13 section of the Abo horizon. As you might note on the  
14 righthand side of this exhibit it shows the line of  
15 continuity or cross sectional position from Well No. 158  
16 in the North Vac Abo Unit to Mobil State JJ, to the State  
17 "U" No. 1, to the TT No. 1, and finally to the State MM  
18 No. 1.

19 The red interval is the Abo pay and where you  
20 see the interval marked with sort of a rectangular ap-  
21 pearance, this is the overall perforated interval. Within  
22 that overall interval there it's selectively perforated.

23 MR. NUTTER: I take it then that this Mobil  
24 State UU, the one that's in the center, is not perforated  
25 in the interval?

• • •

1 A No, sir, it is not.

2 MR. NUTTER: Okay.

3 A This shows that the structure dips to the east,  
4 as the previous exhibit showed.

5 Exhibit Number Five is a reference log of the  
6 proposed North Vacuum Abo East Unit. This is a log of  
7 Mobil's State UU Com. No. 1, a deeper Atoka-Morrow gas  
8 well. On this exhibit the unit -- proposed unit interval  
9 is defined as that point from 8420 feet to 9260 feet sub-  
10 surface.

11 I might make a few comments about the Abo  
12 It is a back reef deposit anhydritic dolomite with inter-  
13 bedded shales. The gross section is about 550 feet thick  
14 and is capped by dense dolomite. The productive interval  
15 is confined almost entirely to the upper 100 feet. The  
16 porosity within the producing interval has good continuity  
17 through the proposed unit area as shown by this cross  
18 section, Exhibit Number Five.

19 Q Now, would you furnish us with a description  
20 of the pertinent data which relate to the project which  
21 has been identified as the proposed North Vacuum Abo East  
22 Unit?

23 A The proposed unit shown on Exhibit Two covers  
24 866 productive acres and includes 11 active producing  
25 wells. Cumulative oil and gas production as of 1-1-78 was



the first of the two main groups.

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THE SECOND GROUP IS

1 767,529 barrels and 762,878 Mcf respectively.

2 Oil producing rate for December, '77, was  
3 293 barrels per day and the average gas/oil ratio was  
4 1220 cubic feet per barrel. Water production was extremely  
5 small, only 2.1 percent of total fluids produced.

6 MR. NUTTER: How many producing wells are in  
7 that?

8 A. At the present time there are eleven.

9 Q. With respect to the production to date, would  
10 you please refer to Exhibits Six and Seven and briefly  
11 describe those for the record and what they're intended  
12 to show?

13 A. Yes, sir. Exhibit Number Six is a production  
14 history for the proposed unit area. The units and columns  
15 are self-explanatory.

16 Q. And Exhibit Seven contains the same information  
17 in different form?

18 A. Yes, sir. Exhibit Seven contains the same  
19 information in graphic form, showing gas/oil ratio, oil  
20 production, and water production. I would like to call  
21 your note to the water production curve. The scale that  
22 applies to the water production is on the righthand side  
23 of this curve. This means that the average water production  
24 is less than 10 barrels per day, whereas the oil production  
25 is in the range of 290 barrels per day; the gas/oil ratio

100

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

[illegible]

1 is a little over 1200 cubic feet per barrel.

2 Continuing, the effective pay was estimated at  
3 18 feet. The porosity is estimated at 11.3 percent and  
4 average permeability of 1 to 2 md. The original oil in  
5 place was approximately 7,000,000 barrels and the ultimate  
6 primary recovery is estimated to be 1,000,000 barrels, or  
7 14.4 percent of the original oil in place.

8 It is estimated that the proposed unitization  
9 and water injection project will recover an additional  
10 1,000,000 barrels of oil that would not be recovered under  
11 primary means. Total recovery, primary plus secondary,  
12 is calculated to be 2,000,000 barrels with approximately  
13 29 percent of the oil in place.

14 Q Mr. Frazier made reference to tract partici-  
15 pation and the factors taken into consideration for the  
16 purpose of establishing those factors, would you elaborate  
17 on the participation a little more?

18 A All right. The tract participation was divided  
19 into two periods.

20 Q That's what you call Phase One and Two?

21 A Phase One and Phase Two. Phase One was 50  
22 percent primary reserves and current production. The  
23 primary reserves were determined by extrapolation of pri-  
24 mary decline curves and the current rate was for the period  
25 mentioned in the Unit Agreement.



1 Q In view of the history which you have developed  
2 by actual operation with respect to the North Vacuum Abo  
3 Unit, what would you anticipate by way of performance for  
4 the proposed unit?

5 A Well, as I mentioned, I would anticipate a  
6 recovery of an additional 1,000,000 barrels of oil, which  
7 is more or less equal to the primary recovery.

8 Q Would you describe for the record the plan of  
9 operation which is proposed mechanically for the operation  
10 of the unit? Proposed unit?

11 A Yes, sir. I'm sorry, but I forgot to mention  
12 one thing that I think is pertinent, and that's what we  
13 call our Exhibit Number Eight. This is the performance  
14 curve of the existing North Vacuum Abo Unit. I would like  
15 to discuss this very briefly to show that the current  
16 production now exceeds the primary production in this unit  
17 area. That's a little over 4000 barrels per day, whereas  
18 the peak primary from this area was averaged in the range  
19 of 3500 barrels per day. The gas/oil ratio, which is the  
20 curve with little circles, has shown a classic decrease  
21 and is currently approximately 600 cubic feet per barrel,  
22 and our produced water is a little over 80 barrels per  
23 day, which is substantially less than what was produced  
24 under primary, after injection of a little over 14-1/2  
25 million barrels of water.

The first thing I noticed when I stepped out of the car was the  
 cold, crisp air. It felt like a fresh blanket after a long, hot  
 summer. I took a deep breath and smiled. This was it. The  
 beginning of a new adventure. I had heard so much about the  
 beauty of the mountains, but nothing could prepare me for the  
 sheer majesty of the peaks ahead. The sun was just  
 rising, painting the sky in shades of orange and pink. The  
 mountains were still shrouded in a light mist, giving them a  
 dreamlike quality. I walked along the path, my boots crunching  
 on the dry leaves. The silence was perfect. No cars, no  
 phones, just the sound of my own breath and the rustle of the  
 trees. I had found a piece of paradise.

THE  
 END  
 OF  
 THE  
 WORLD

1 Q Well, do I understand from that that you anti-  
2 cipate excellent results from the introduction of the pro-  
3 posed plan of operation into the East Unit area?

4 A Yes, sir, we hope that it would perform as  
5 well on a comparable size basis.

6 Q Now, describe for us the pattern, the injection  
7 pattern, that you expect to use, the source of water for  
8 the purpose of injection, the disposition of produced  
9 water, and those relevant matters pertaining to the plan  
10 of operation.

11 A Mobil plans to initiate a 5-spot water injection  
12 program using Ogallala water similar to our North Vacuum  
13 Abo project.

14 Ogallala water will be obtained from Mobil  
15 wells on the Bridges-State lease under permits authorizing  
16 usage of 1200 acre feet per year, or 25,500 barrels per  
17 day. At a later date we may consider injection of CO<sub>2</sub>  
18 or other substances. Initially, we plan to inject approxi-  
19 mately 500 barrels per day per well and we anticipate a  
20 maximum injection pressure later in the project life of  
21 4800 psi, which is below the estimated frac pressure.

22 This is in line with performance of our off-  
23 setting North Vacuum Abo Unit, which is currently oper-  
24 ating at wellhead pressures of 3700 to 4500 psi. Step  
25 rate tests that we have performed indicate that the cur-





1 rent frac pressures range from 4250 psi to 5000 psi at  
2 the North Vacuum Abo Unit.

3 Q Have you prepare an exhibit, which I believe  
4 is marked Nine, which --

5 A I believe that's Eleven?

6 Q I believe -- yeah, the step rate tests are  
7 reflected in Eleven.

8 A Right.

9 Q Yeah, refer to Eleven. I was a little out of  
10 order but I don't think it will make any difference.

11 A Exhibit Eleven is information concerning step  
12 rate tests that we've run in the Abo project supporting  
13 the maximum injection pressure of 4800 psi. The first  
14 curve behind the written work that shows more or less  
15 two parallel lines and a series of circles connected by  
16 lines, is an average by time period of the step rate tests  
17 that we've conducted within the project. For example,  
18 during the latter part of 1973 the average of our step  
19 rate tests for frac pressure indication varied from a low  
20 of around, oh, 3300 psi to a high of 3800 psi, and at each  
21 time period thereon, you can notice that these curves  
22 generally increased. The point I'm trying to make is  
23 that frac pressure increases with fill-up. As we continue  
24 to inject and put additional water in the ground, our  
25 frac pressure measurements continued to increase.

$\mathcal{L}(\mathbf{y}|\mathbf{X}) = \prod_{i=1}^n \mathcal{L}(y_i|\mathbf{X}_i)$

[illegible]

Figure 1. The effect of the concentration of the *Ag* on the *Ag* adsorption capacity of the *Ag*-*Ag*2S-*Ag*2S2O3-*Ag*2S2O4-*Ag*2S2O6-*Ag*2S2O8-*Ag*2S2O10-*Ag*2S2O12-*Ag*2S2O14-*Ag*2S2O16-*Ag*2S2O18-*Ag*2S2O20-*Ag*2S2O22-*Ag*2S2O24-*Ag*2S2O26-*Ag*2S2O28-*Ag*2S2O30-*Ag*2S2O32-*Ag*2S2O34-*Ag*2S2O36-*Ag*2S2O38-*Ag*2S2O40-*Ag*2S2O42-*Ag*2S2O44-*Ag*2S2O46-*Ag*2S2O48-*Ag*2S2O50-*Ag*2S2O52-*Ag*2S2O54-*Ag*2S2O56-*Ag*2S2O58-*Ag*2S2O60-*Ag*2S2O62-*Ag*2S2O64-*Ag*2S2O66-*Ag*2S2O68-*Ag*2S2O70-*Ag*2S2O72-*Ag*2S2O74-*Ag*2S2O76-*Ag*2S2O78-*Ag*2S2O80-*Ag*2S2O82-*Ag*2S2O84-*Ag*2S2O86-*Ag*2S2O88-*Ag*2S2O90-*Ag*2S2O92-*Ag*2S2O94-*Ag*2S2O96-*Ag*2S2O98-*Ag*2S2O100-*Ag*2S2O102-*Ag*2S2O104-*Ag*2S2O106-*Ag*2S2O108-*Ag*2S2O110-*Ag*2S2O112-*Ag*2S2O114-*Ag*2S2O116-*Ag*2S2O118-*Ag*2S2O120-*Ag*2S2O122-*Ag*2S2O124-*Ag*2S2O126-*Ag*2S2O128-*Ag*2S2O130-*Ag*2S2O132-*Ag*2S2O134-*Ag*2S2O136-*Ag*2S2O138-*Ag*2S2O140-*Ag*2S2O142-*Ag*2S2O144-*Ag*2S2O146-*Ag*2S2O148-*Ag*2S2O150-*Ag*2S2O152-*Ag*2S2O154-*Ag*2S2O156-*Ag*2S2O158-*Ag*2S2O160-*Ag*2S2O162-*Ag*2S2O164-*Ag*2S2O166-*Ag*2S2O168-*Ag*2S2O170-*Ag*2S2O172-*Ag*2S2O174-*Ag*2S2O176-*Ag*2S2O178-*Ag*2S2O180-*Ag*2S2O182-*Ag*2S2O184-*Ag*2S2O186-*Ag*2S2O188-*Ag*2S2O190-*Ag*2S2O192-*Ag*2S2O194-*Ag*2S2O196-*Ag*2S2O198-*Ag*2S2O200-*Ag*2S2O202-*Ag*2S2O204-*Ag*2S2O206-*Ag*2S2O208-*Ag*2S2O210-*Ag*2S2O212-*Ag*2S2O214-*Ag*2S2O216-*Ag*2S2O218-*Ag*2S2O220-*Ag*2S2O222-*Ag*2S2O224-*Ag*2S2O226-*Ag*2S2O228-*Ag*2S2O230-*Ag*2S2O232-*Ag*2S2O234-*Ag*2S2O236-*Ag*2S2O238-*Ag*2S2O240-*Ag*2S2O242-*Ag*2S2O244-*Ag*2S2O246-*Ag*2S2O248-*Ag*2S2O250-*Ag*2S2O252-*Ag*2S2O254-*Ag*2S2O256-*Ag*2S2O258-*Ag*2S2O260-*Ag*2S2O262-*Ag*2S2O264-*Ag*2S2O266-*Ag*2S2O268-*Ag*2S2O270-*Ag*2S2O272-*Ag*2S2O274-*Ag*2S2O276-*Ag*2S2O278-*Ag*2S2O280-*Ag*2S2O282-*Ag*2S2O284-*Ag*2S2O286-*Ag*2S2O288-*Ag*2S2O290-*Ag*2S2O292-*Ag*2S2O294-*Ag*2S2O296-*Ag*2S2O298-*Ag*2S2O300-*Ag*2S2O302-*Ag*2S2O304-*Ag*2S2O306-*Ag*2S2O308-*Ag*2S2O310-*Ag*2S2O312-*Ag*2S2O314-*Ag*2S2O316-*Ag*2S2O318-*Ag*2S2O320-*Ag*2S2O322-*Ag*2S2O324-*Ag*2S2O326-*Ag*2S2O328-*Ag*2S2O330-*Ag*2S2O332-*Ag*2S2O334-*Ag*2S2O336-*Ag*2S2O338-*Ag*2S2O340-*Ag*2S2O342-*Ag*2S2O344-*Ag*2S2O346-*Ag*2S2O348-*Ag*2S2O350-*Ag*2S2O352-*Ag*2S2O354-*Ag*2S2O356-*Ag*2S2O358-*Ag*2S2O360-*Ag*2S2O362-*Ag*2S2O364-*Ag*2S2O366-*Ag*2S2O368-*Ag*2S2O370-*Ag*2S2O372-*Ag*2S2O374-*Ag*2S2O376-*Ag*2S2O378-*Ag*2S2O380-*Ag*2S2O382-*Ag*2S2O384-*Ag*2S2O386-*Ag*2S2O388-*Ag*2S2O390-*Ag*2S2O392-*Ag*2S2O394-*Ag*2S2O396-*Ag*2S2O398-*Ag*2S2O400-*Ag*2S2O402-*Ag*2S2O404-*Ag*2S2O406-*Ag*2S2O408-*Ag*2S2O410-*Ag*2S2O412-*Ag*2S2O414-*Ag*2S2O416-*Ag*2S2O418-*Ag*2S2O420-*Ag*2S2O422-*Ag*2S2O424-*Ag*2S2O426-*Ag*2S2O428-*Ag*2S2O430-*Ag*2S2O432-*Ag*2S2O434-*Ag*2S2O436-*Ag*2S2O438-*Ag*2S2O440-*Ag*2S2O442-*Ag*2S2O444-*Ag*2S2O446-*Ag*2S2O448-*Ag*2S2O450-*Ag*2S2O452-*Ag*2S2O454-*Ag*2S2O456-*Ag*2S2O458-*Ag*2S2O460-*Ag*2S2O462-*Ag*2S2O464-*Ag*2S2O466-*Ag*2S2O468-*Ag*2S2O470-*Ag*2S2O472-*Ag*2S2O474-*Ag*2S2O476-*Ag*2S2O478-*Ag*2S2O480-*Ag*2S2O482-*Ag*2S2O484-*Ag*2S2O486-*Ag*2S2O488-*Ag*2S2O490-*Ag*2S2O492-*Ag*2S2O494-*Ag*2S2O496-*Ag*2S2O498-*Ag*2S2O500-*Ag*2S2O502-*Ag*2S2O504-*Ag*2S2O506-*Ag*2S2O508-*Ag*2S2O510-*Ag*2S2O512-*Ag*2S2O514-*Ag*2S2O516-*Ag*2S2O518-*Ag*2S2O520-*Ag*2S2O522-*Ag*2S2O524-*Ag*2S2O526-*Ag*2S2O528-*Ag*2S2O530-*Ag*2S2O532-*Ag*2S2O534-*Ag*2S2O536-*Ag*2S2O538-*Ag*2S2O540-*Ag*2S2O542-*Ag*2S2O544-*Ag*2S2O546-

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

1 MR. NUTTER: Why?

2 A This is customary. This is typical reservoir  
3 performance. The frac pressure under a depleted condition  
4 is much lower than the frac pressure under initial condi-  
5 tions.

6 MR. NUTTER: Why would this happen?

7 A The reservoir, when you inject water, you  
8 build a bubble of water around that injection well. You  
9 provide it with a reservoir pressure, and this pressure  
10 in turn pushes back, is a resistance, so the frac pressure  
11 determined under depleted conditions is not the same value  
12 as the frac pressure determined under initial conditions  
13 or under partial fill-up conditions, as you conduct your  
14 injection program.

15 MR. NUTTER: I'll have to think about that.

16 A The next curve, which shows a typical step  
17 rate test conducted on our North Vacuum Abo Unit No. 220.  
18 The point I'd like to show on this is rate increases with  
19 pressure linearally in the first part of the curve but  
20 at the point of intersection you can see that the rate  
21 continues to increase but there's only a very, very shallow  
22 increase in pressure. This means that we have exceeded  
23 the capability of the rock to contain the water and it  
24 is parted. So the intercept there represents the frac  
25 pressure determination in Well 220 at that point in time,

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1 which was December, 1975. We estimate the frac pressure  
2 to be 4150 psi.

3 The next curve is on Well 159. As you will  
4 note on the lower curve on the test dated 6-20-74, after  
5 I don't know exactly how many barrels of water injected,  
6 we determined that the frac pressure was 3500 psi surface  
7 wellhead duty. The curve above on a test some six months  
8 later, which is dated 12-3-75, we see no break in the  
9 curve, at approximately the same injection rates. There-  
10 fore, the only thing that we could conclude, since there  
11 is no break in the curve, it's linear, that the frac pres-  
12 sure is somewhat above the final pressure reading of 3950  
13 psi, meaning that in that six-month interval our frac  
14 pressure has increased approximately 450 pounds on the  
15 same well through nothing more than fill-up in our reser-  
16 voir.

17 Q Is that -- are those tests the basis for your  
18 conclusion that with injection that the frac pressures  
19 increase?

20 A Yes, sir.

21 Q Do you have anything further to add with re-  
22 spect to Exhibit Nine?

23 A You mean Eleven?

24 Q I mean Eleven.

25 A Yes, sir, I do. I'd like to point out that



1 in view of our very successful flood, if we are limited  
2 to a .2 psi per foot surface pressure measurement, or ap-  
3 proximately 1750 psi, it is doubtful that we will be able  
4 to inject water after about two months of operation.

5 Q Now are you making reference to Memo Number  
6 3-77 dated August 24, 1977, from the Commission to operators  
7 and attorneys?

8 A Yes, sir, I am.

9 Q Okay. Which appears to place some restraint  
10 upon surface injection pressures.

11 A Yes, sir.

12 Q And your testimony is that with respect to  
13 the proposed project, that is the East Abo Unit project,  
14 that you require relief from the requirements set forth  
15 in that memo?

16 A Yes, sir, we request it.

17 Continuing on our plan of operation, injection  
18 in a typical well will be through corrosion-resistant  
19 lined tubing below a mechanical packer. The annulus will  
20 be filled with treated fresh water and a pressure relief  
21 valve will be installed on the casing at the surface.  
22 Sketches of all wellbores penetrating the Abo within one-  
23 half mile of the proposed injectors in the project are  
24 shown on Exhibit Number Nine.

25 Q Now to complete the description of exhibits,





1 would you refer now to what's been marked as Exhibit Number  
2 Ten and explain the information contained in that exhibit  
3 and its purpose?

4 A Yes, sir, Exhibit Ten is a tabulation of the  
5 wells shown in graphic form in Exhibit Nine and does show  
6 the casing size, setting depths, volume of cement, cement  
7 tops, et cetera. It's the same information in tabular  
8 form.

9 Q Okay. What do you propose with respect to  
10 the disposition of produced water?

11 A We plan to dispose of our produced water  
12 through Mobil's waterflood project in the Vacuum-Grayburg-  
13 San Andres.

14 Q Do you have recommendations to make to the  
15 Commission with respect to the application and the proposed  
16 unit project?

17 A Yes, sir. Mobil Oil Corporation respectfully  
18 asks the Commission for the following:

19 Number 1. Approval of the North Vacuum Abo  
20 East Unit Agreement.

21 2, Approval of the plan of operation to inject  
22 fluids into the Abo formation to the five wells described  
23 in Exhibit Two at pressures not to exceed the lessor of  
24 4800 psi of wellhead pressure or frac pressure.

25 Number 3, an allowable formula to be fixed by

1950

The first of the two main parts of the book is devoted to a study of the history of the English language. The author begins with a discussion of the early history of the language, and then proceeds to a detailed study of the changes which have taken place in the language since the time of the Norman Conquest. The second part of the book is devoted to a study of the grammar of the English language. The author begins with a discussion of the basic principles of grammar, and then proceeds to a detailed study of the various parts of speech and the various grammatical constructions which are used in the English language.

The third part of the book is devoted to a study of the literature of the English language. The author begins with a discussion of the early literature of the language, and then proceeds to a detailed study of the various literary movements and the various literary works which have been produced in the English language. The fourth part of the book is devoted to a study of the history of the English language. The author begins with a discussion of the early history of the language, and then proceeds to a detailed study of the changes which have taken place in the language since the time of the Norman Conquest.

The fifth part of the book is devoted to a study of the grammar of the English language. The author begins with a discussion of the basic principles of grammar, and then proceeds to a detailed study of the various parts of speech and the various grammatical constructions which are used in the English language. The sixth part of the book is devoted to a study of the literature of the English language. The author begins with a discussion of the early literature of the language, and then proceeds to a detailed study of the various literary movements and the various literary works which have been produced in the English language.

1 the Commission to provide for a maximum daily unit allowable  
2 not to exceed the number of 80-acre proration units times  
3 the daily top unit allowable set for the wells in the North  
4 Vacuum Abo Pool; such unit allowable may be produced from  
5 any well or wells in the project area in any proportion.

6 4, Establishment of an administrative procedure, whereby the Commission may authorize the completion  
7 of the second producing well on the 80-acre proration  
8 units at unorthodox locations within said unit providing  
9 such wells are located no closer than 467 feet from the  
10 outer unit boundary, nor closer than 10 feet to any  
11 quarter quarter section or subdivision inner boundary.

12 In explanation of this, the 80-acre spacing  
13 in the large pattern areas, 160-acre 5-spot, coupled with  
14 low permeability of the reservoir and its effect on pro-  
15 ject response, may make it necessary in this area to in-  
16 fill drill producers in certain areas of the project.  
17 We're not prepared to say which area yet may require this,  
18 but it quite well may require it.

19  
20 MR. NUTTER: Have you done any infill drilling  
21 in the North Vacuum Unit?

22 A. Yes, sir, we have.

23 Number 5. That the project area be fixed as  
24 the total area within the boundaries of the said North  
25 Vacuum Abo East Unit as described in this application and

the fact that the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This is a well-known result in the theory of numerical methods for partial differential equations. The  $\mathcal{H}^1$ -norm is a measure of the error in the solution, and it is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This result is important because it shows that the numerical solution is stable and accurate.

The next step is to show that the numerical solution is stable. This is done by showing that the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This is a well-known result in the theory of numerical methods for partial differential equations. The  $\mathcal{H}^1$ -norm is a measure of the error in the solution, and it is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This result is important because it shows that the numerical solution is stable and accurate.

The final step is to show that the numerical solution is accurate. This is done by showing that the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This is a well-known result in the theory of numerical methods for partial differential equations. The  $\mathcal{H}^1$ -norm is a measure of the error in the solution, and it is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This result is important because it shows that the numerical solution is stable and accurate.

In conclusion, the numerical solution is stable and accurate. This is shown by the fact that the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution is bounded by the  $\mathcal{H}^1$ -norm of the difference between the exact solution and the numerical solution. This result is important because it shows that the numerical solution is stable and accurate.

1 with further provisions that the project area may be ex-  
2 panded administratively by the Commission upon meeting  
3 the conditions set forth by the Commission.

4 Q Is the allowable formula suggested in your  
5 recommendation the same as or at variance with that which  
6 is established for the North Vacuum Abo Unit?

7 A To my knowledge, it's the same.

8 Q Do you have an opinion, Mr. Hankinson, as to  
9 whether or not the granting of the application in these  
10 cases will be in the interests of conservation, will prevent  
11 waste, and will protect correlative rights of the operators  
12 in the area?

13 A Yes, sir, we believe it will.

14 MR. SPERLING: At this time I'd like to offer  
15 Exhibits One through Eleven.

16 MR. NUTTER: Mobil Exhibits One through Eleven  
17 will be admitted in evidence.

18  
19 CROSS EXAMINATION

20 BY MR. NUTTER:

21 Q Mr. Hankinson, I missed writing the figures  
22 down when you were giving the estimated primary and  
23 secondary and total ultimate, and so forth.

24 A All right.

25 Q Would you repeat those figures again, please?



1 A Yes, sir, I will.

2 The estimated primary ultimate is 1,000,000,  
3 or approximately 14.4 percent of the oil in place. I  
4 estimate the secondary recovery, or rather pressure main-  
5 tenance recovery, to be an additional 1,000,000 barrels.  
6 Therefore the primary plus secondary would be 2,000,000  
7 barrels, or approximately 29 percent of the original oil  
8 in place.

9 Q Well, if I'd known they were good round numbers  
10 like this -- I had the 29 percent. That's all I had.

11 Okay, now, Mr. Hankinson, on these frac pres-  
12 sures, if you refer to your Exhibit Number Eleven, we see  
13 that the second paragraph states there that present frac  
14 pressure ranges from 4250 to 5000 psig. Now, I understand  
15 that some of this variation is due to the interval of  
16 time in which these tests were taken because, as you show  
17 in your exhibits, the frac pressure seems to go up with  
18 time and fill-up.

19 A Uh-huh.

20 Q However, there is a variation, is there not,  
21 in the reservoir at a given time? I mean every well  
22 doesn't have the same frac pressure, does it?

23 A No, sir, not all -- not exactly the same.

24 Q Well, don't you think that the Commission  
25 should restrict the injection pressures to the frac pressure



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be carefully documented to ensure the integrity of the financial data. This includes recording dates, amounts, and the nature of the transactions.

The second part of the document provides a detailed breakdown of the company's revenue streams. It identifies the primary sources of income and analyzes their contribution to the overall financial performance. This section also includes a comparison of current revenue trends with historical data to identify patterns and growth opportunities.

The third part of the document focuses on the company's expenses and costs. It details the various categories of expenditures, from operational costs to capital investments. The analysis highlights areas where costs can be optimized and suggests strategies for reducing unnecessary expenses while maintaining the quality of services.

The fourth part of the document presents a comprehensive overview of the company's financial position. It includes a summary of the balance sheet, income statement, and cash flow statement. This section also provides a clear picture of the company's liquidity, solvency, and overall financial health.

The fifth part of the document discusses the company's future financial outlook. It outlines the projected revenue and expenses for the upcoming period, taking into account various market factors and internal developments. This section also includes a risk assessment and a contingency plan to address potential challenges.

The sixth part of the document provides a detailed analysis of the company's debt obligations. It lists all outstanding loans and interest payments, and evaluates the company's ability to service its debt. This section also discusses the terms and conditions of the debt agreements and the impact of interest rate fluctuations.

The seventh part of the document focuses on the company's tax compliance. It details the various tax obligations and provides a summary of the company's tax payments. This section also includes a review of the company's tax strategies and suggestions for optimizing its tax position.

The eighth part of the document provides a final summary of the company's financial performance. It reiterates the key findings from the previous sections and provides a clear conclusion regarding the company's financial health and future prospects. This section also includes a list of recommendations for improving the company's financial management.

The document is a confidential financial report and should be handled accordingly. It contains sensitive information that is not to be shared with unauthorized personnel.

1 that's indicated in an area by the lowest pressure of any  
2 well?

3 I mean that's the breakdown pressure for the  
4 formation at some point in that reservoir around there.

5 A No, sir, I don't. I think our proposal ac-  
6 complishes what you're trying to get at, in that if we  
7 set a pressure that we've determined by actual tests or --  
8 which is this 4800 psi -- or the lessor as determined by  
9 frac pressure -- individual frac pressure tests.

10 Q You'd take a frac pressure test on every single  
11 well, then?

12 A Yes, sir, we do.

13 As you might note, our water production in  
14 the North Vacuum Abo Unit, after approximately five years  
15 of operation is 81 barrels per day.

16 Q Uh-huh, and with 14,000,000 barrels --

17 A After 14-1/2 million. We're most concerned  
18 about fracturing that reservoir and have attempted to  
19 operate at all times under frac pressure so that the  
20 water injected is confined to the Abo and does its job  
21 of displacing oil to our Abo producers.

22 Q Well, you've got such wide spacing there, it's  
23 obvious that you haven't had the complete sweep of the  
24 reservoir and one of these days you will be producing  
25 more than 80 barrels out of those wells.

Level of Difficulty	Condition A (%)	Condition B (%)	Condition C (%)	Condition D (%)
1	85	75	65	55
2	75	65	55	45
3	70	60	50	40
4	65	60	55	45

[illegible]

10

A. Yes, sir, absolutely, but the point I'm trying to make, I guess, is if we were fracturing these wells, one of the best things that -- not the best things, but best indicators of fracturing is rather imminent water production in one of the offset wells.

Q Or breakthrough sometimes in an inside well.

A. Yes, right.

Q And you've experienced no breakthrough in any of the wells --

A. No, sir.

Q --in that other unit.

A. No, sir. It's our calculation both from hand calculations and from simulator studies that we have very well controlled volumetric flood that is doing what it should do.

Q I know the responses given on Exhibit Eight has been rather gratifying.

A. Yes, sir, it has.

Q. Those proposed rules that you had for the operation of the project, are they contained in any of these things you submitted to us here today?

A. Yes, sir, they are. Now, with the exception of a little amendment on Item Two.

Q. What are they in?

MR. SPERLING: No, they haven't been. We



1 propose to do that, right.

2 A I stand corrected.

3 MR. SPERLING: We were going to leave a copy  
4 of that with the reporter for the purpose of her being  
5 assured that she got all of this.

6 MR. NUTTER: I'd like to have a copy of it.

7 MR. SPERLING: Sure, we can certainly do  
8 that.

9 MR. NUTTER: Are there any other questions  
10 of the witness? Mr. Kellahin?

11  
12 CROSS EXAMINATION

13 BY MR. KELLAHIN:

14 Q Mr. Hankinson, you testified a moment ago  
15 about one of the similarities between the unit agreement  
16 for the North Vacuum Abo and the North Vacuum East Abo,  
17 with regards to assignment of allowables.

18 Are the two unit agreements materially dif-  
19 ferent in any respect, and if so, what are they?

20 MR. FRAZIER: As far as -- may I answer that?

21 MR. NUTTER: Yes, sir. The record will show  
22 that Mr. Frazier is answering that.

23 MR. FRAZIER: Essentially there is no differ-  
24 ence between -- there's probably some difference in wording  
25 but the -- basically they're practically the same.

2000

Q Let me ask you, Mr. Hankinson, on one of your exhibits you've shown the wells in both the existing unit and the proposed new unit. If you'll locate one of those for yourself.

A Are any of the wells in the proposed new unit receiving any response from wells in the existing unit, and if so, which ones?

A I believe there is some degree of response indicated on the Mobil well which is called the State JJ No. 1.

Q In the northwest corner?

A Which would be proration unit H, J, --

Q L.

A -- K, L. Seven-L.

Q Do you know how much response it's receiving?

A No, sir, I don't have that well curve in front of me, but it is receiving some response.

Q All right. Do you have any recollection of an approximate amount of response it's receiving from the offset unit?

A Not specifically. I'd hate to give you a number and that not be correct.

Q Could you furnish that to us when you get the curve?

A I certainly will.



1 Q I'd appreciate that. In addition to that one  
2 well are there any other wells that are receiving responses  
3 from the existing unit?

4 A I think I'd have to refer to the production  
5 curve. There may have been more than one along that edge,  
6 but as I remember, that was the only well of any signi-  
7 ficance, where you might say there was any significant  
8 amount of oil.

9 Since Mr. Rainey is in Midland, it's quite  
10 possible that we could send production curves directly to  
11 him of those offset wells, if you would wish.

12 Q I'd appreciate it. I'd appreciate that, Mr.  
13 Hankinson, that would be just fine.

14 A All right.

15 Q Let me ask you this about your methods for  
16 calculating the participation factors on the new unit.

17 Is your method for conducting or calculating  
18 those participation factors any different from the method  
19 used to determine the participation factors on the  
20 existing unit?

21 A Method, no, formula, yes.

22 Q All right. Tell me what different formulas  
23 were used for each.

24 A Well, as you mentioned, from your own testimony,  
25 that there was 65 percent net pore volume, 17-1/2 percent,

1 and so on, whereas, in this we've testified that Phase One  
2 is 50 percent primary reserves, 50 percent current pro-  
3 duction, and Phase Two is 100 percent alternate primary.

4 Q Why did you not use the same method as in the  
5 existing unit?

6 A Because our control, our log control, the  
7 status of being more towards the edge of the reservoir,  
8 possibly higher water saturation, indicated to engineering  
9 that it may be more desireable to go on an ultimate primary  
10 basis as an indicator of secondary rather than something  
11 indicating pore volume.

12 Q Would that cause you to want to change the  
13 method of use for participation in the existing flood  
14 from the pore volume calculation to this other method?

15 A This is why we selected the method. We pre-  
16 pared a number of parameters data, ultimate, primary,  
17 oil in place estimates, and submitted these to the working  
18 interest owners, who in turn negotiated a formula of equity.

19 Q Did you conduct any studies or to your know-  
20 ledge were any studies conducted that would consider the  
21 question of expanding the existing unit to include the  
22 area under consideration for your new unit?

23 A Not complete studies. We have thought of  
24 the idea, and as Mr. Frazier pointed out, the fact that  
25 one unit has made their investment, the production is re-

1       sponding very favorably, whereas, the other unit the  
2       production is down, they haven't made it, would cause a  
3       rather difficult time with regard to obtaining each indi-  
4       vidual's equity on a participation formula.

5           Q       You're talking about in investment adjustment?

6           A       Yes, that and the difference in production  
7       in time. In other words, you have production response,  
8       a significant production response in our present unit.  
9       These people have invested their money and are seeing  
10      response.

11                 The new unit, there is no response. Production  
12      is down. It's under partially depleted primary and the  
13      problems involved in determining equity between those  
14      two areas with those differences we believe would require  
15      considerable more time in order to accomplish the same  
16      purpose than approaching it from a new unit concept.

17           Q       Other than the factor of time, it still could  
18      be economic to expand the existing unit to include the --  
19      expand the existing unit to include the acreage under the  
20      new unit, could it not?

21           A       You put the word "economic" to it, and I am  
22      not prepared to answer that. I do know that because of  
23      the pressures involved in our project the addition of  
24      lines for additional wells may not be feasible to our  
25      present wells, because of limitation of injection lines.



1 In other words, you may have four or five injection wells  
2 on a present injection line. It's physically impossible  
3 without substantial pressure drop to add another three or  
4 four injectors onto it. So I really am not prepared to  
5 agree with your --

6 Q In your opinion will it be more profitable for  
7 Mobil to create a new unit for this acreage as opposed to  
8 including it in an expanded participation in the existing  
9 unit?

10 A We prepared economics on the new unit and it  
11 will be profitable to all the working interest owners.  
12 I have not, as I've stated, I have not prepared economics  
13 of expanding the unit to the original --

14 Q Mobil's been the unit operator of this North  
15 Vacuum Abo Unit from its inception, has it not?

16 A That's correct.

17 Q As the unit operator, would you not think it  
18 your responsibility to conduct such kinds of analyses  
19 to determine whether it's better for expansion of the  
20 existing unit as opposed to creating the new unit? Would  
21 that not be your responsibility as the unit operator?

22 A Yes, I suppose it would be. It calls for a  
23 conclusion, I guess, and we in turn believe that it would  
24 be more advantageous to all concerned to do the method  
25 that we have, which would protect lease lines, people



1 would participate equitably, we came up with a formula  
2 that they could agree with, rather than go through the  
3 expansion problems and sometimes quite lengthy negotiations  
4 required to achieve expansion.

5 Some of the original expansions were necessi-  
6 tated and were brought forth because these people partici-  
7 pated in the original unit concept, but were in the devel-  
8 opment phase and decided by -- voluntarily to keep these  
9 areas out until they were developed, but asked that they  
10 be considered in this unit at a later date. This is  
11 true of that Shell tract.

12 Q The operators and working interest owners of  
13 the new unit all participated in the existing unit.

14 MR. FRAZIER: No, that's not correct.

15 A Not true. Let's see. Elk Oil is not in the  
16 existing unit.

17 Q Are there any other exceptions?

18 A No.

19 Q Which -- what acreage is the Elk Oil acreage?

20 A This would be the -- what is called the Elk  
21 State Com No. 1 and No. 2, located in the south half of  
22 Section 18.

23 Q I see it, okay. You've not made this proposal  
24 or informed the working interest owners of the existing  
25 unit of your desire to create a new unit, have you?





1           A.       This has been published in whatever papers  
2 that all the operators normally subscribe to for information  
3 with regard to the Commission activities.

4           Q       Apart from that notice you've not made any  
5 effort to contact the working interest owners of the  
6 existing unit to propose the possibility, or have them  
7 consider for a vote the possibility of expanding the  
8 existing unit to include any portion of the new unit?

9           A.       No.

10           MR. KELLAHIN: Thank you very much.

11           MR. NUTTER: Are there any other questions  
12 of Mr. Hankinson?

13                   He may be excused. Did you have anything  
14 further, Mr. Sperling?

15           MR. SPERLING: No, sir.

16           MR. NUTTER: Does anyone have anything they  
17 wish to offer in Case Number 6247, 6248, consolidated?

18           MR. KELLAHIN: Move the introduction of  
19 Pennzoil Exhibit One. I believe it's a duplicate of one  
20 of Mr. Sperling's exhibits.

21           MR. NUTTER: It's very close to it. Pennzoil  
22 Exhibit Number One will be admitted in evidence.

23                   Does anyone have anything further to offer in  
24 either of these cases? We'll take the cases under advisement.

25                   (Hearing concluded.)



REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill from my notes taken at the time of the hearing.

Sally Walton Boyd, C.S.R.

SALLY WALTON BOYD  
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I do hereby certify that the foregoing is  
a complete record of the proceedings in  
the Examiner hearing of Case No. 6247-48  
heard by me on 6/7, 1978.

  
Examiner  
New Mexico Oil Conservation Commission

