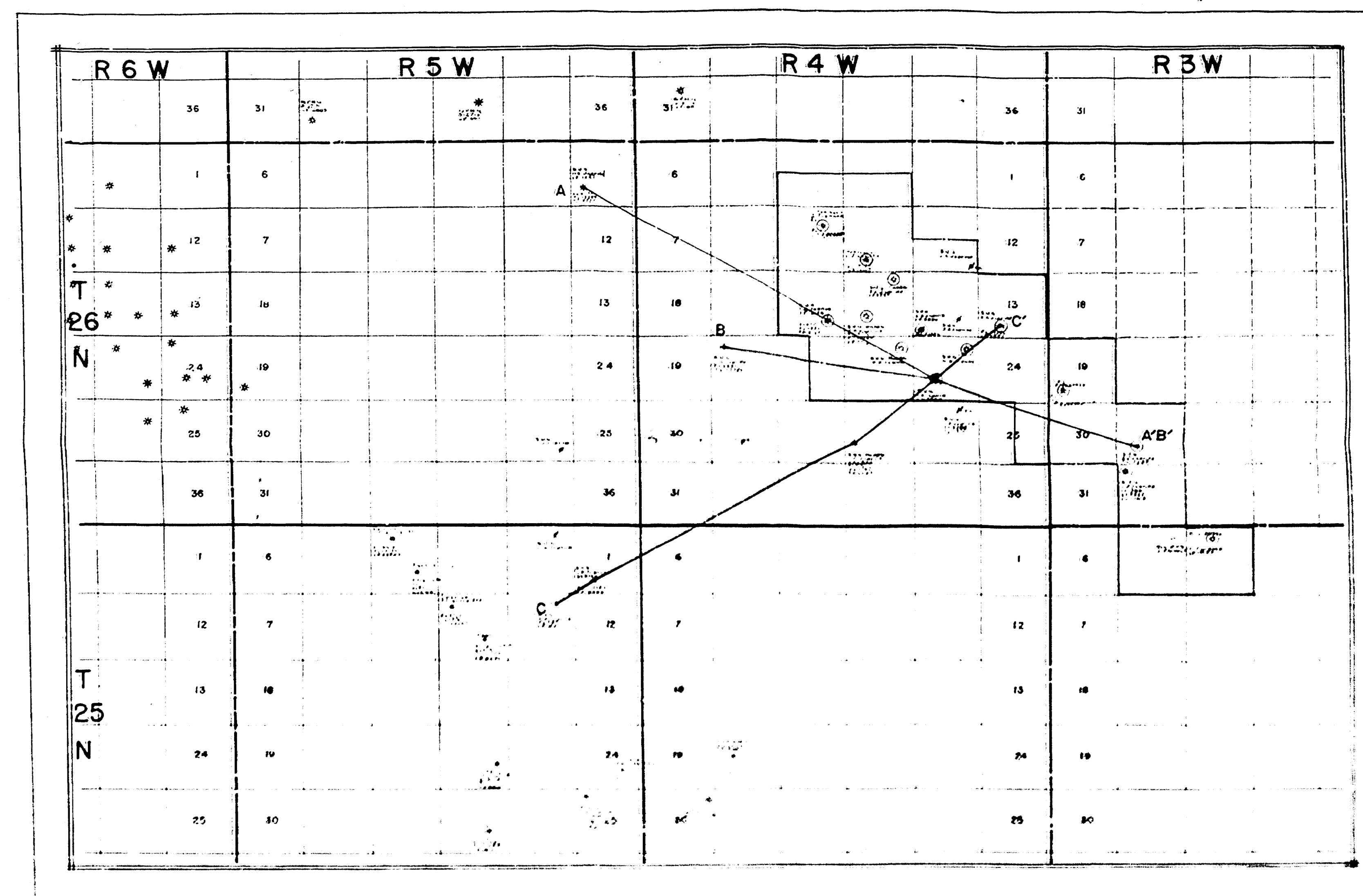
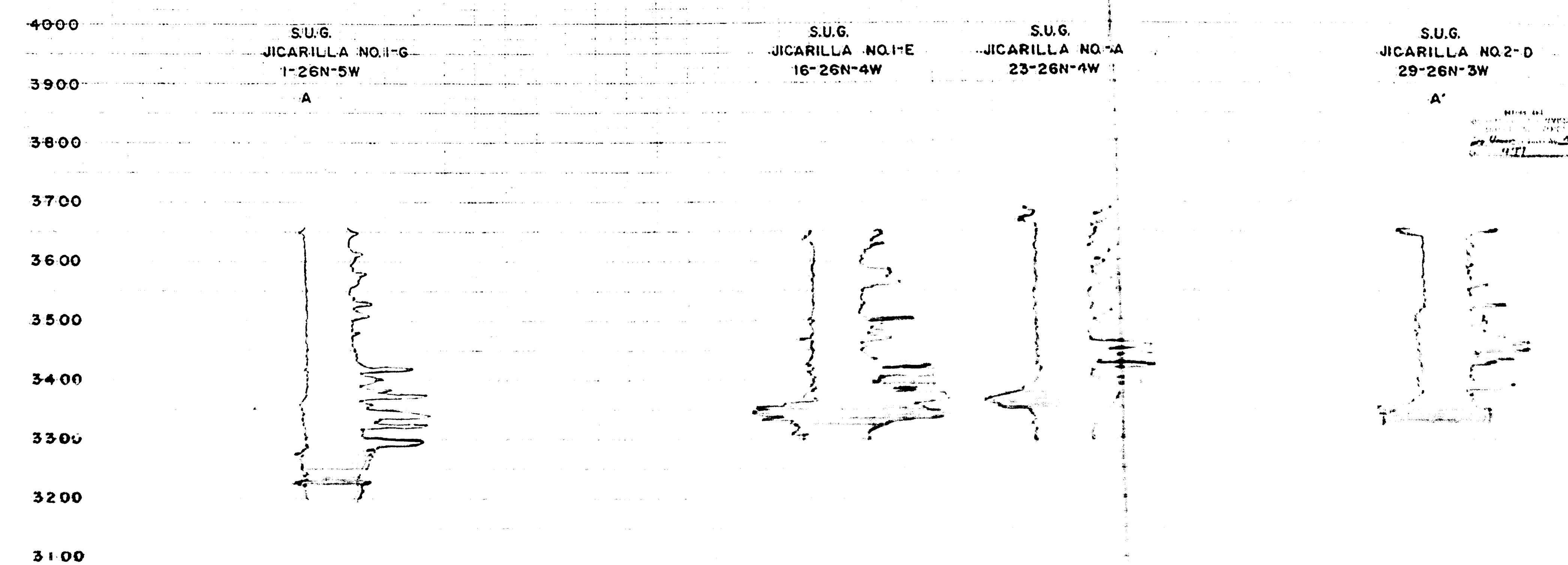
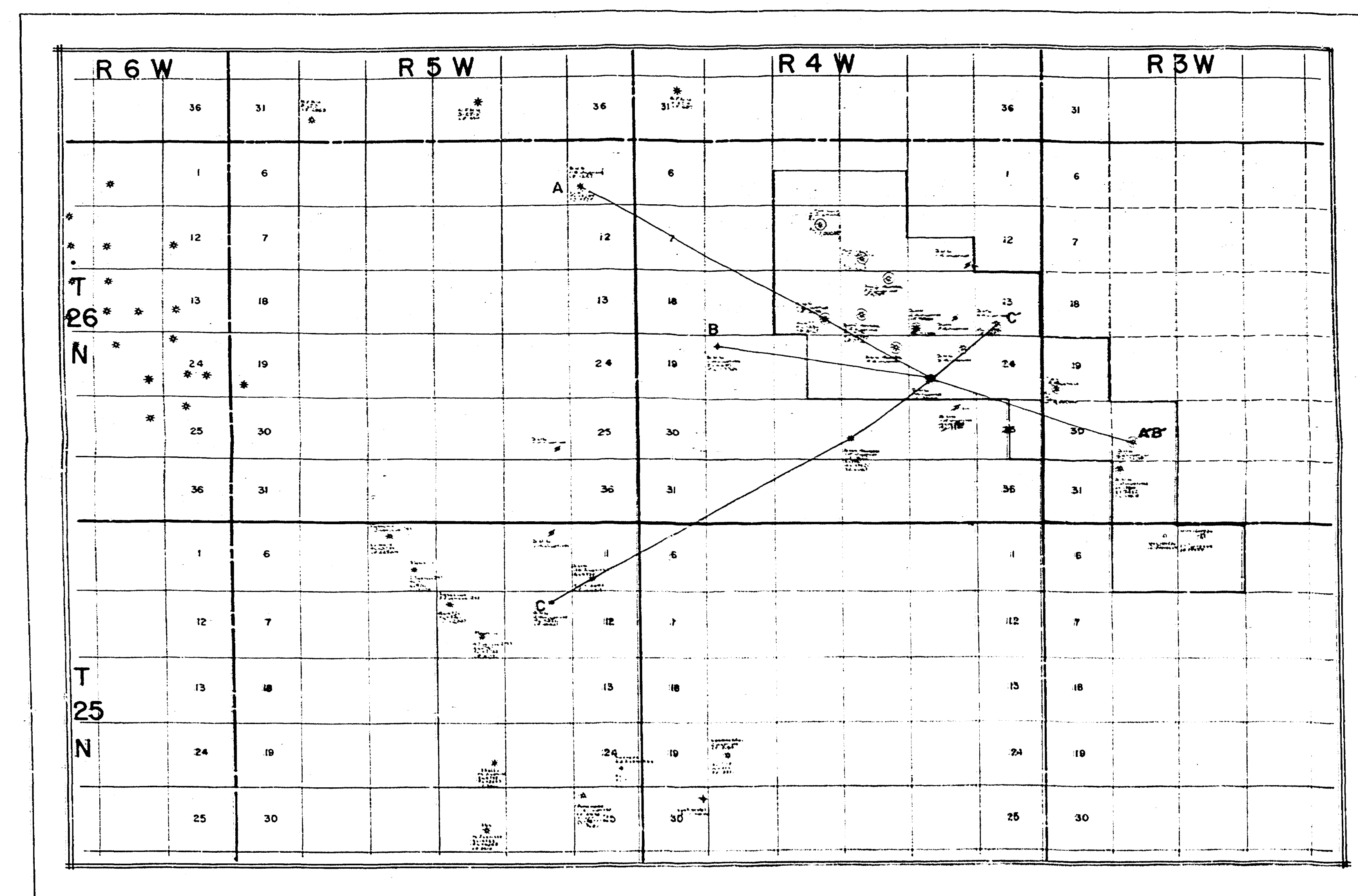


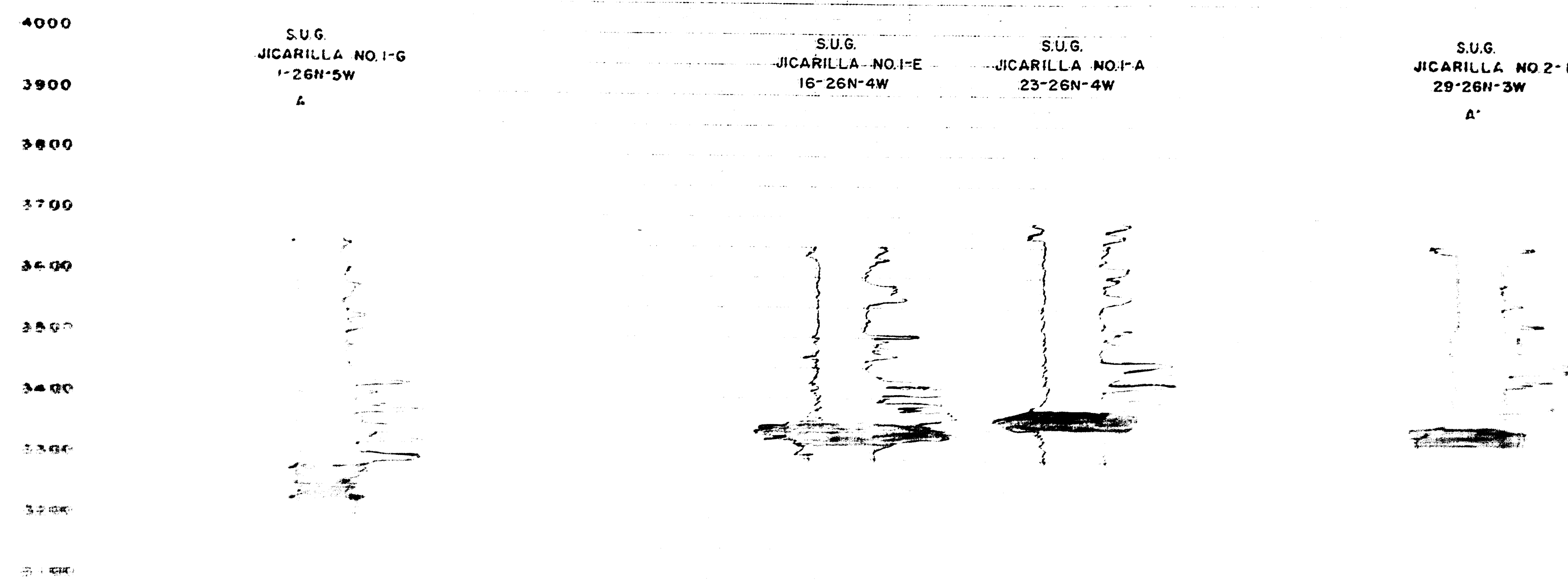
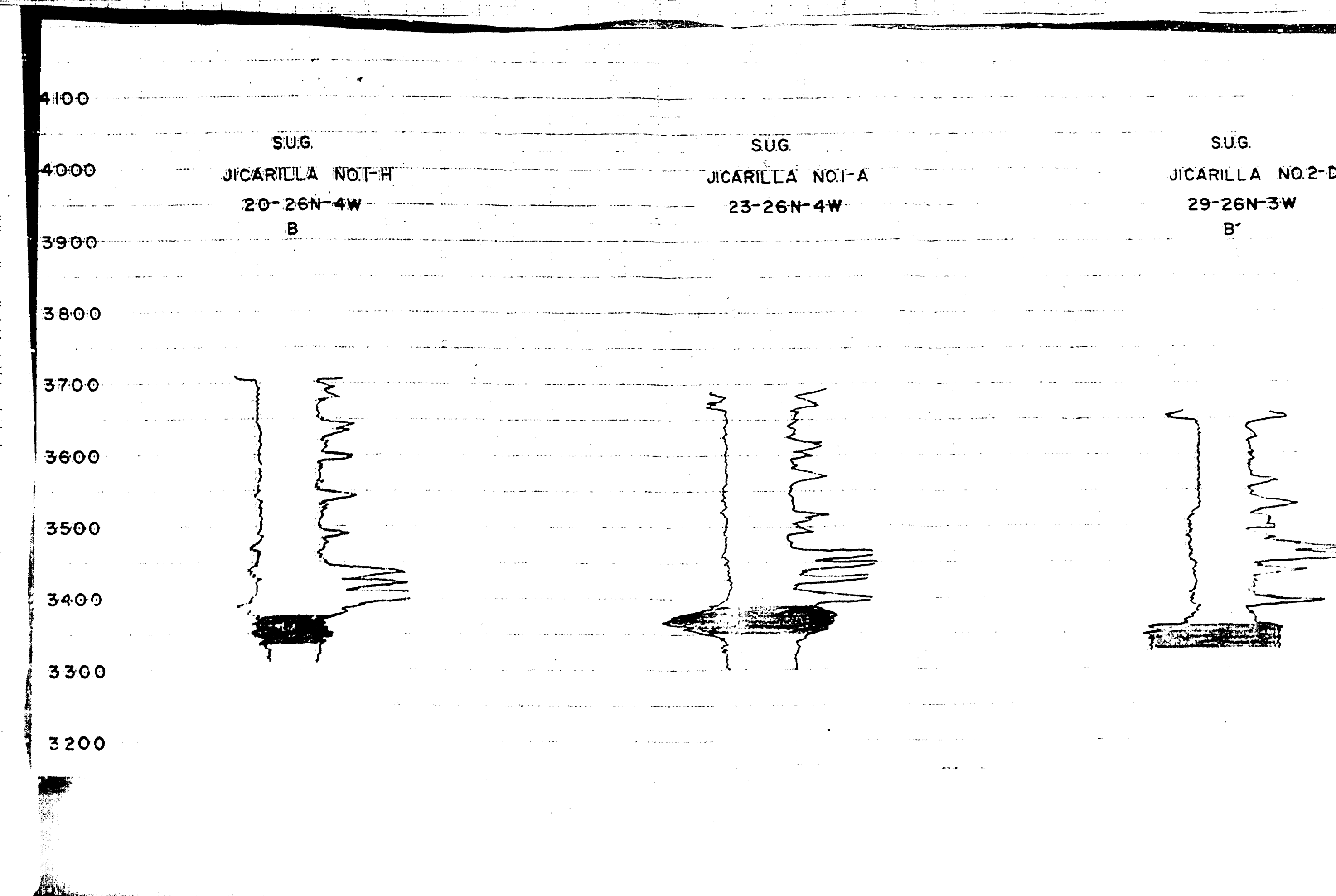
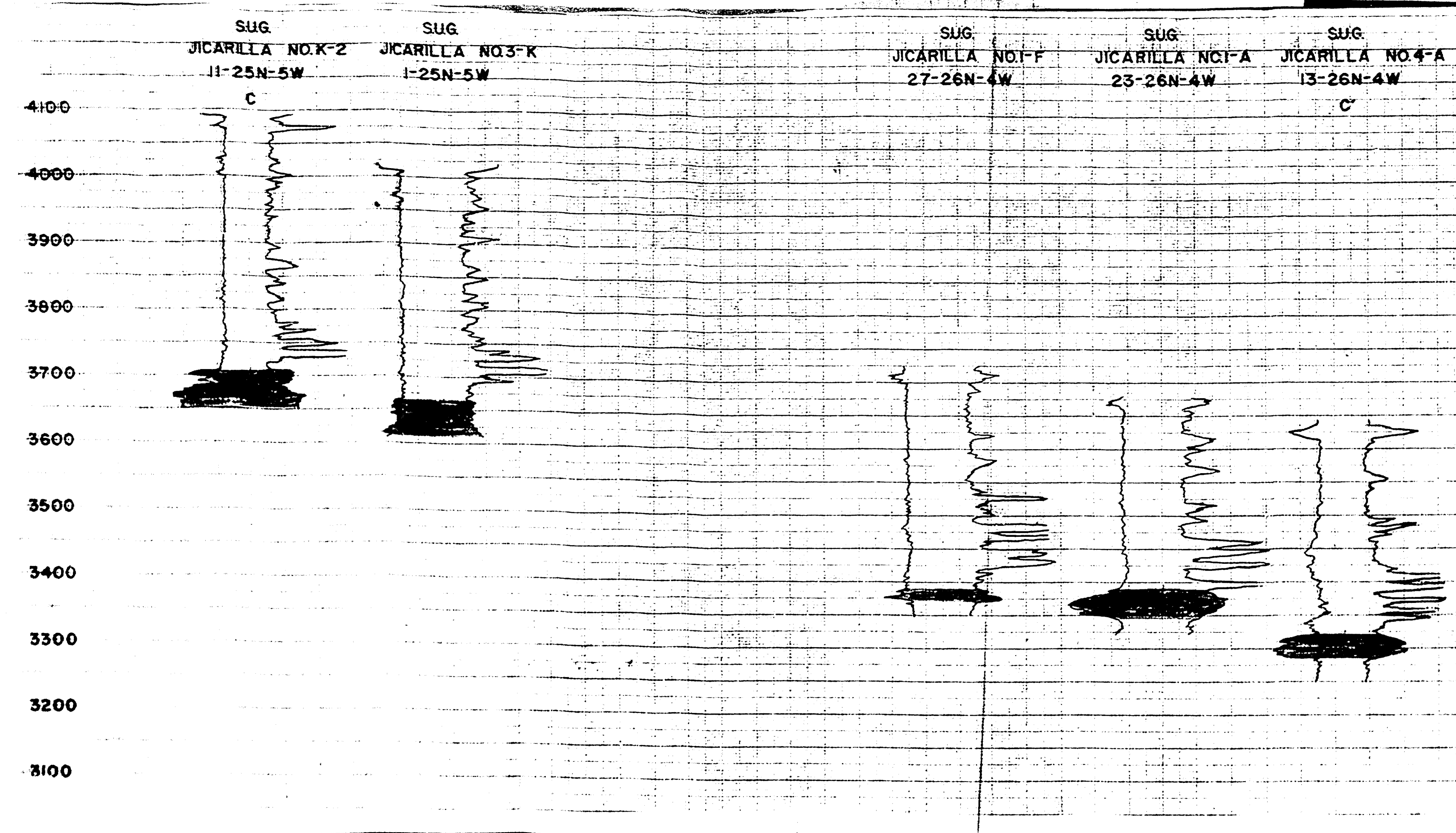
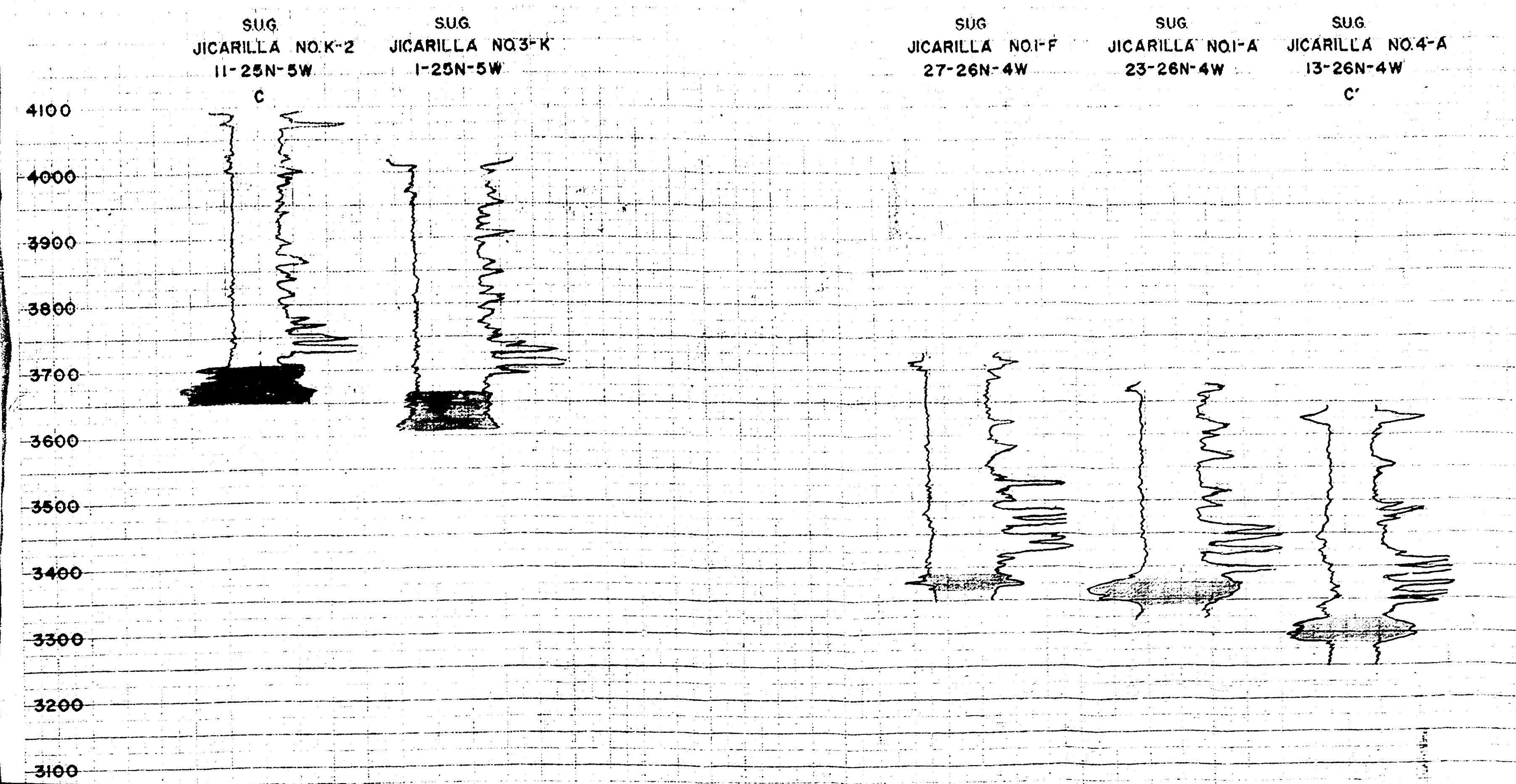
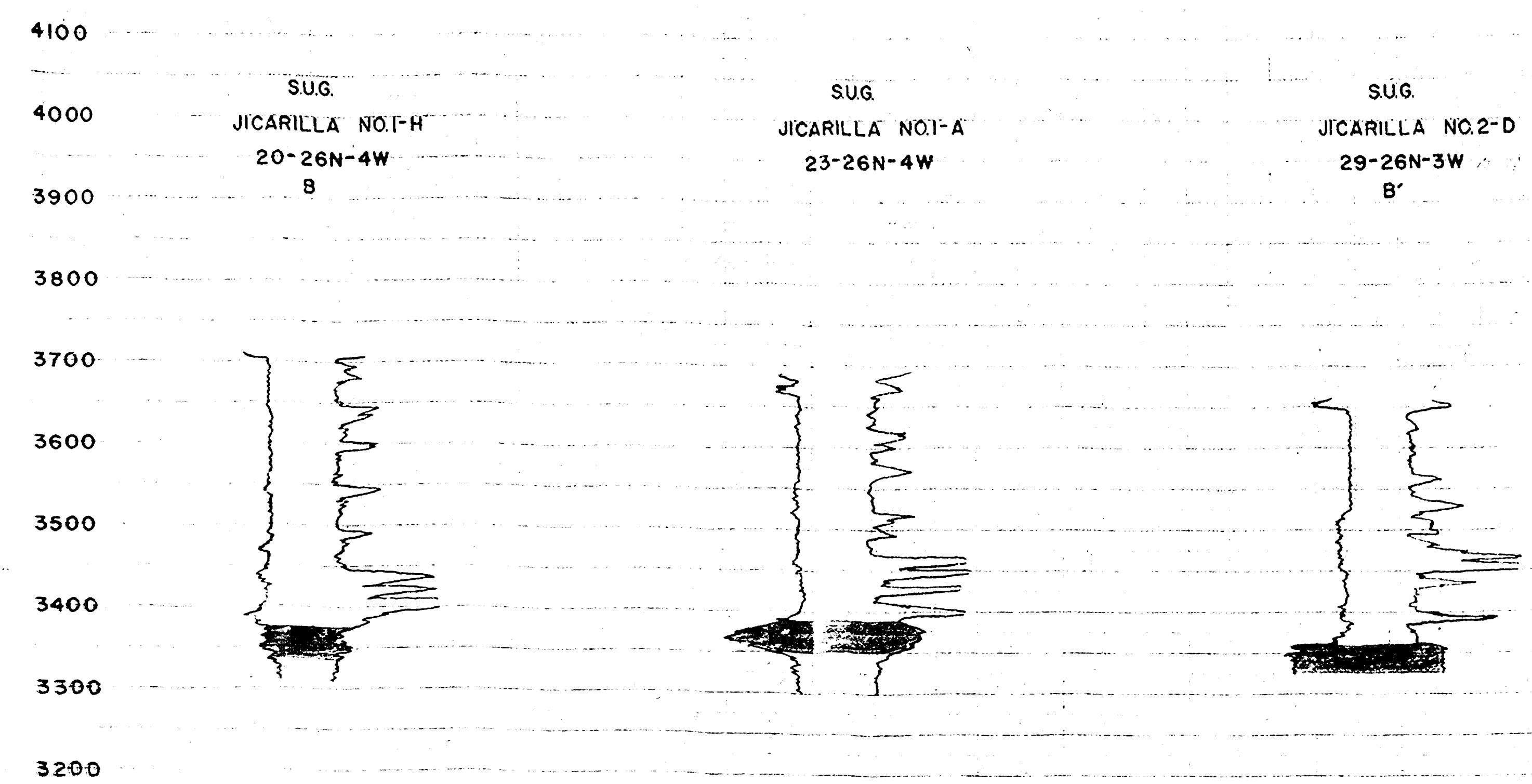
CASE No.

977

Large Exhibits
OCD

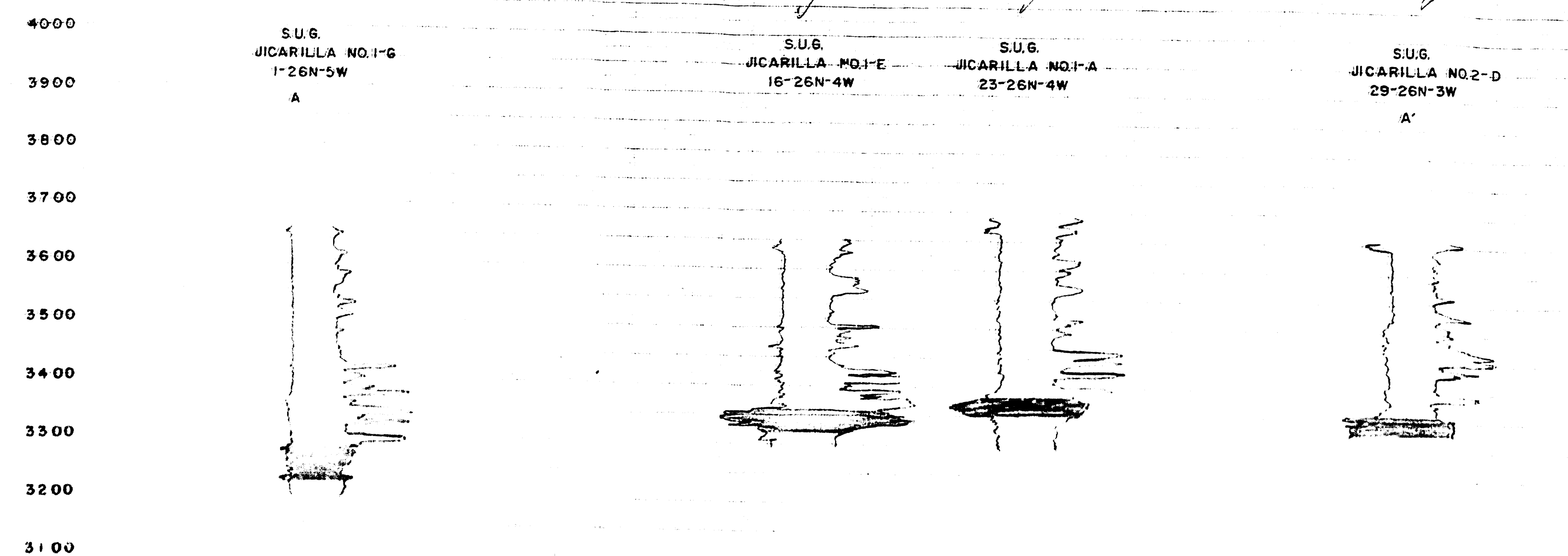
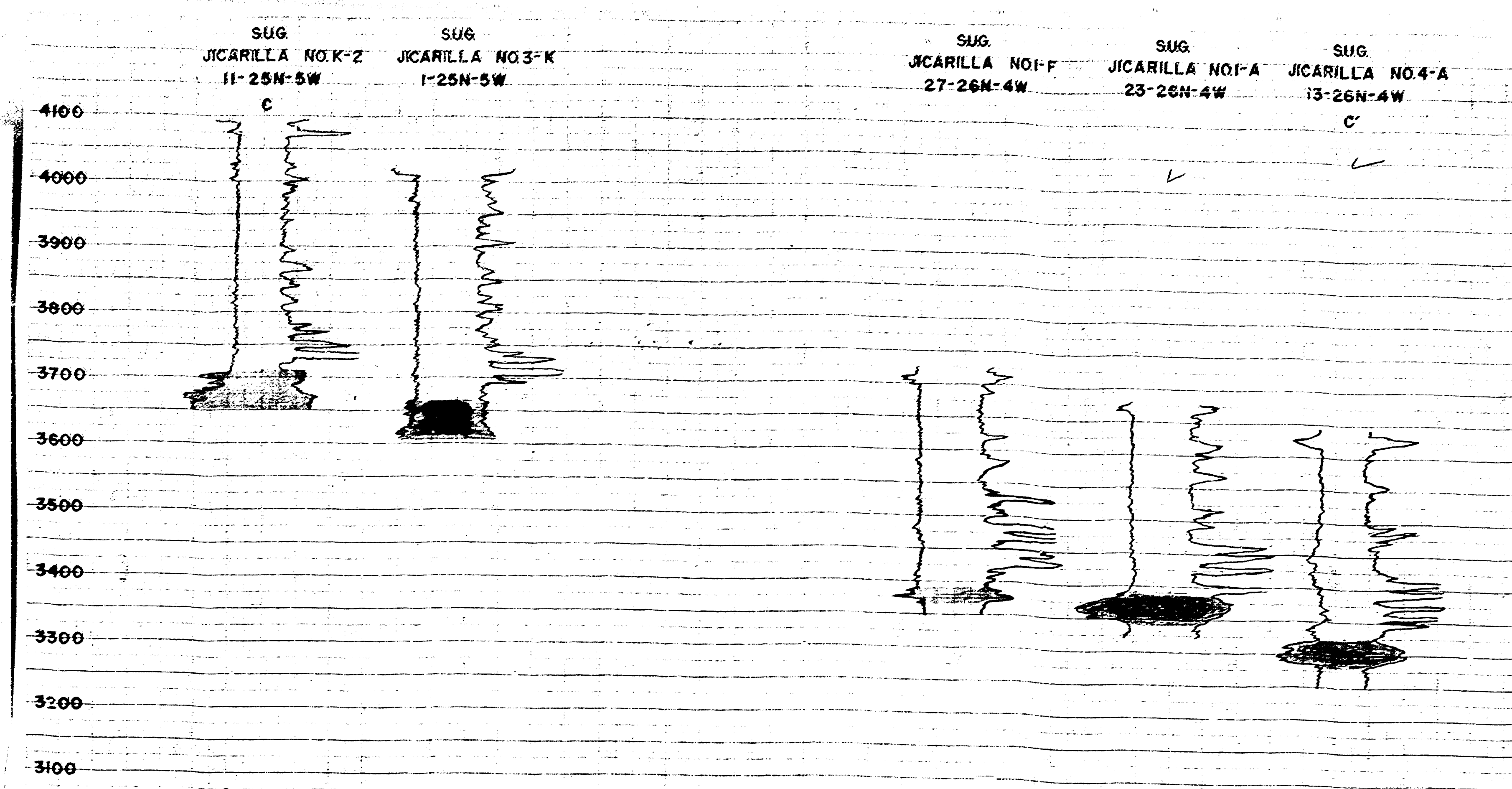
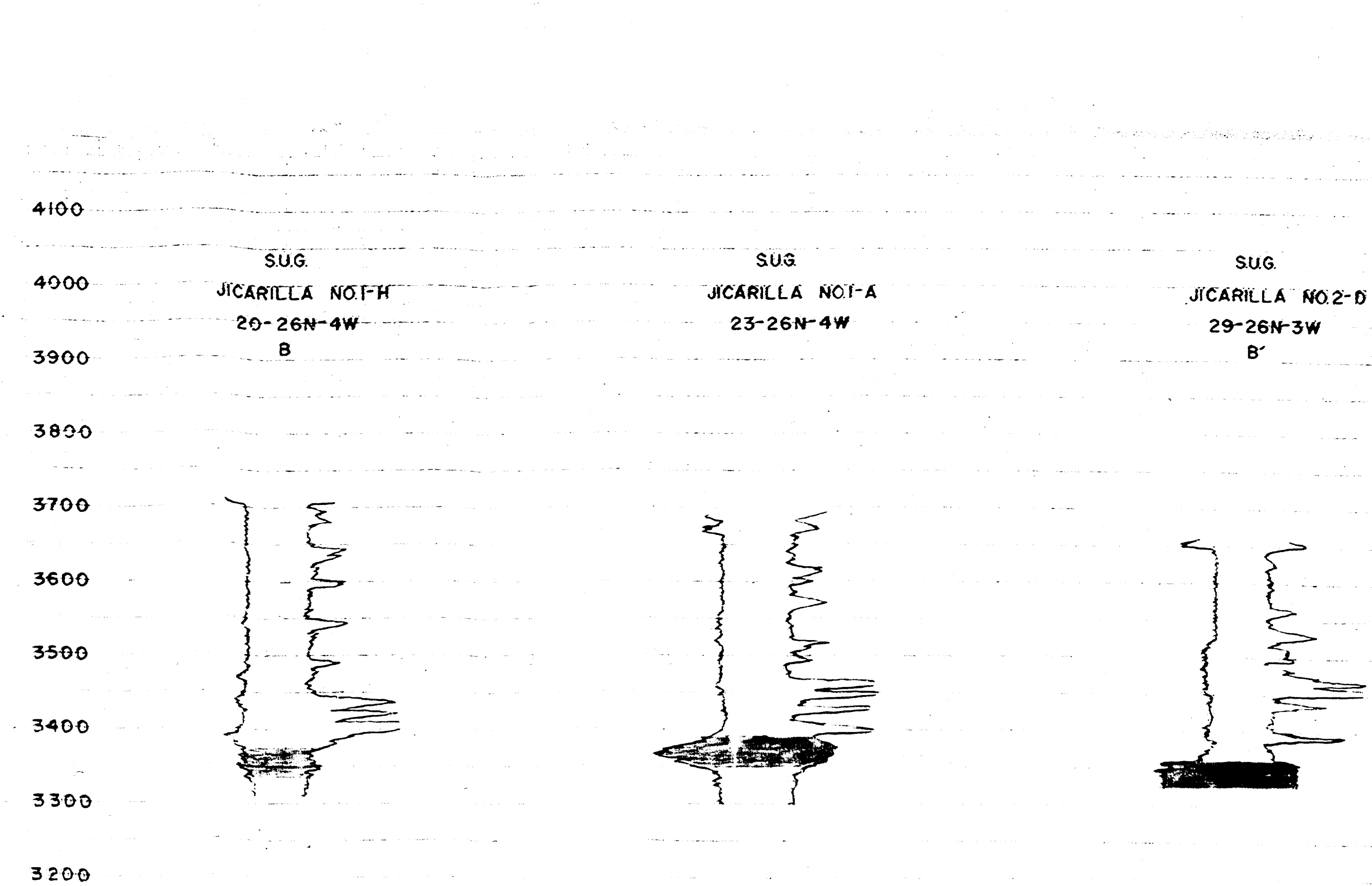


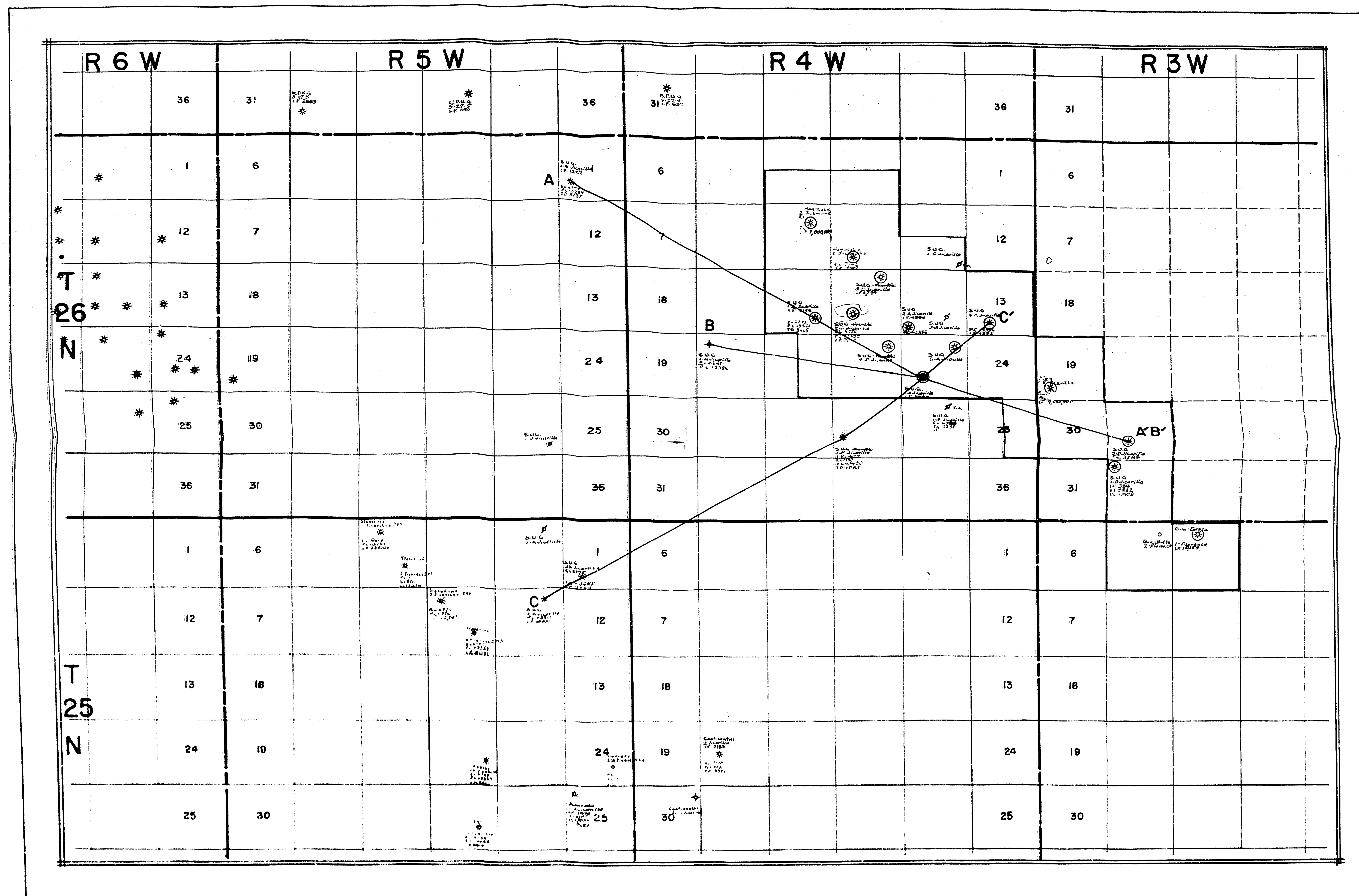




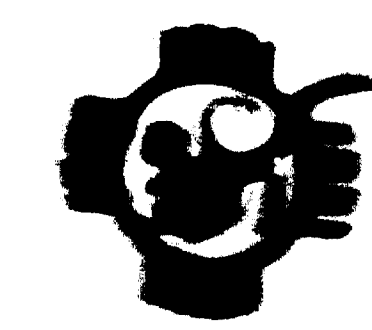
SUG
JICARILLA NO.2-D
29-26N-3W
A



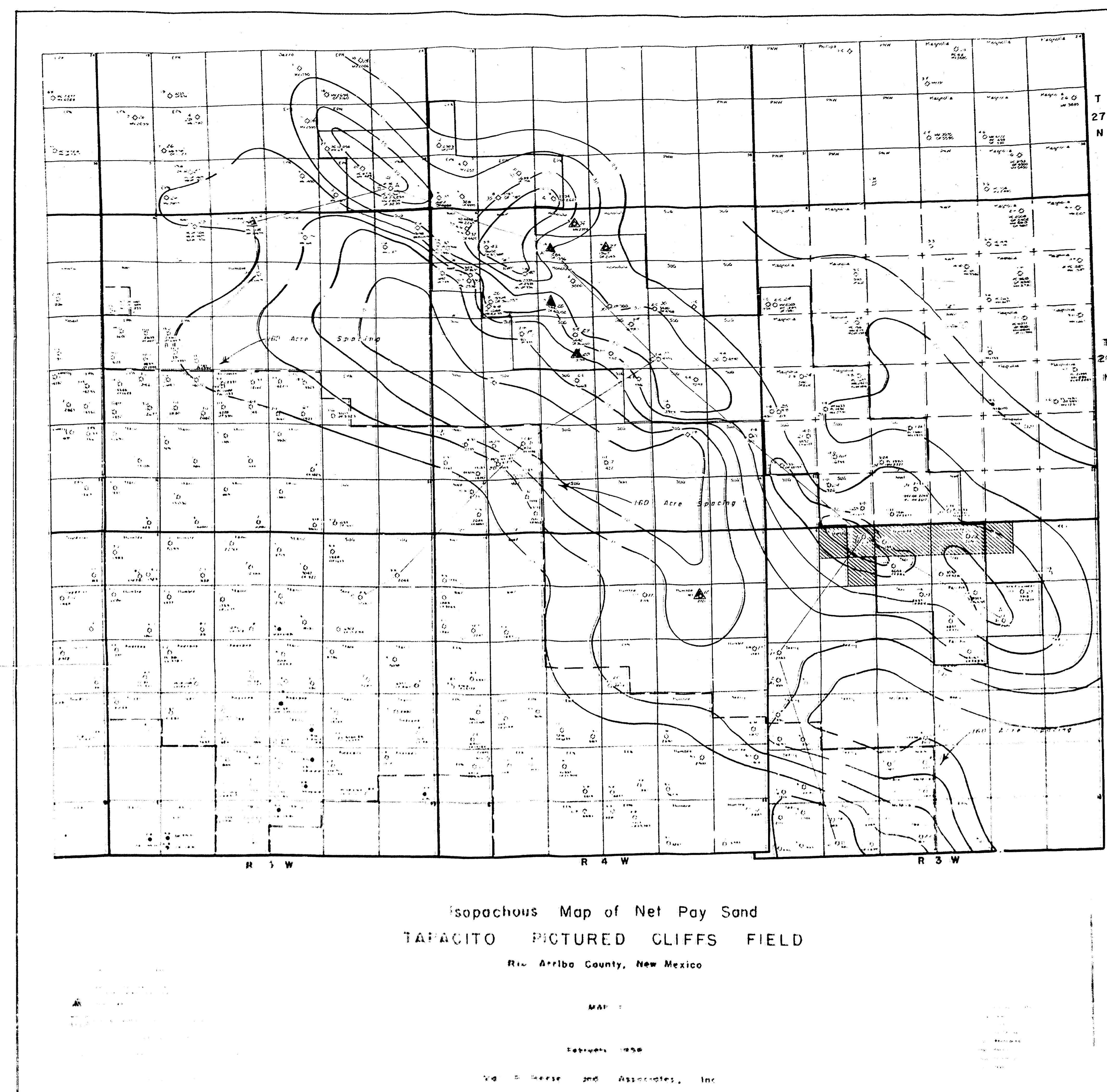


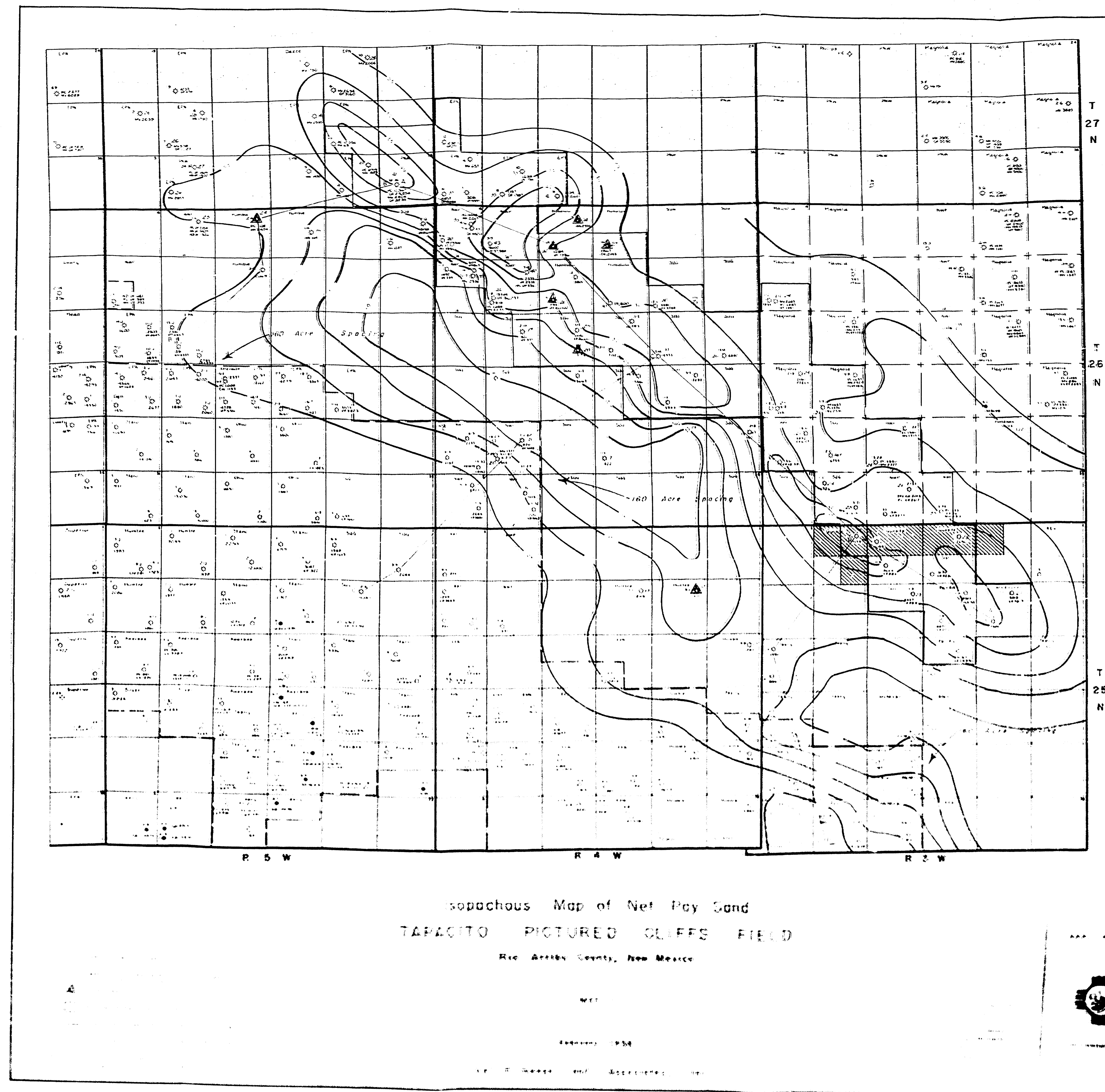


MIN. & G. MICROGRAPHIC



NOT AVAILABLE 0000





CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

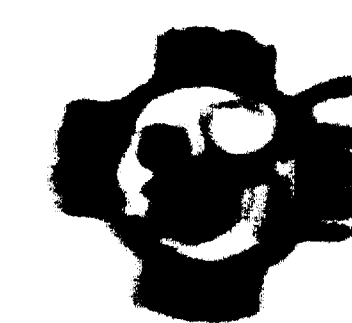
SAND  LIMESTONE  CONGLOMERATE  CHERT 
SHALE  DOLOMITE   

These analyses, in turn, as interpretations are based on observations and material supplied by the client to whom, and for whose existence and confidence, this report is made. The interpretations or opinions expressed represent the best judgment of Care Laboratories, Inc. All errors and omissions excepted. Care Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representation as to the accuracy, propriety, operation, or profitability of any of the above.

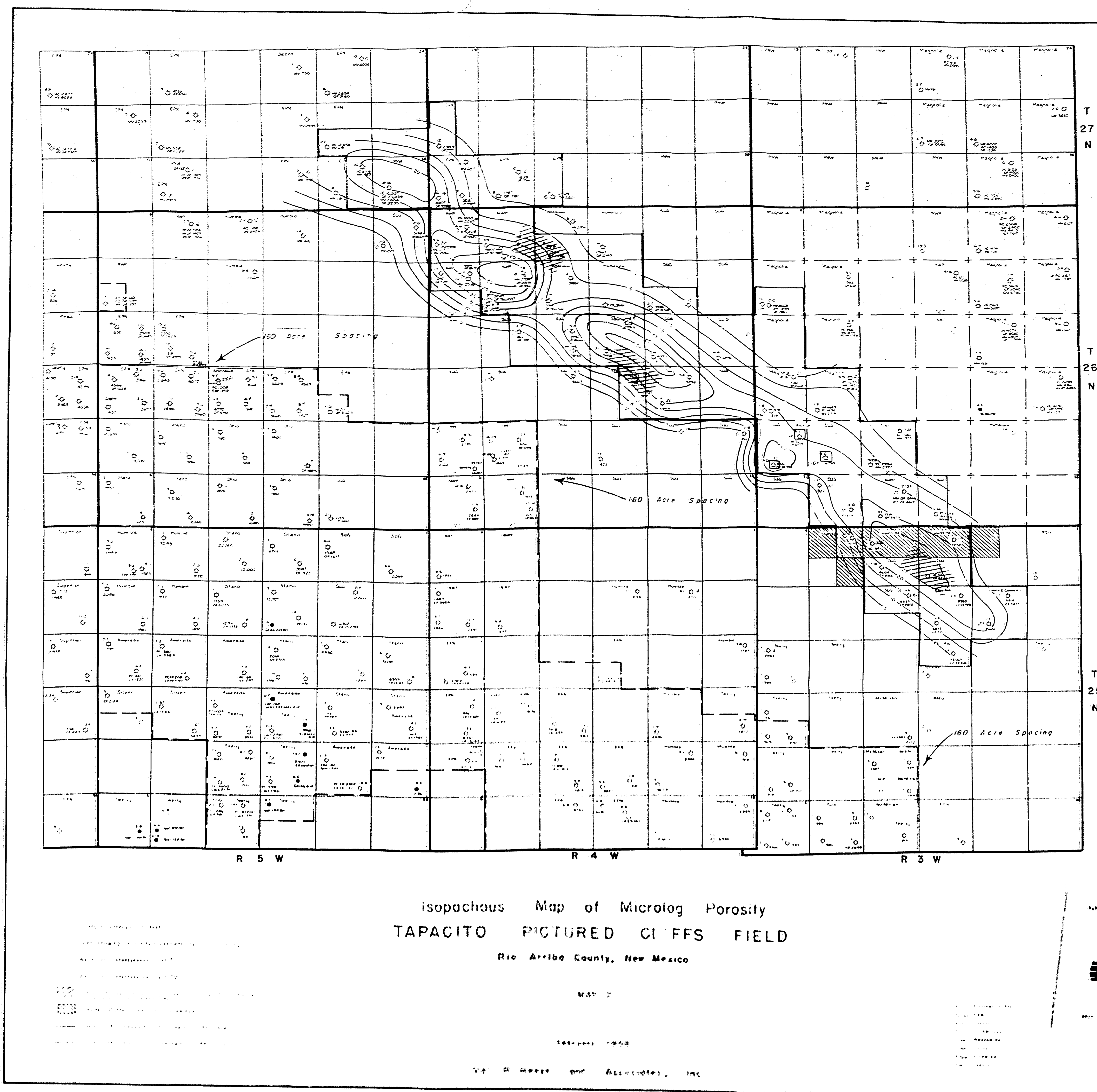
COMPLETION COREGRAPH

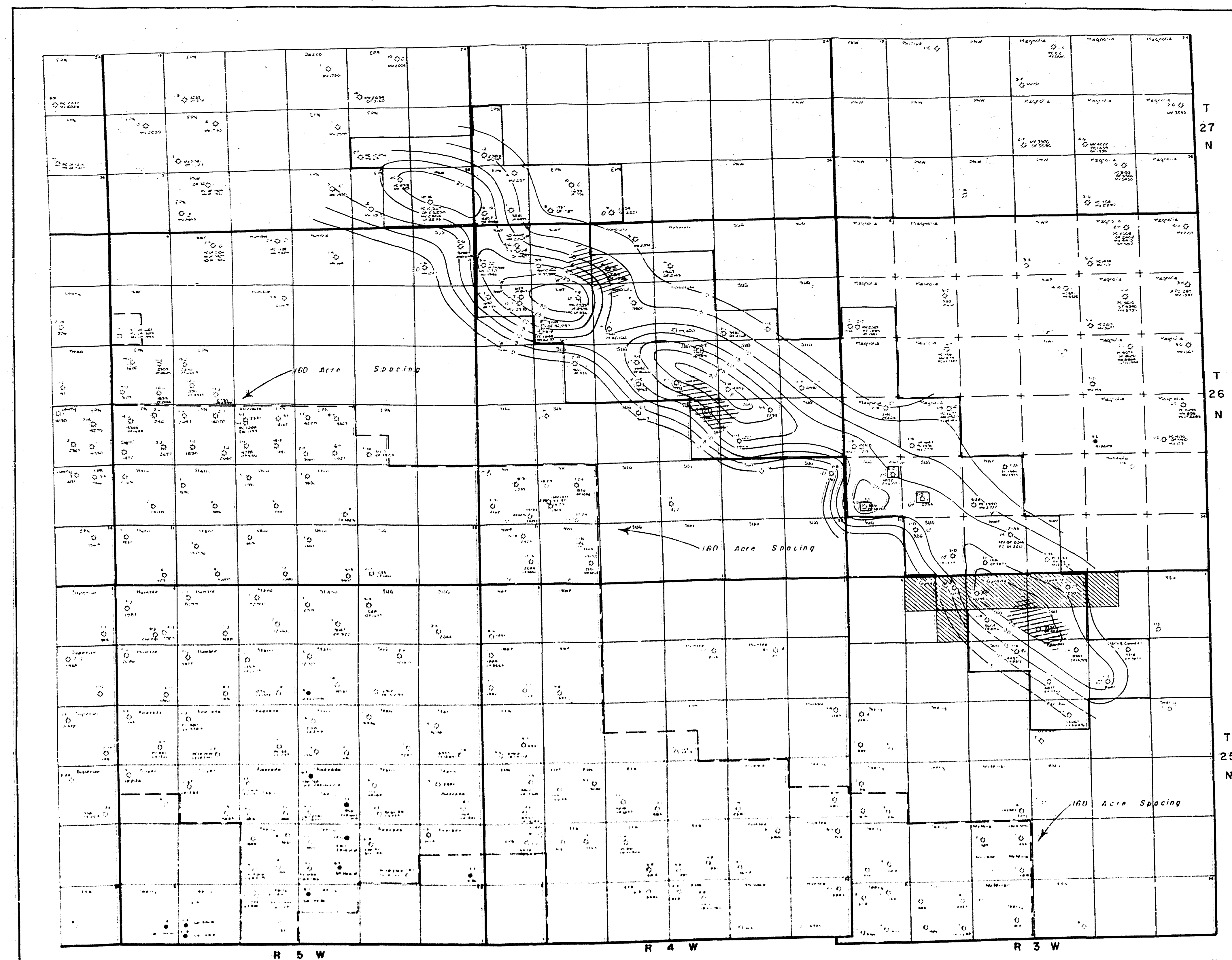
TABULAR DATA and INTERPRETATION

SAMPLE NUMBER	DEPTH FEET	PLUM NO.	PERMEABILITY	RESIDUAL SATURATION % PORE SPACE		FRACTURE SYSTEM	PROD.	POROSITY X---X		OIL SATURATION X---X	
				OIL	TOTAL			PERCENT	PERCENT PORE SPACE		
								50 10 30 20 10 0		80 60 40 20	
LOGGED:											
VF - VERTICAL FRACTURE											
1	3607.5	0.04	6.9	14.5	79.8		*				
2	08.5	0.0	7.7	7.8	85.6						
3	09.5	0.0	7.1	0.0	88.9						
4	10.5	0.29	9.9	0.0	69.7		*				
5	11.5	0.29	9.2	0.0	62.0		*				
6	12.5	0.04	8.0	0.0	67.6		*				
7	13.5	0.0	7.2	8.3	73.7						
8	14.5	0.38	11.5	0.0	57.2						
9	15.5	0.83	18.7	0.0	46.5		GAS				
10	16.5	1.20	36.1	0.0	51.8		GAS				
11	17.5	0.55	14.6	0.0	54.1		GAS				
12	18.5	0.55	35.7	0.0	55.4		GAS				
13	19.5	1.37	17.1	0.0	57.4		GAS				
14	20.5	1.16	36.7	0.0	52.1	VF	GAS				
15	21.5	1.03	36.3	0.0	50.9	VF	GAS				
16	22.5	0.85	35.6	0.0	48.7	VF	GAS				
17	23.5	2.02	36.7	0.0	50.8	VF	GAS				
18	24.5	5.76	37.4	0.0	43.5	VF	GAS				
19	25.5	35.10	21.4	2.3	35.1	VF	GAS				
20	26.5	3.56	17.2	0.0	44.2	VF	GAS				
21	27.5	16	22.8	0.0	37.7		GAS				
22	28.5	10.80	22.1	0.0	38.0		GAS				
23	29.5	1.63	20.0	0.0	37.5		GAS				
24	30.5	0.23	7.4	0.0	47.4		GAS				
25	31.5	0.13	6.3	0.0	63.5		GAS				
26	32.5	0.13	3.8	0.0	60.4		*				
27	33.5	16	19.8	0.0	26.8		GAS				
28	34.5	27	20.8	2.4	33.6		GAS				
29	35.5	29	23.9	0.0	36.8		GAS				
30	36.5	2.10	17.8	0.0	44.0		GAS				
31	37.5	0.04	4.5	0.0	80.0		*				
32	38.5	0.13	4.4	0.0	65.9		*				
33	39.5	0.13	5.9	0.0	66.1		*				
34	40.5	0.13	7.8	0.0	67.9		*				
35	41.5	0.04	6.9	0.0	78.3		*				
36	42.5	0.04	7.9	0.0	64.6		*				
37	43.5	0.13	6.3	0.0	88.9		*				
38	44.5	0.04	6.8	0.0	82.4		*				
39	45.5	0.04	7.4	0.0	82.4		*				
40	46.5	0.04	6.1	0.0	65.7		*				
41	47.5	0.04	5.9	0.0	61.0		*				
42	48.5	0.13	6.0	0.0	63.0		*				
43	49.5	0.04	8.1	0.0	79.0		*				
44	50.5	0.04	9.0	0.0	72.4		*				
45	51.5	0.13	7.6	0.0	75.0		*				
46	52.5	0.04	5.5	0.0	72.8		*				
47	53.5	0.04	8.6	0.0	80.4		*				
48	3614.5	0.04	10.4	0.0	86.5		*				



余三子：長子長子長子：長子



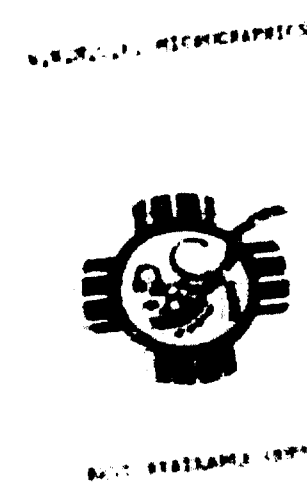


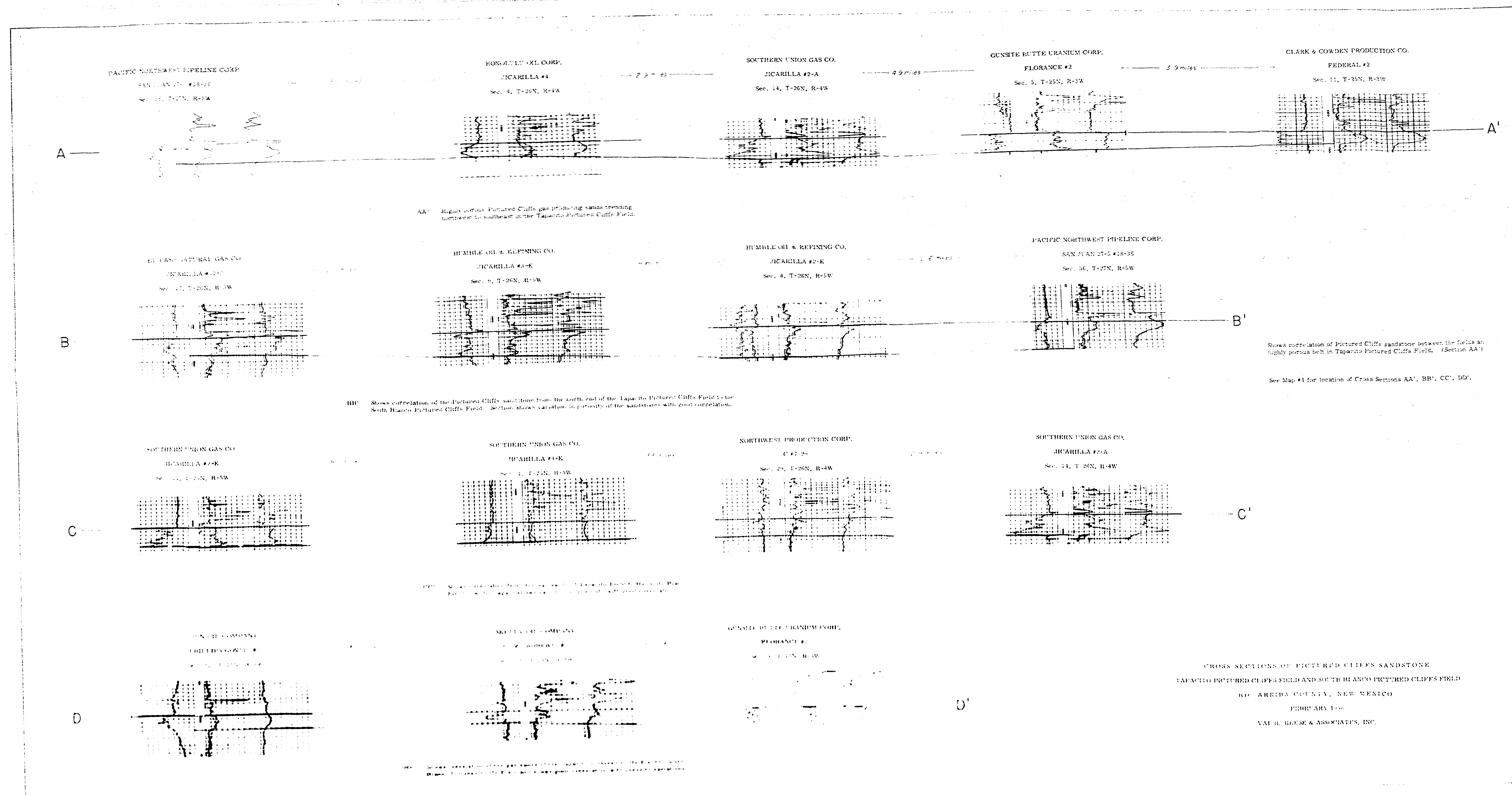
Isopachous Map of Microlog Porosity
TAPACITO PICTURED CLIFFS FIELD
Rio Arriba County, New Mexico

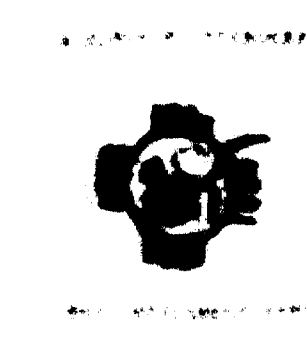
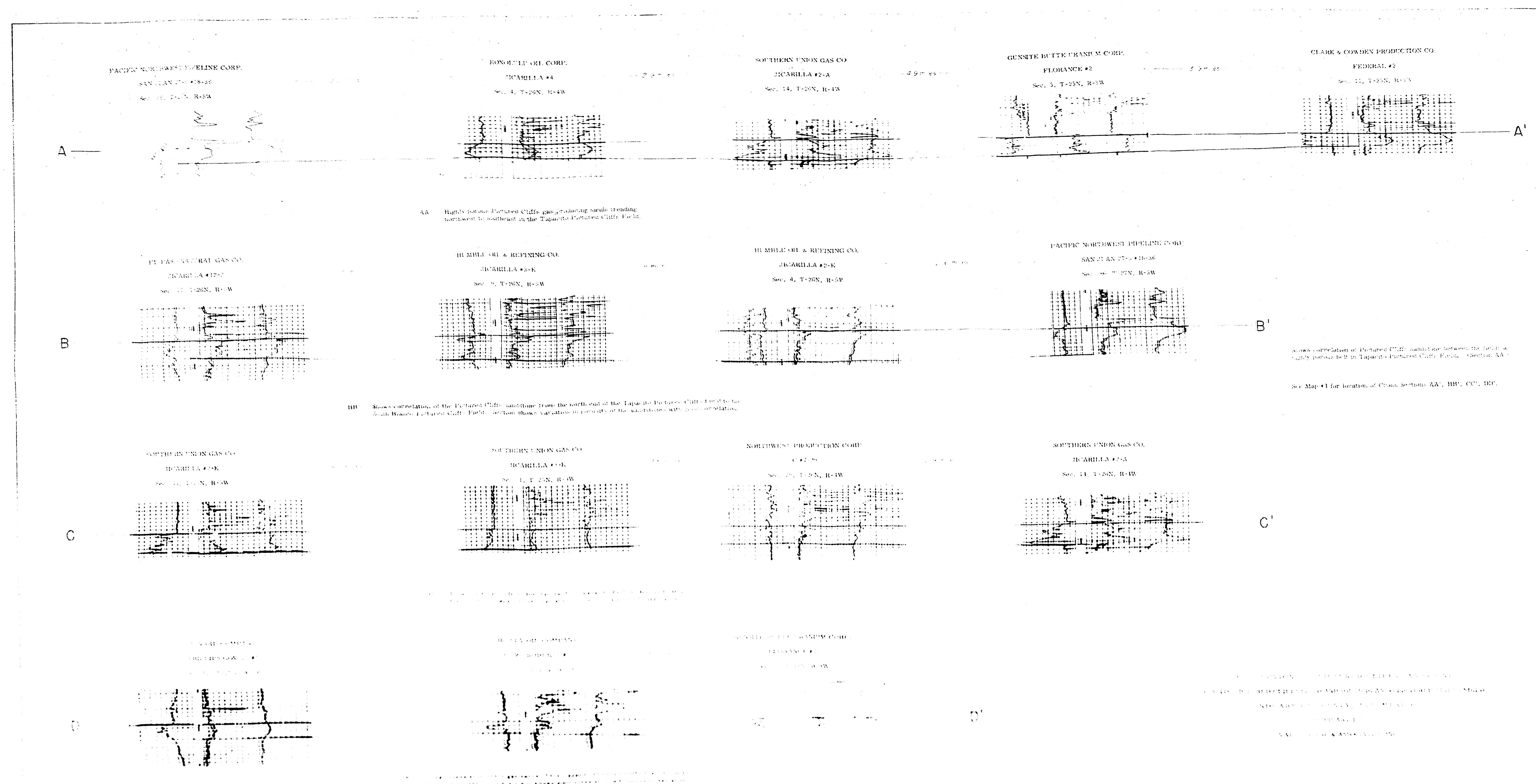
Scale

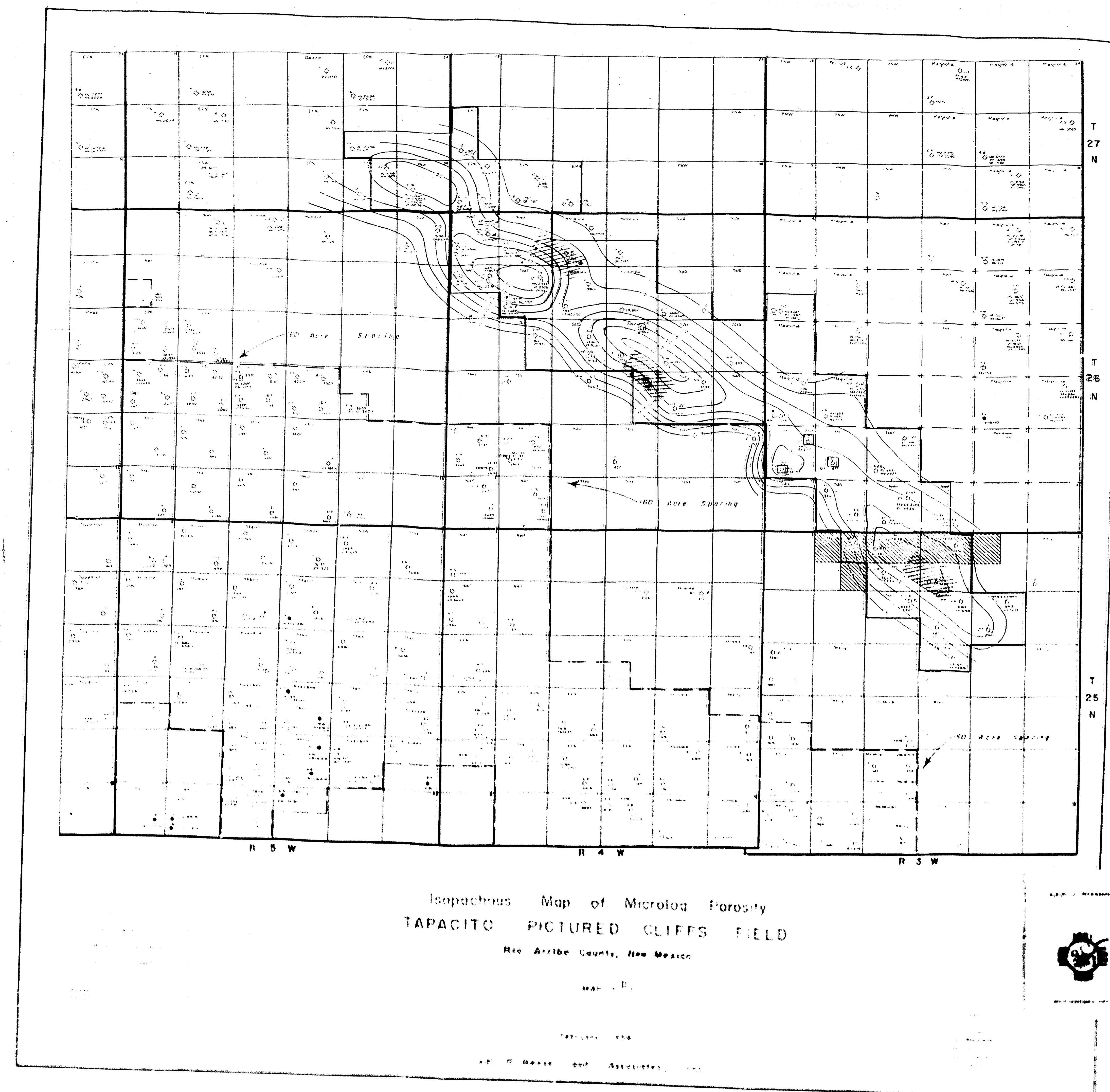
1954

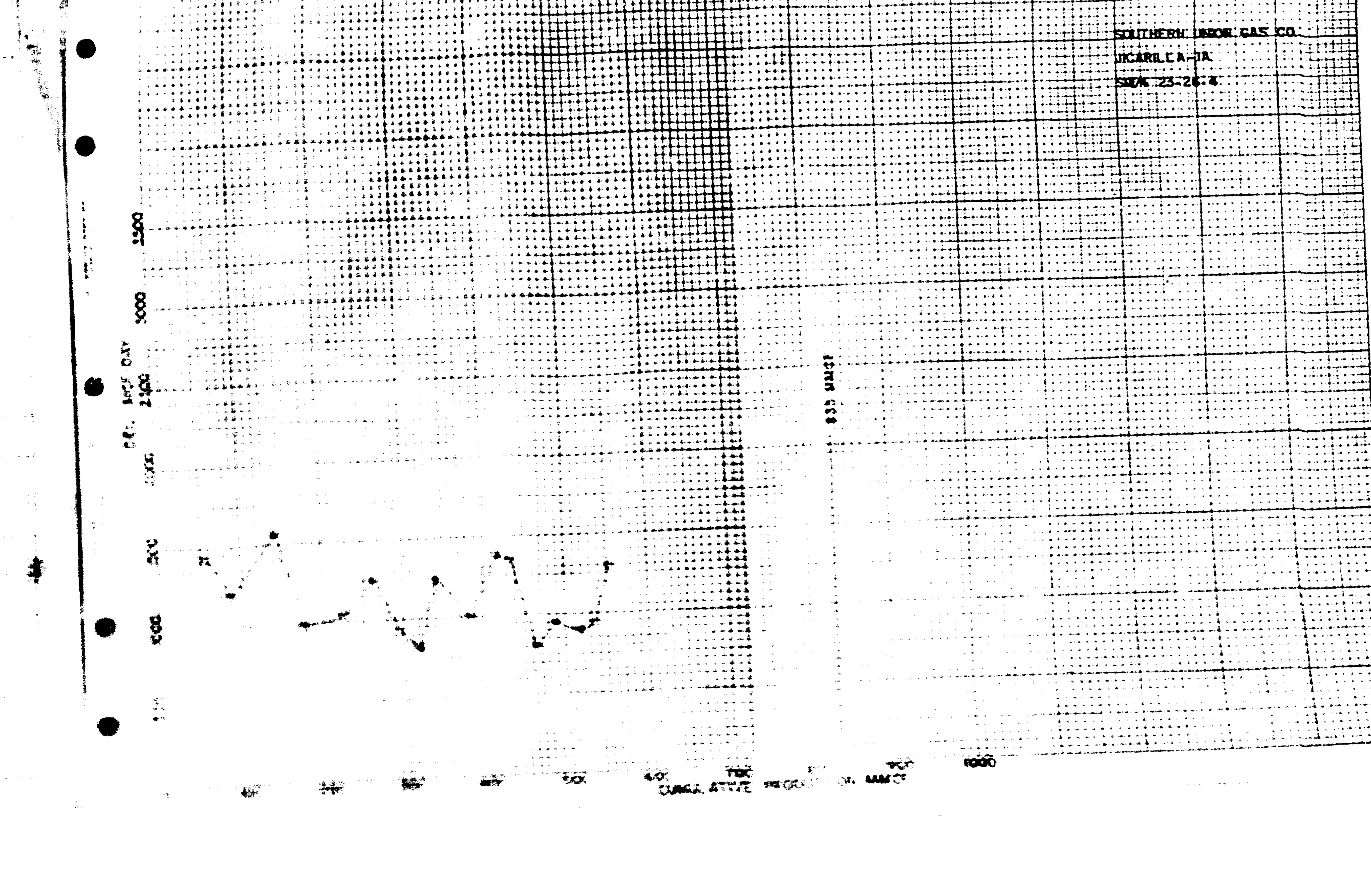
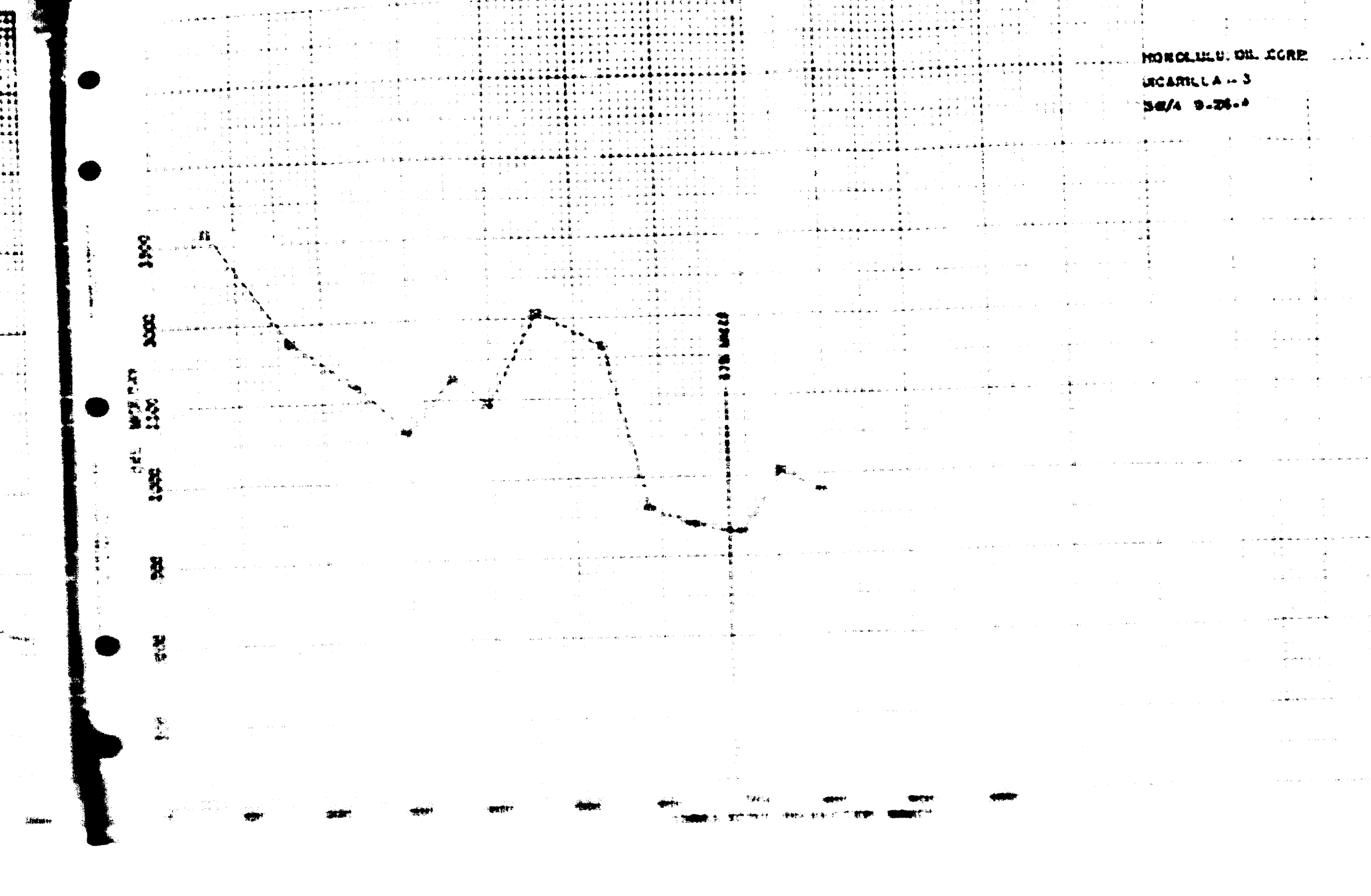
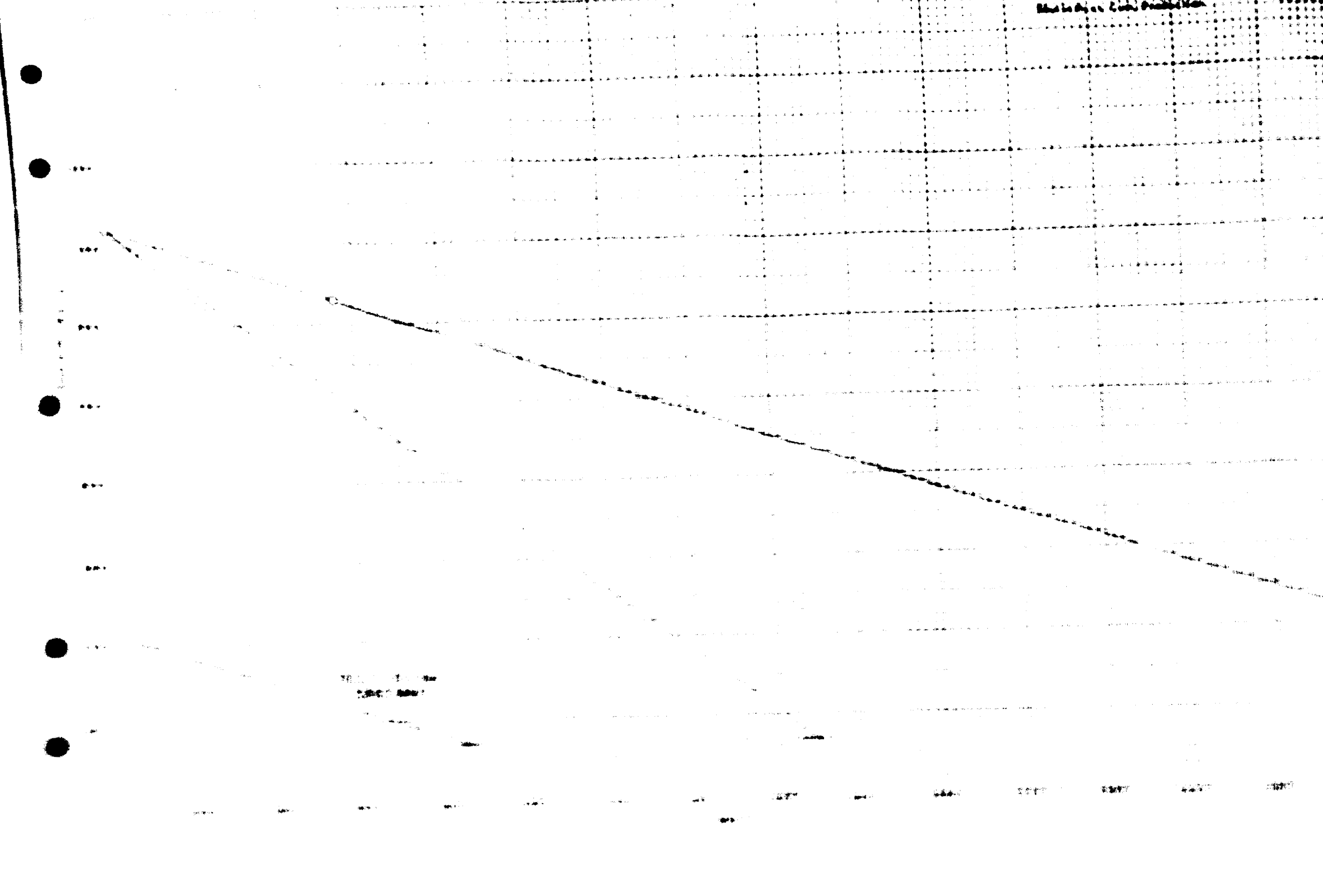
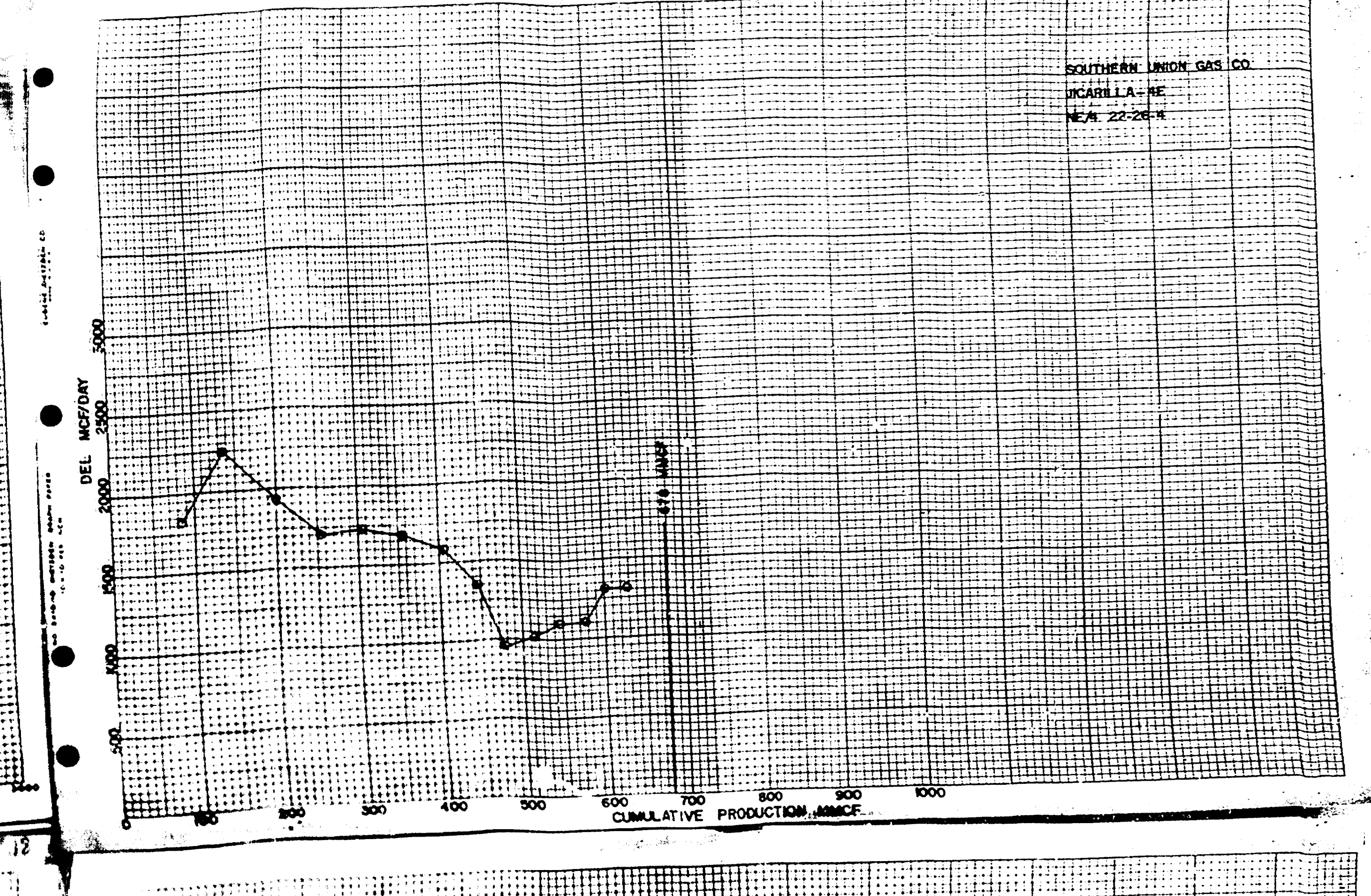
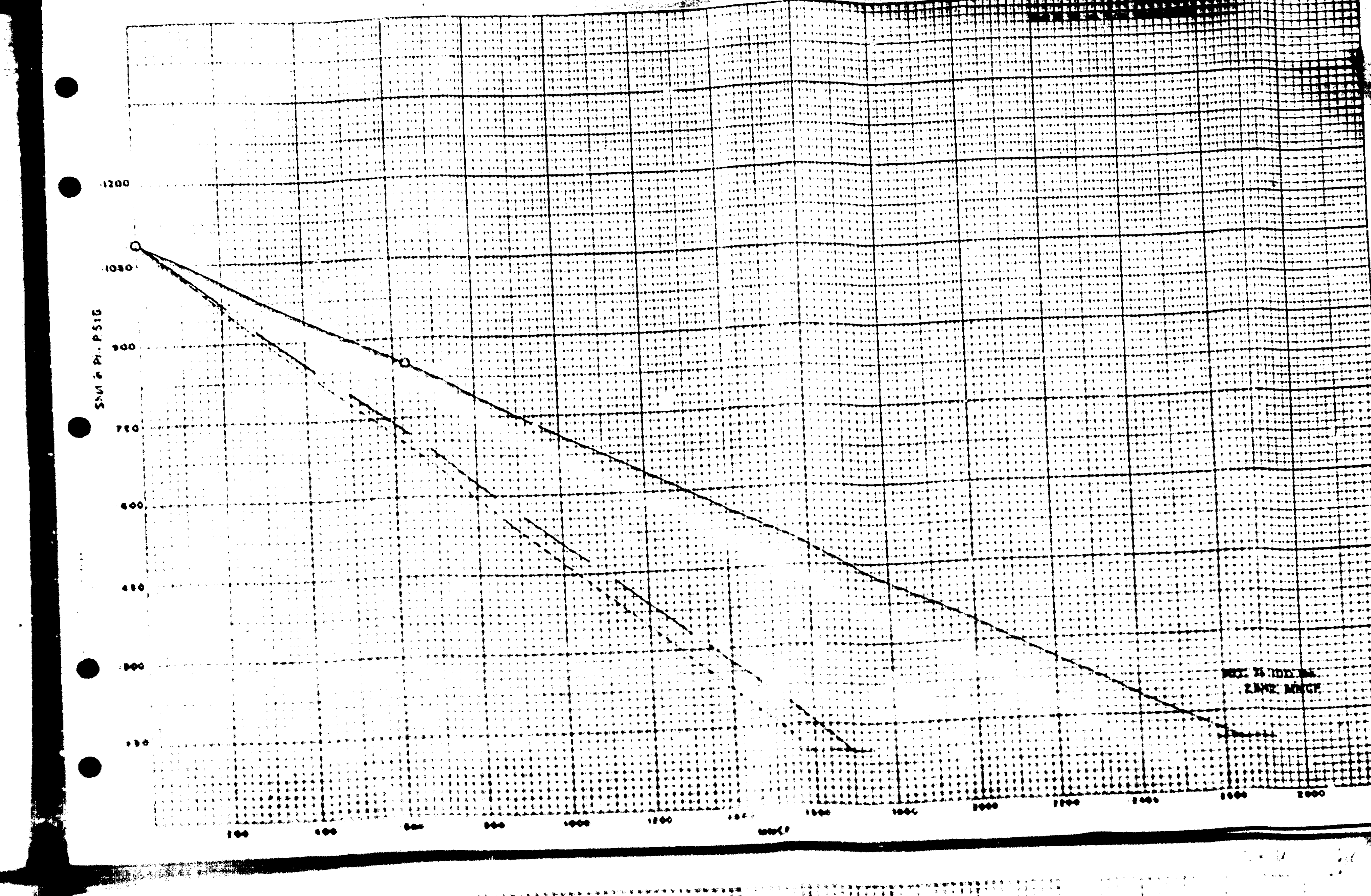
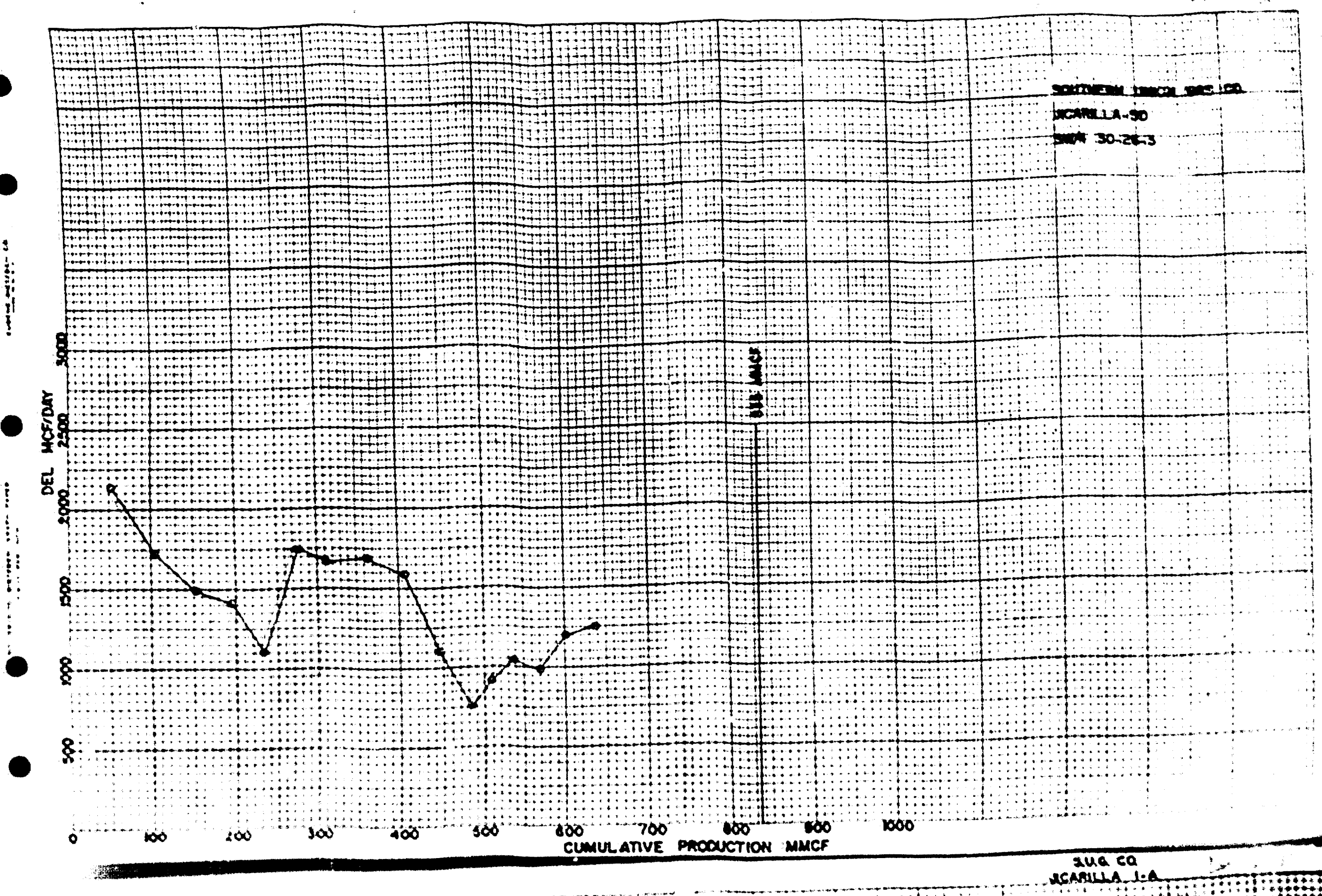
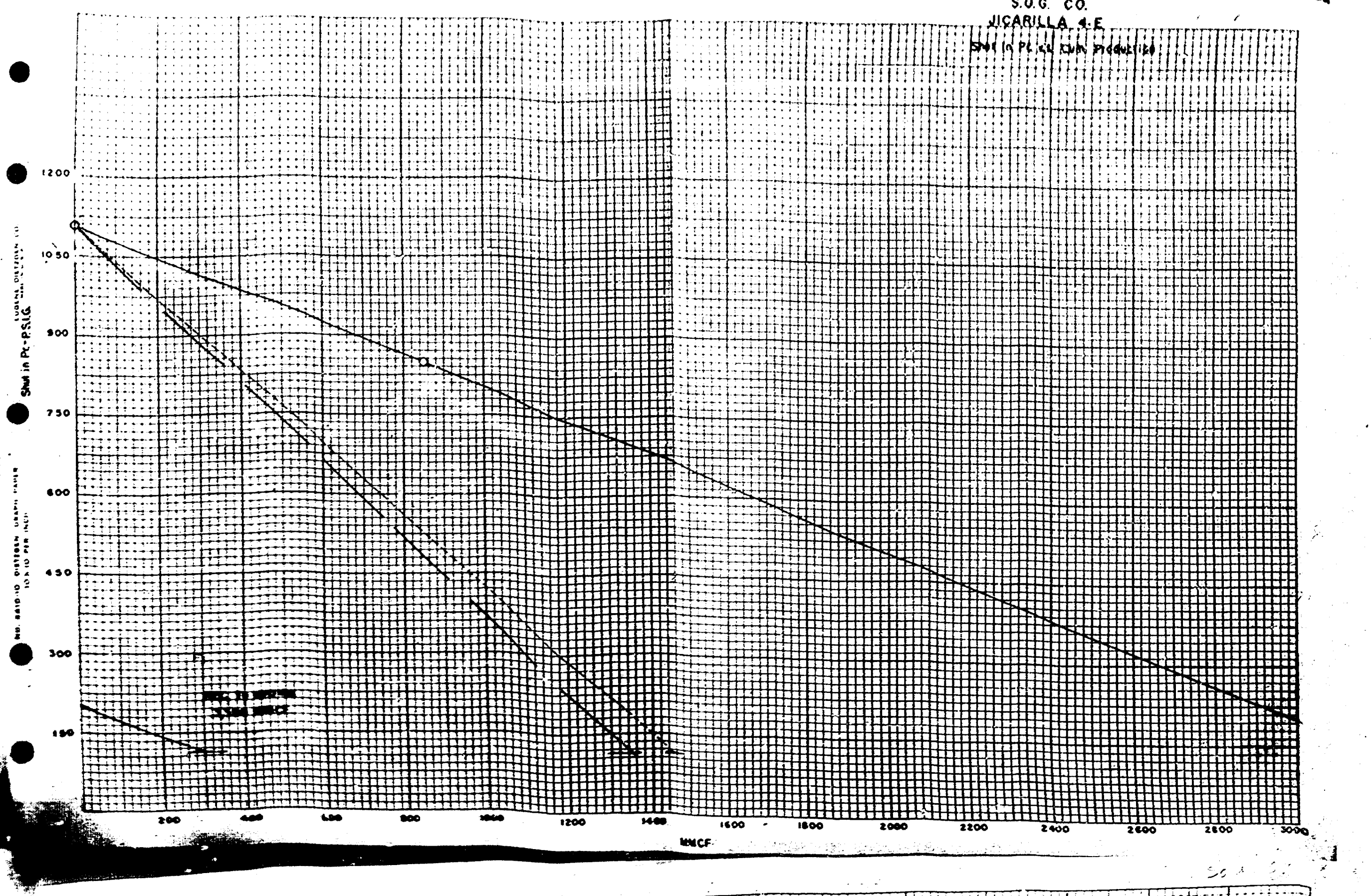
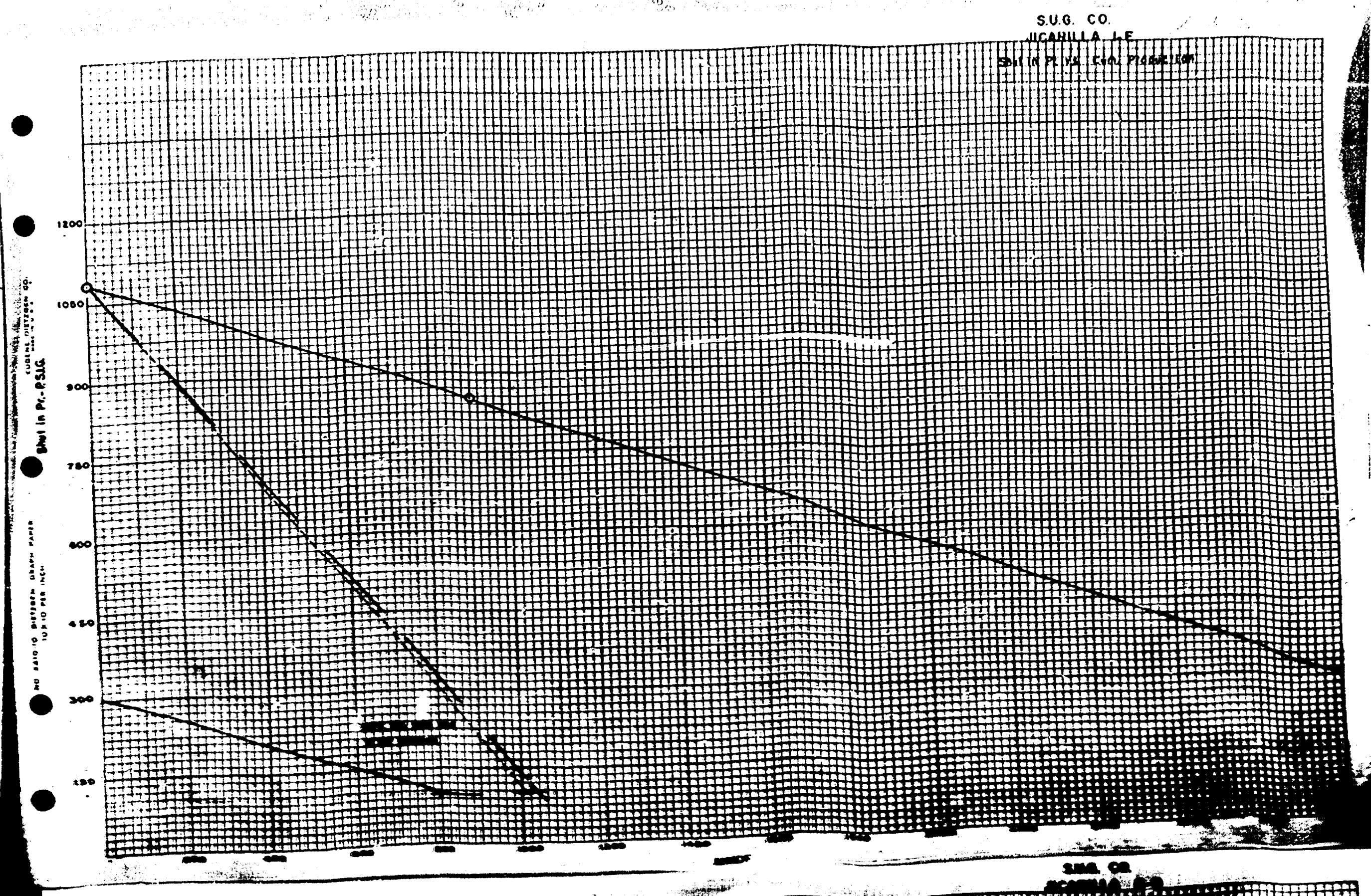
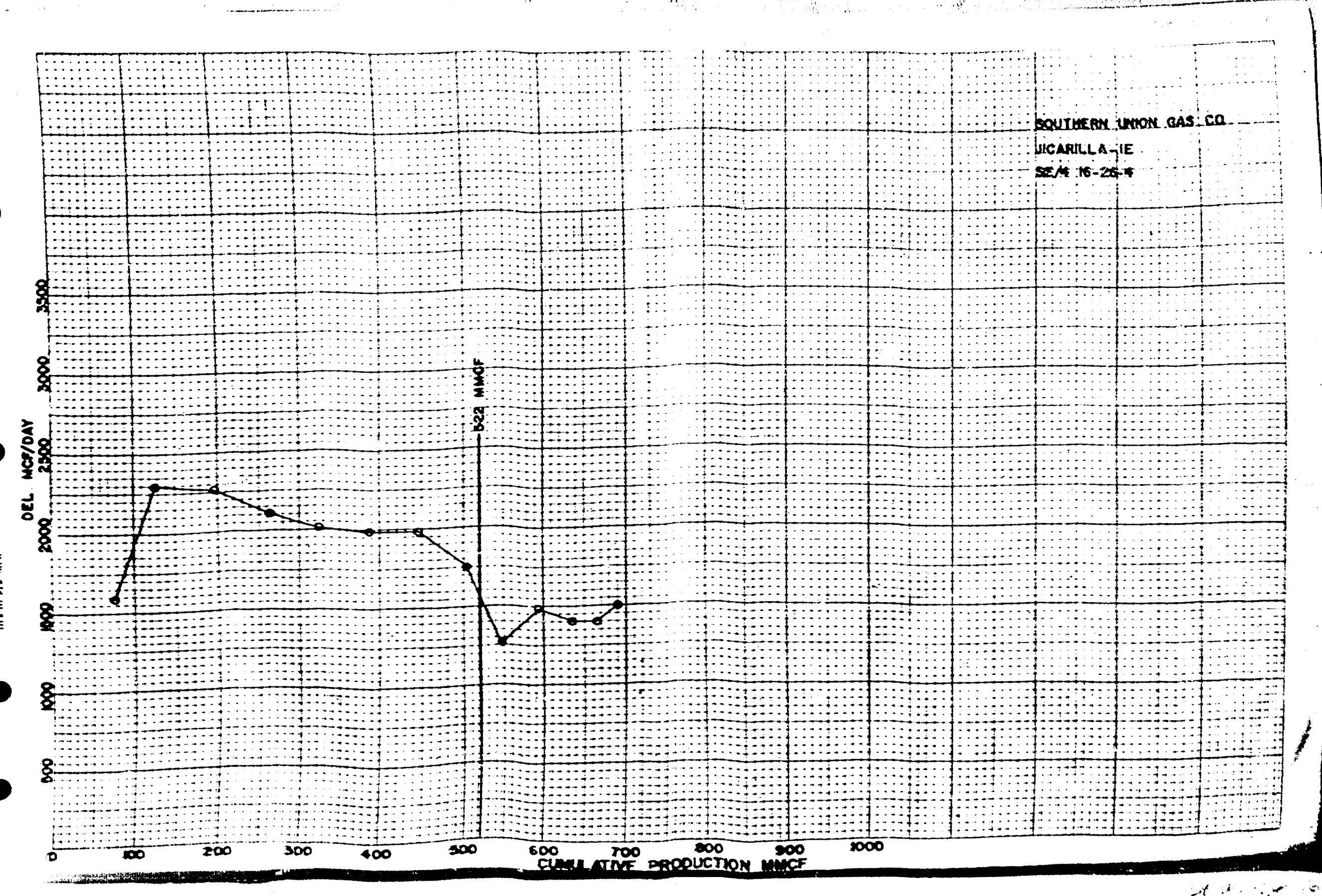
J. E. Reese and Associates

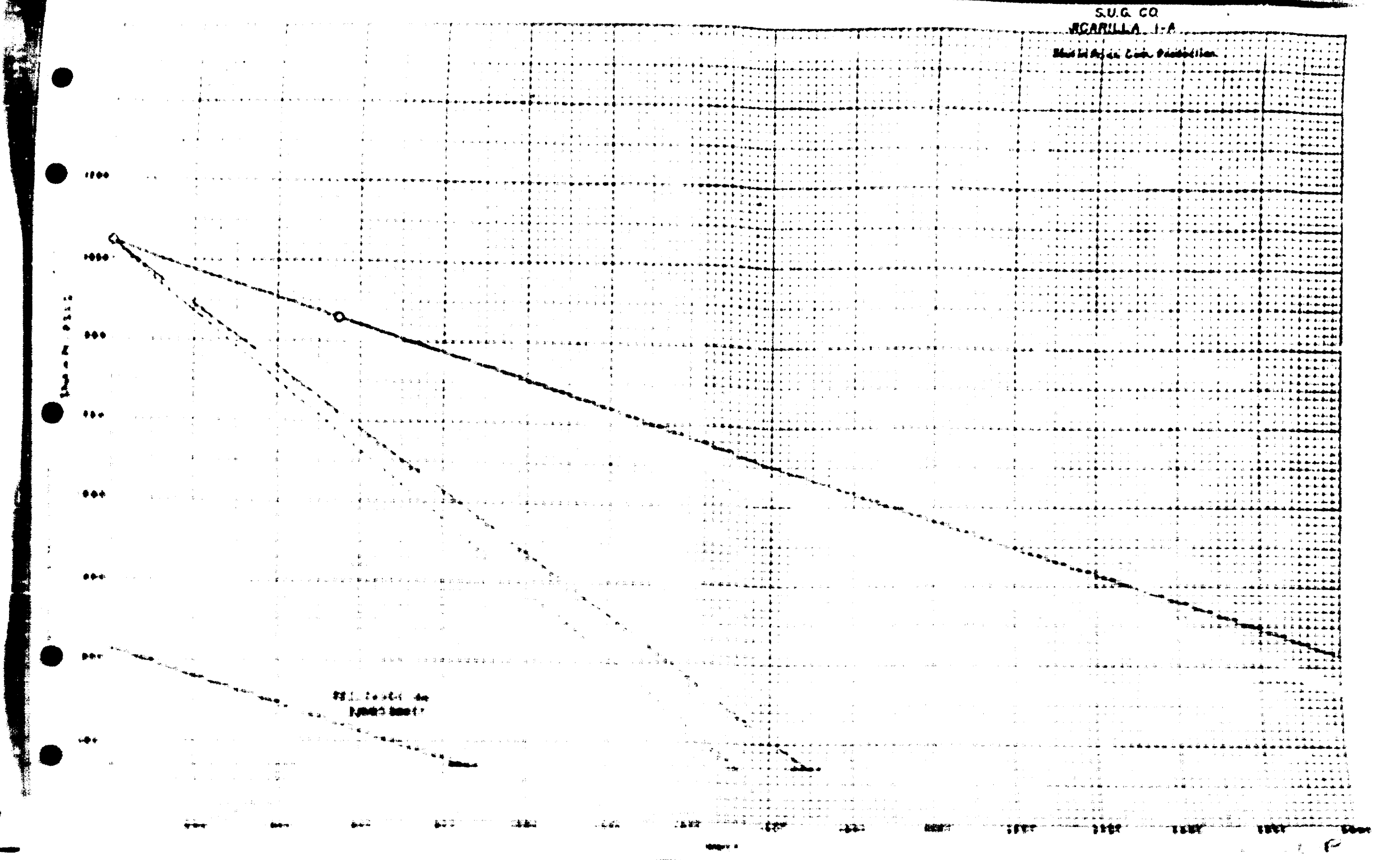
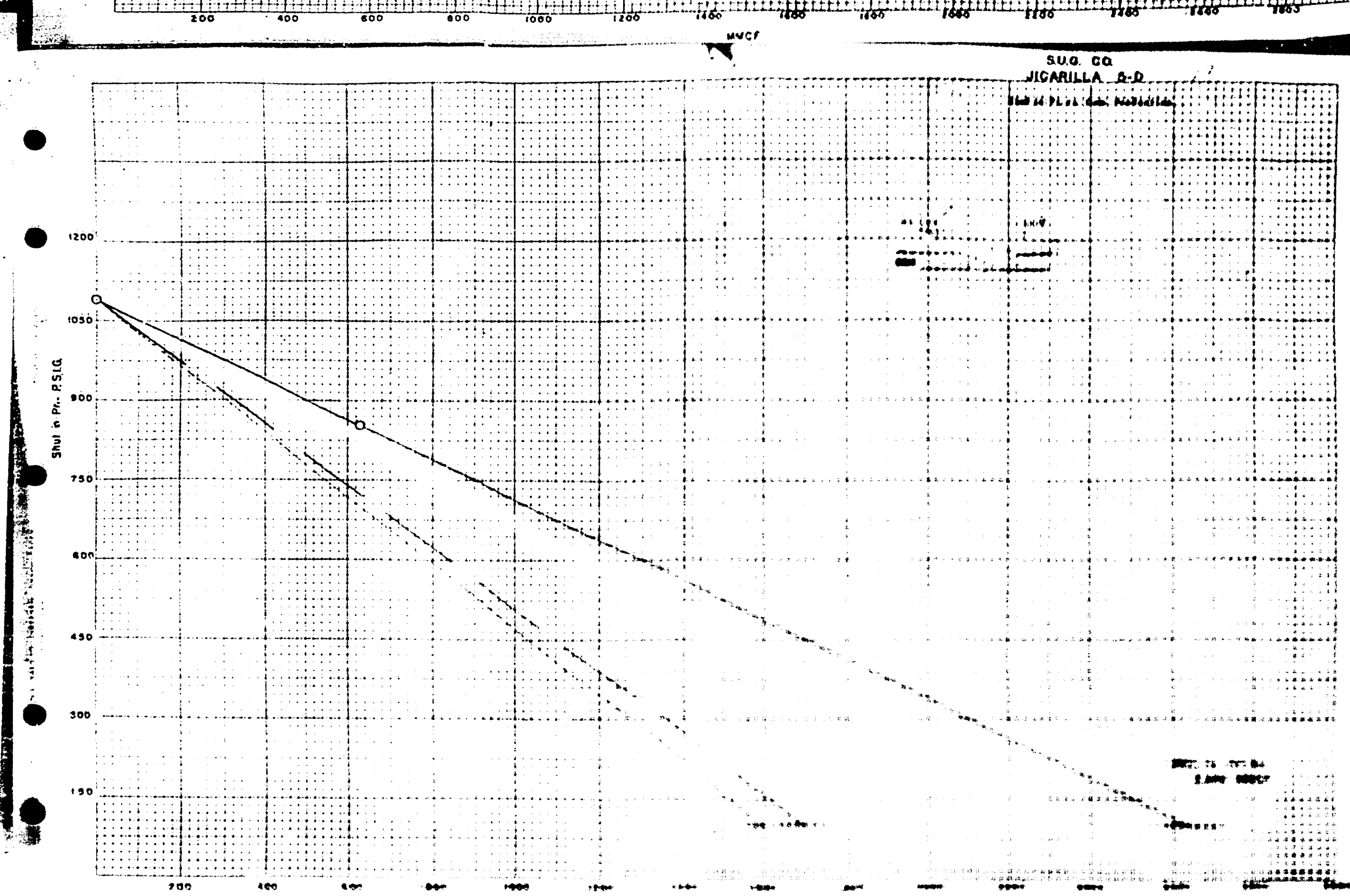
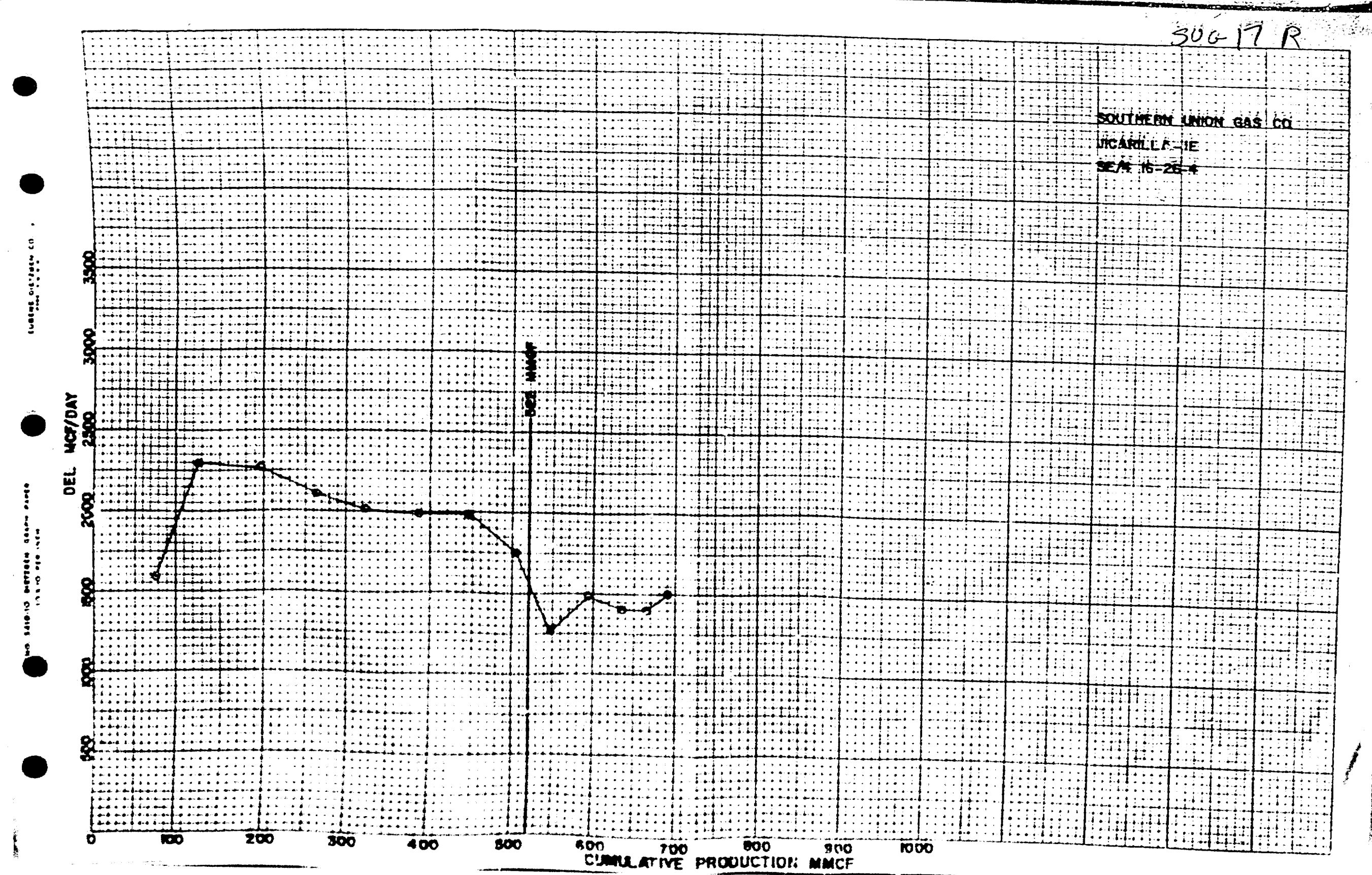
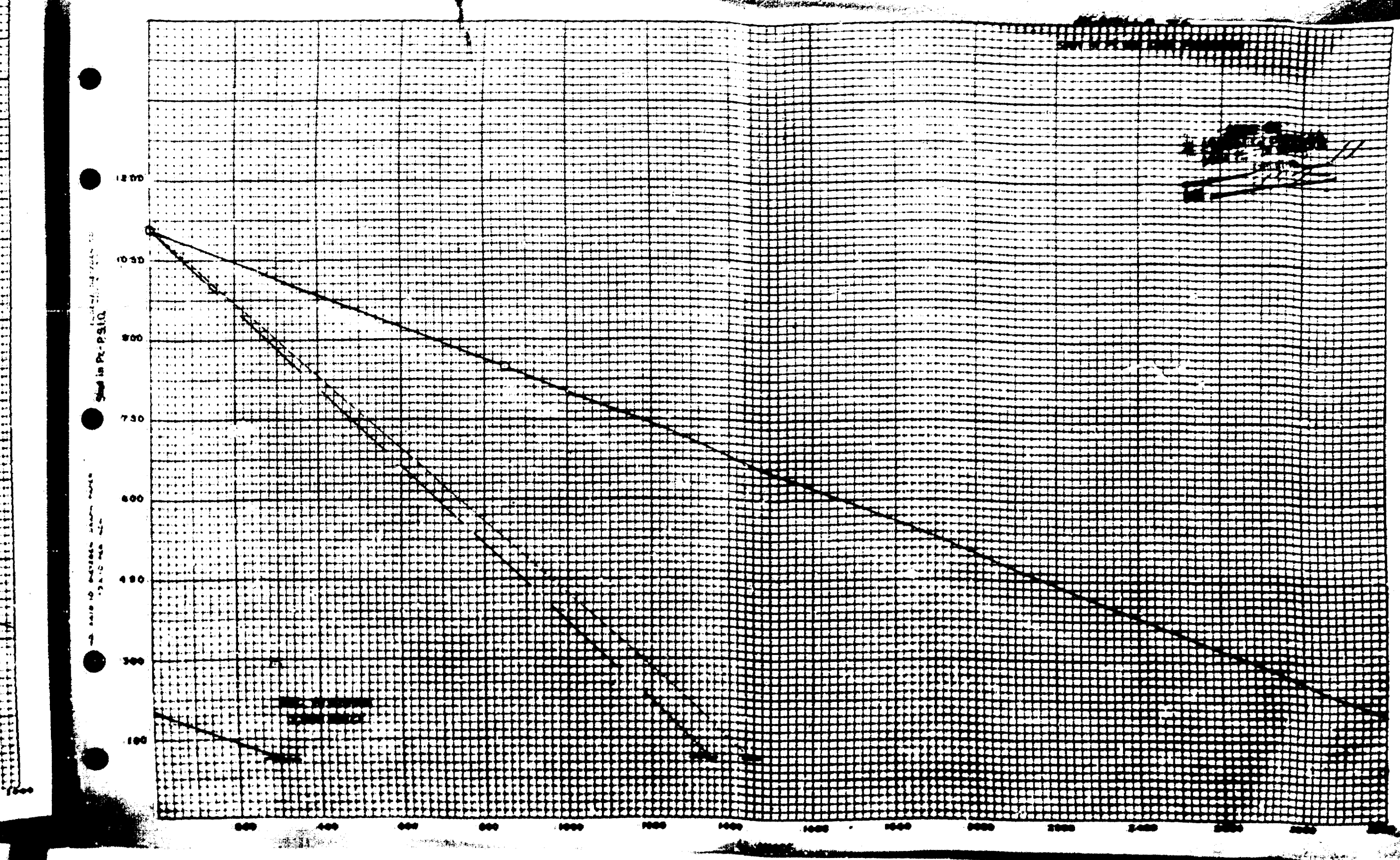
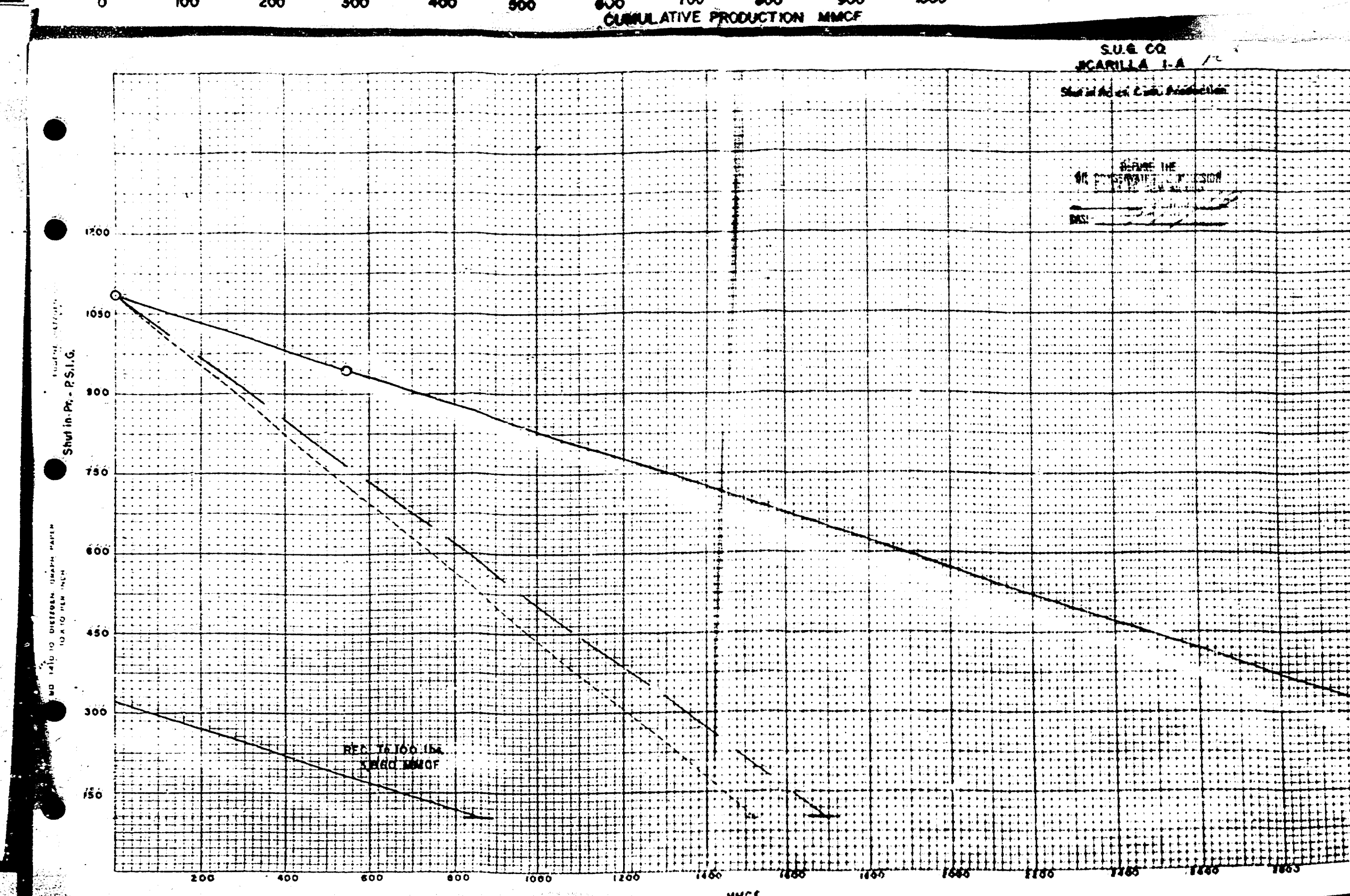
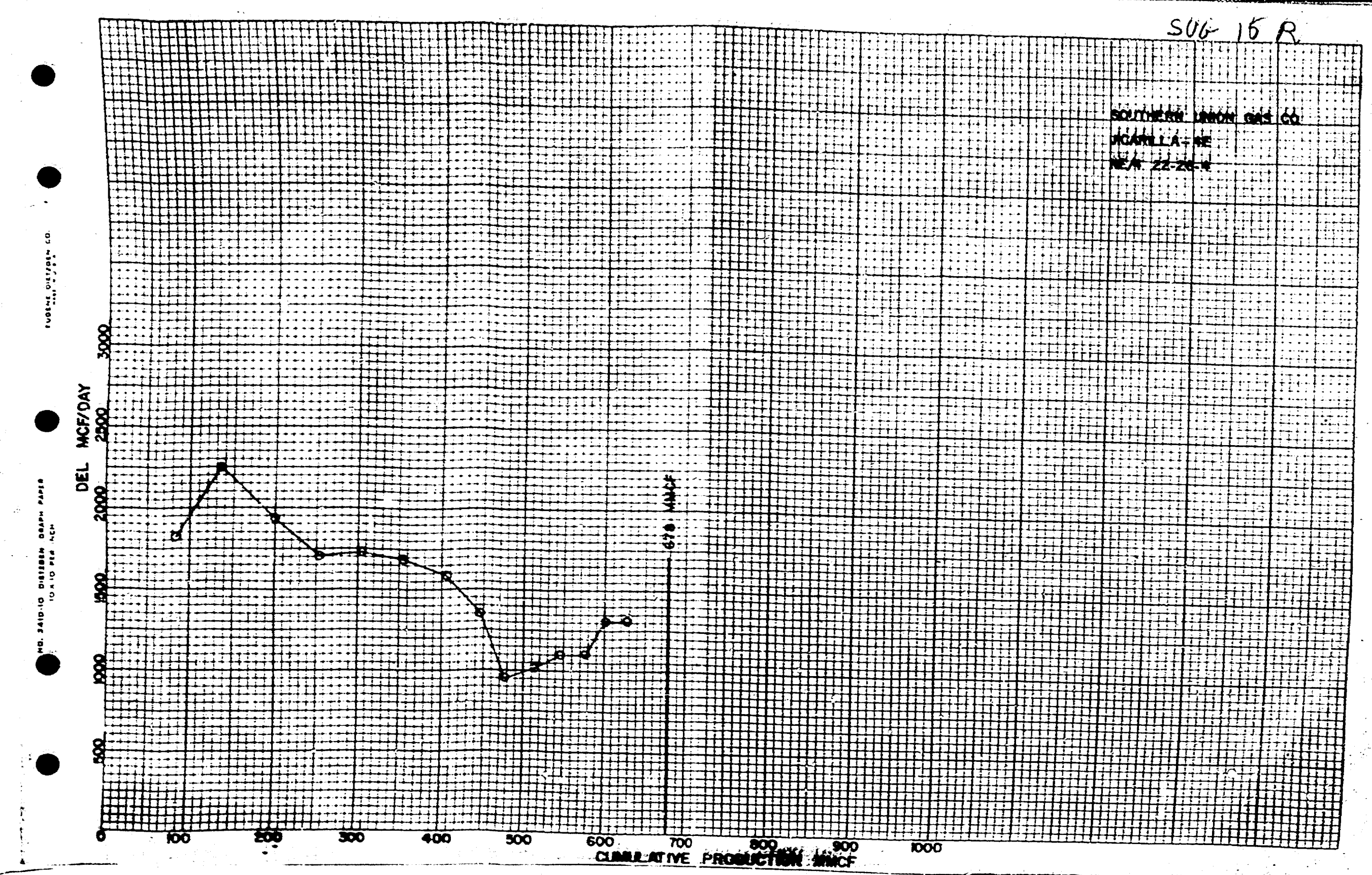
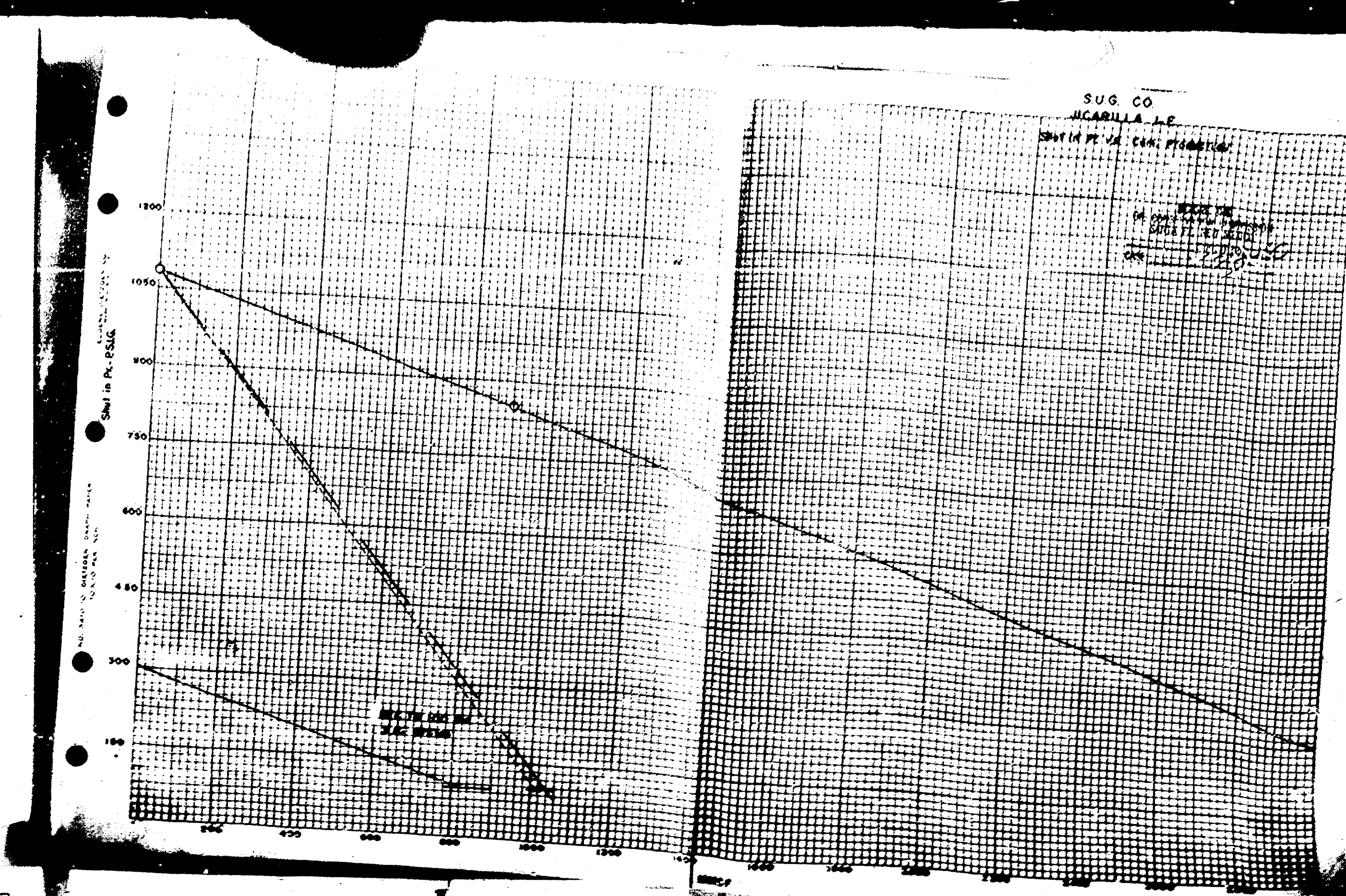
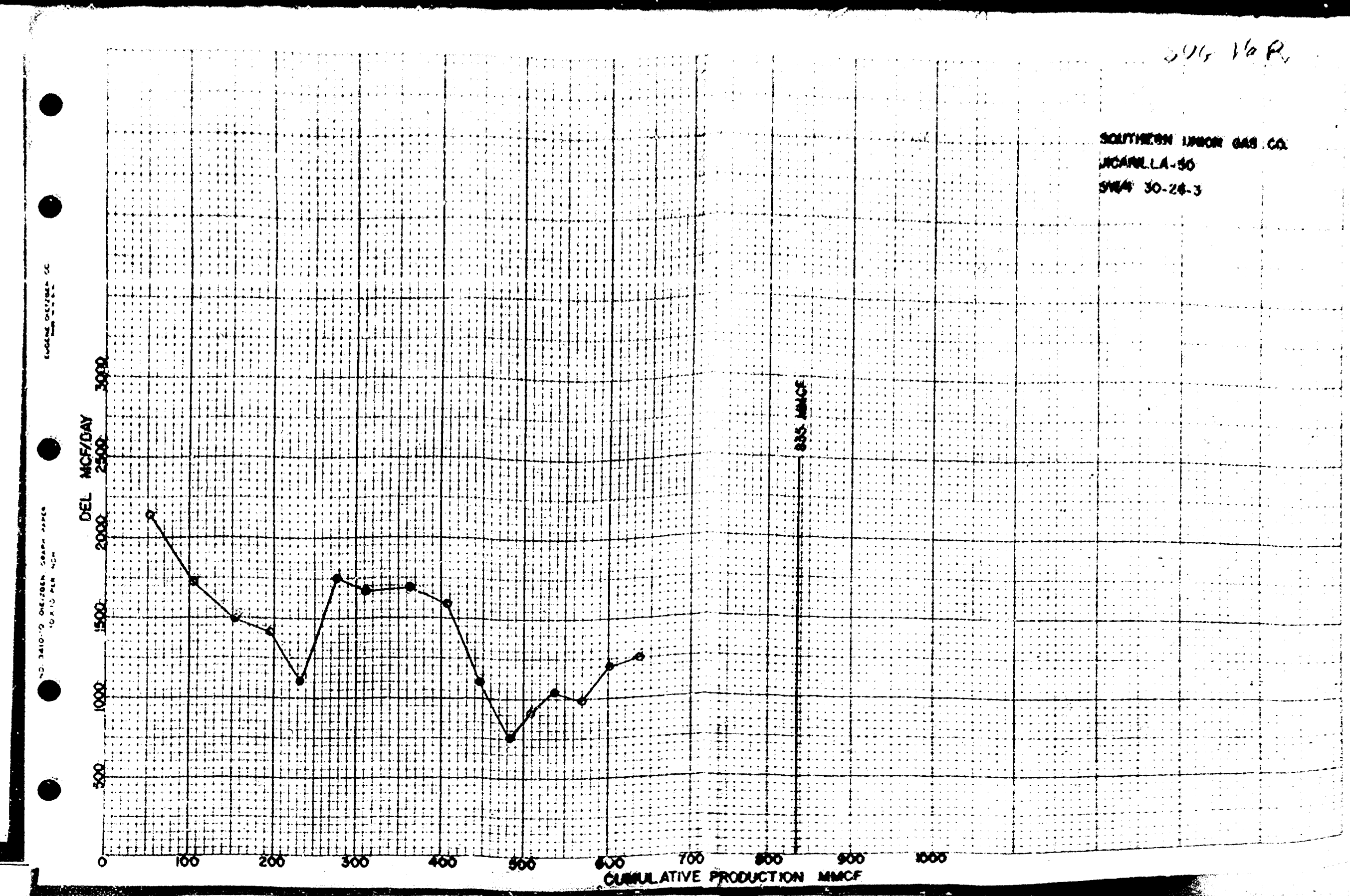
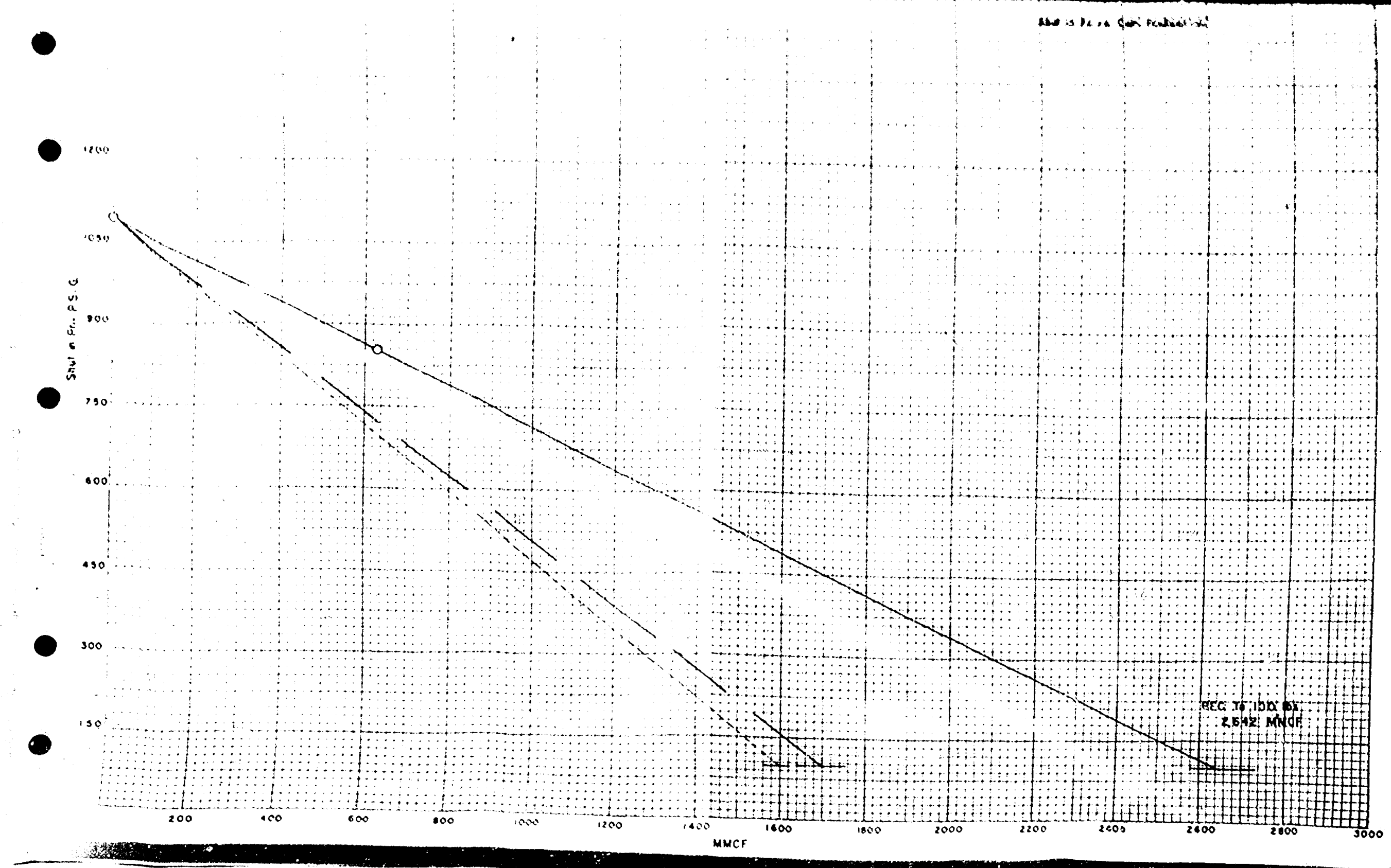


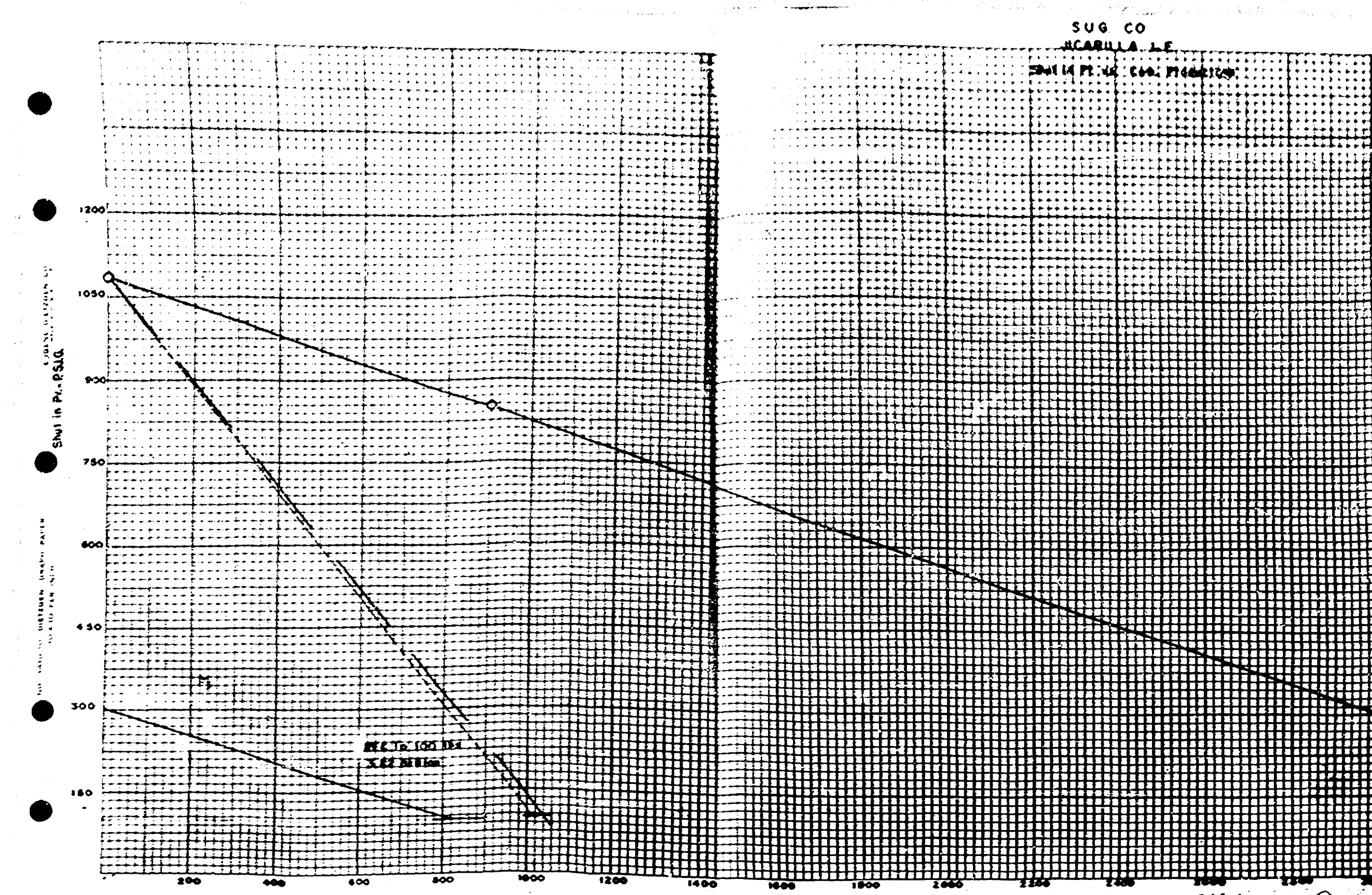












CORE LABORATORIES, INC.
Petroleum Services Engineering
DALLAS, TEXAS

Company: SUGCO, JICARILLA A-2
Well: SW 1/4 Sec 36, T10N, R10E, S4E
Field: JICARILLA
County: TARRANT
Location: SW 1/4 Sec 36, T10N, R10E, S4E

DATE: APRIL 30, 1954
Page: 1 of 1

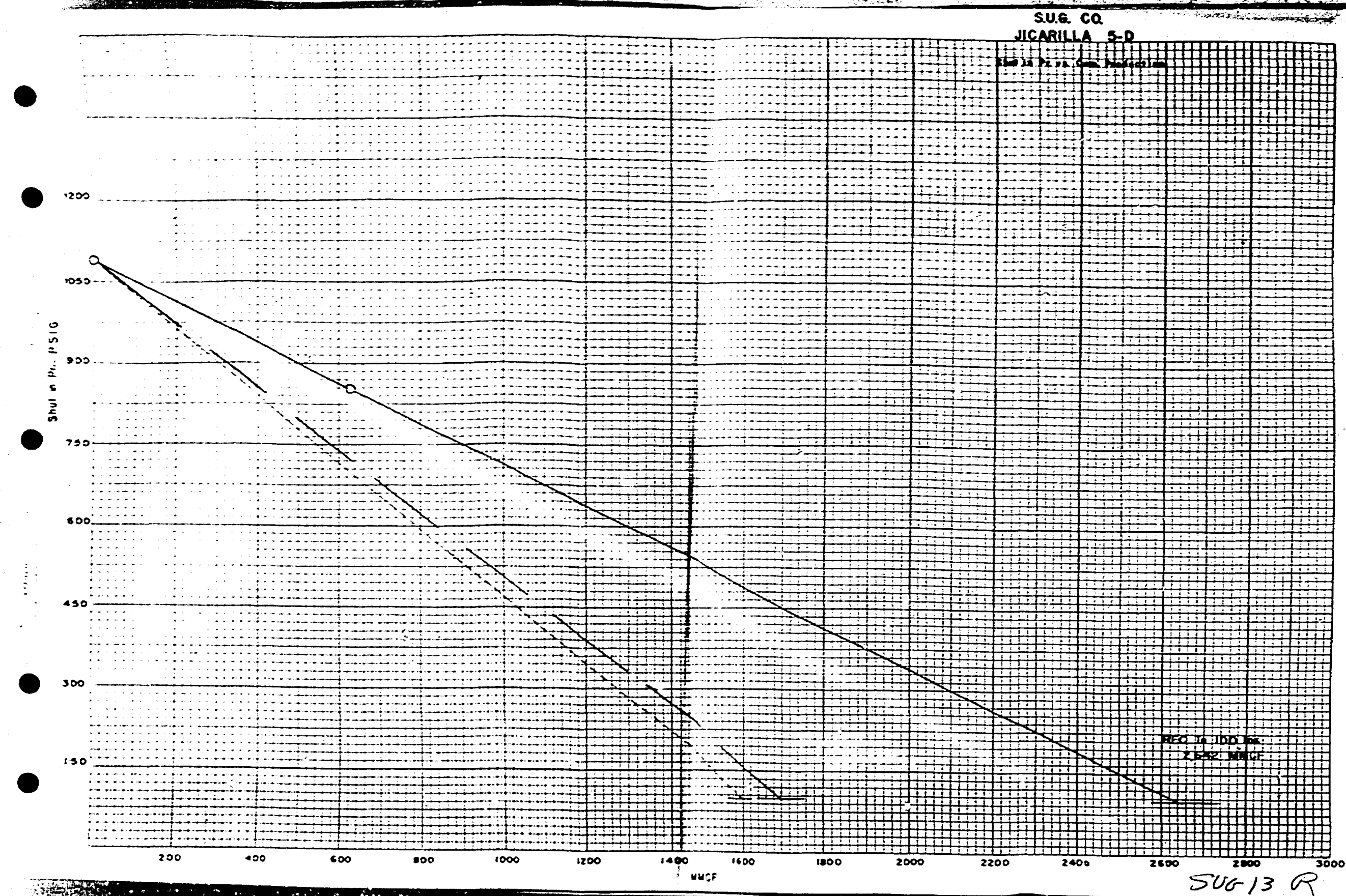
ANALYST: J. L. GILBERT
CHECKED: J. L. GILBERT

CORE ANALYSIS AND INTERPRETATION
(Figures in parentheses are in percent unless noted)

DEPTH FEET	PERMEABILITY MD/Darcy	POISSON'S RATIO	COMPRESSIBILITY 1/psi	FORMATION VOLUME FACTOR	RESISTIVITY OHM-FT	LOG K/μ
1	258.5	0.0	7.8	0.0	73.1	
2	25.5	0.0	8.3	0.0	50.7	
3	25.5	0.0	9.3	0.0	70.5	
4	25.5	0.0	11.9	27.6	53.1	
5	25.5	0.0	11.3	16.1	65.8	
6	25.5	0.0	12.0	30.5	55.1	
7	13.5	0.03	12.1	15.7	53.5	
8	13.5	0.0	6.2	0.0	52.7	
9	13.5	0.0	9.5	0.0	70.9	
10	13.5	0.0	10.2	19.6	55.5	
11	13.5	0.0	10.3	16.2	51.0	
12	13.5	0.0	9.2	0.0	63.1	
13	13.5	0.0	7.2	0.0	72.8	
14	20.5	0.0	6.5	0.0	52.3	
15	252.5	0.0	10.1	37.5	39.6	

This section is essentially non-productive due to low capacity.

CT 11,990 psi



CORE LABORATORIES, INC.
Petroleum Services Engineering
DALLAS, TEXAS

Company: SUGCO, JICARILLA A-2
Well: SW 1/4 Sec 36, T10N, R10E, S4E
Field: JICARILLA
County: TARRANT
Location: SW 1/4 Sec 36, T10N, R10E, S4E

DATE: APRIL 30, 1954
Page: 2 of 2

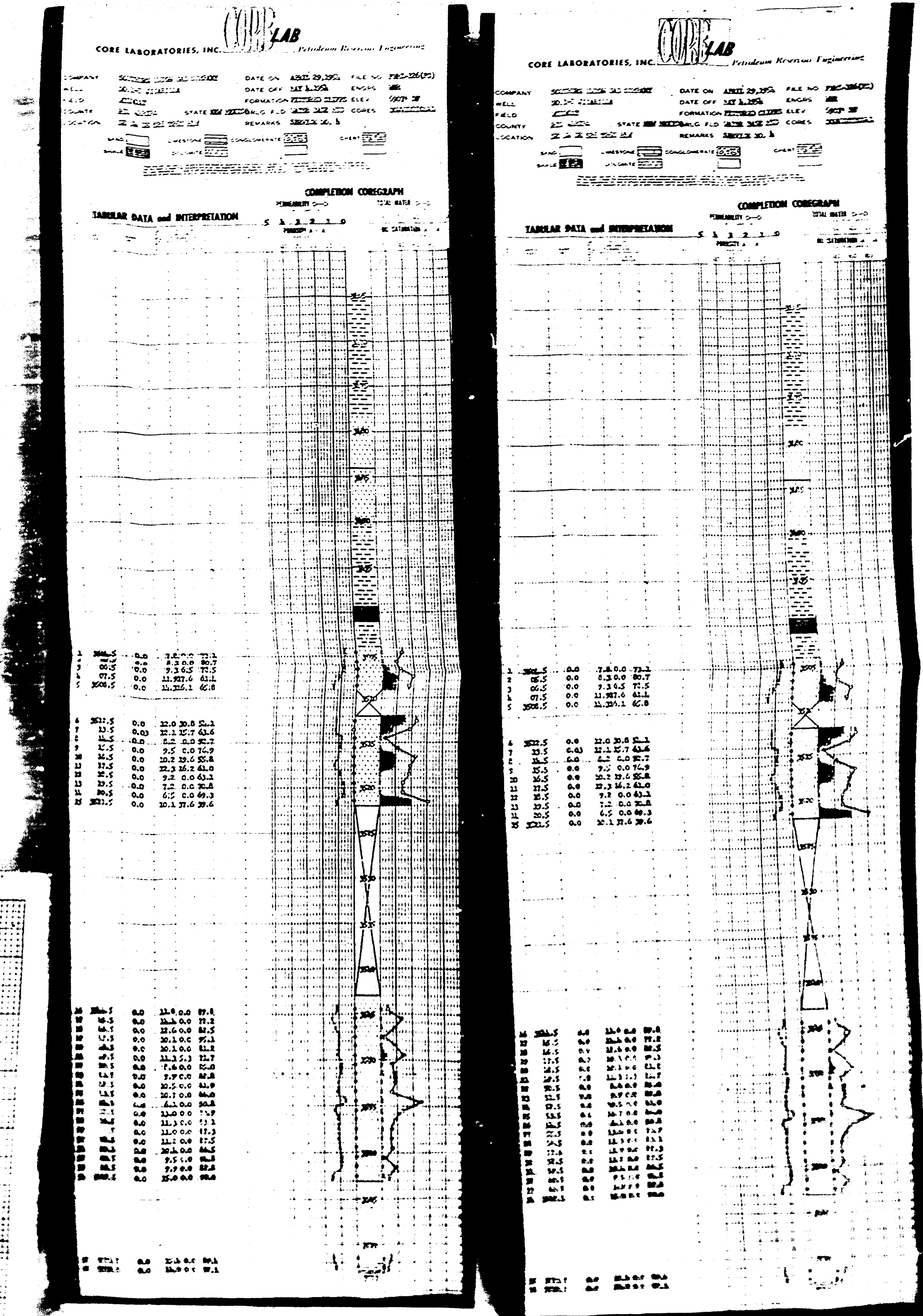
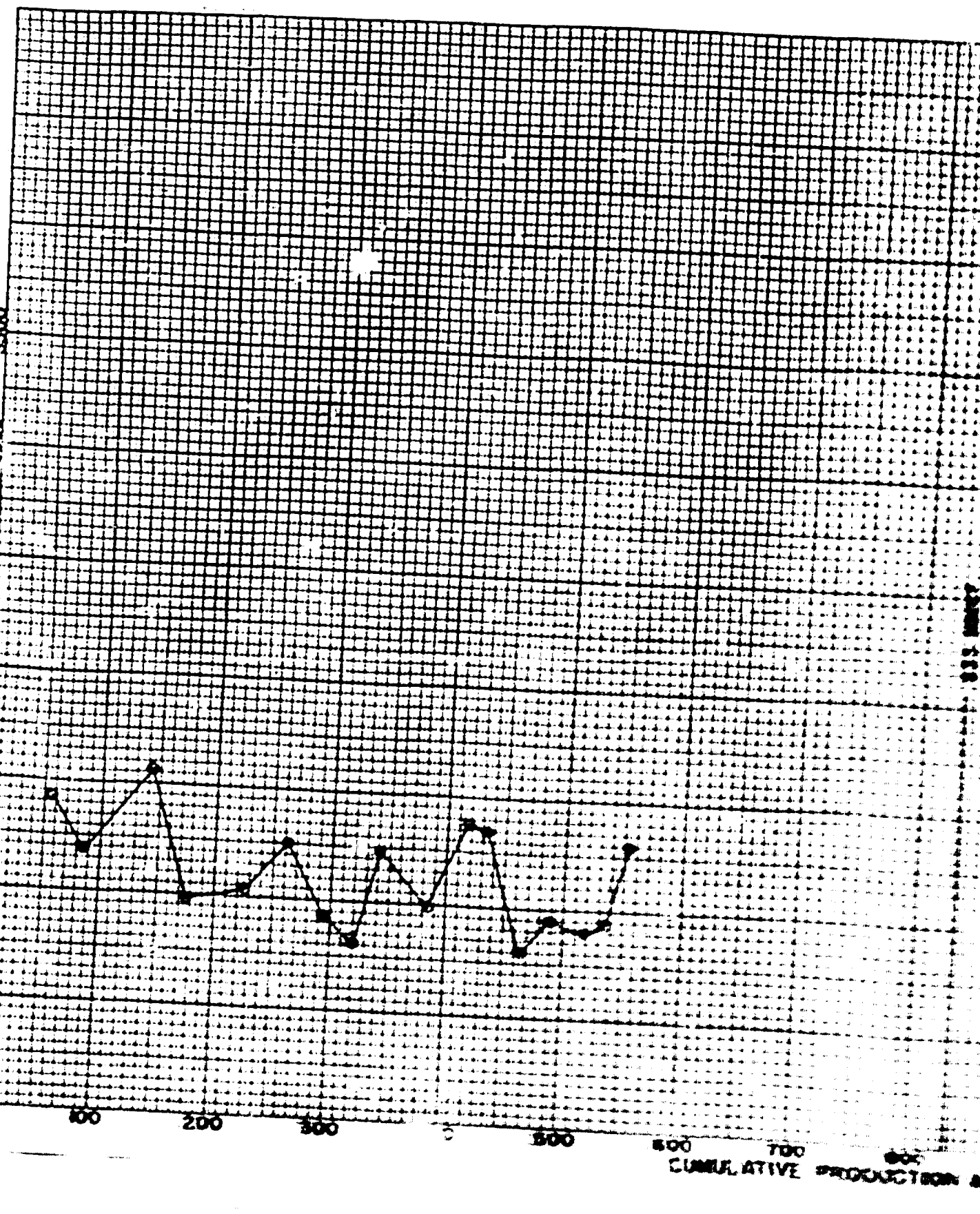
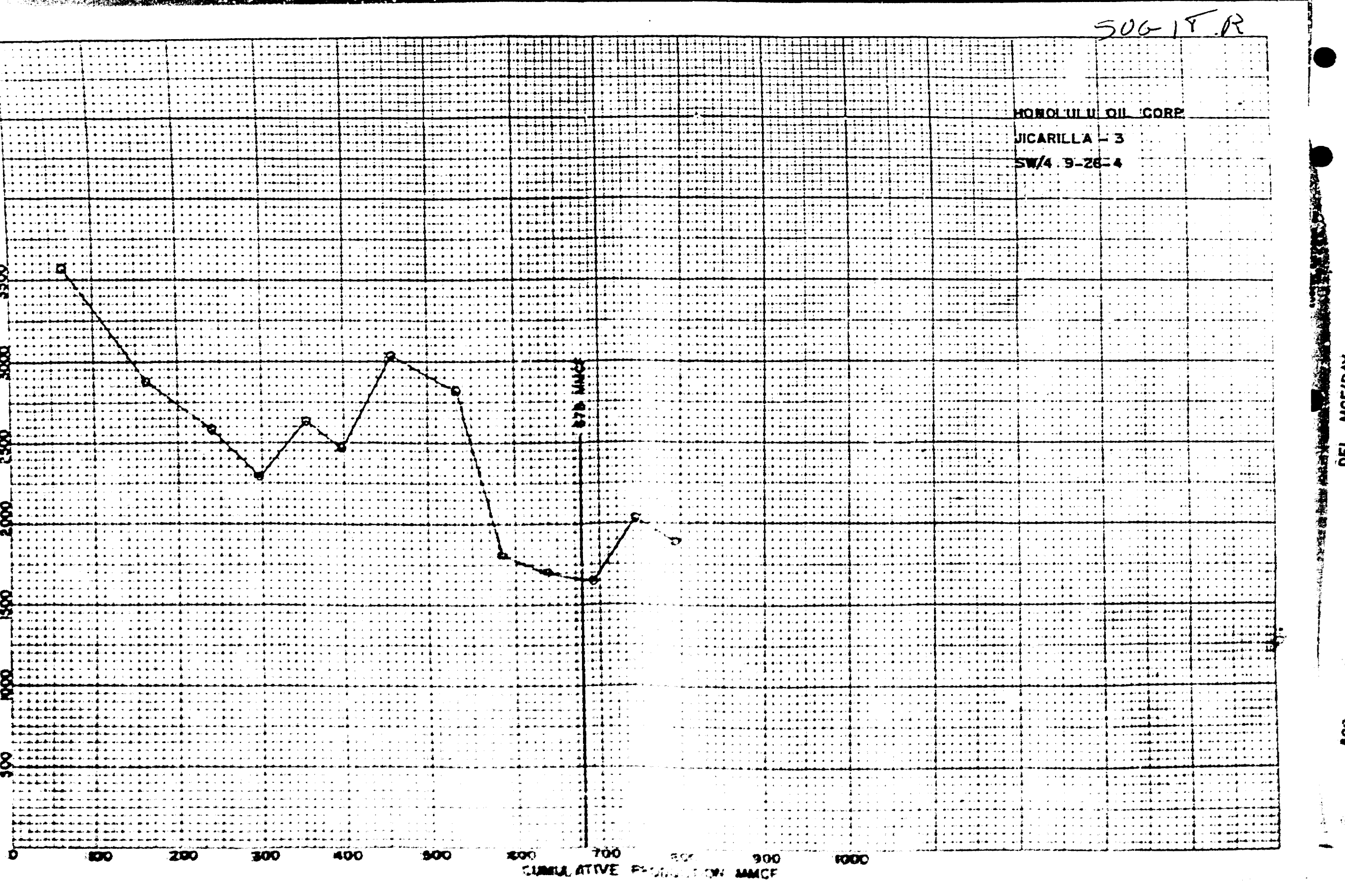
ANALYST: J. L. GILBERT
CHECKED: J. L. GILBERT

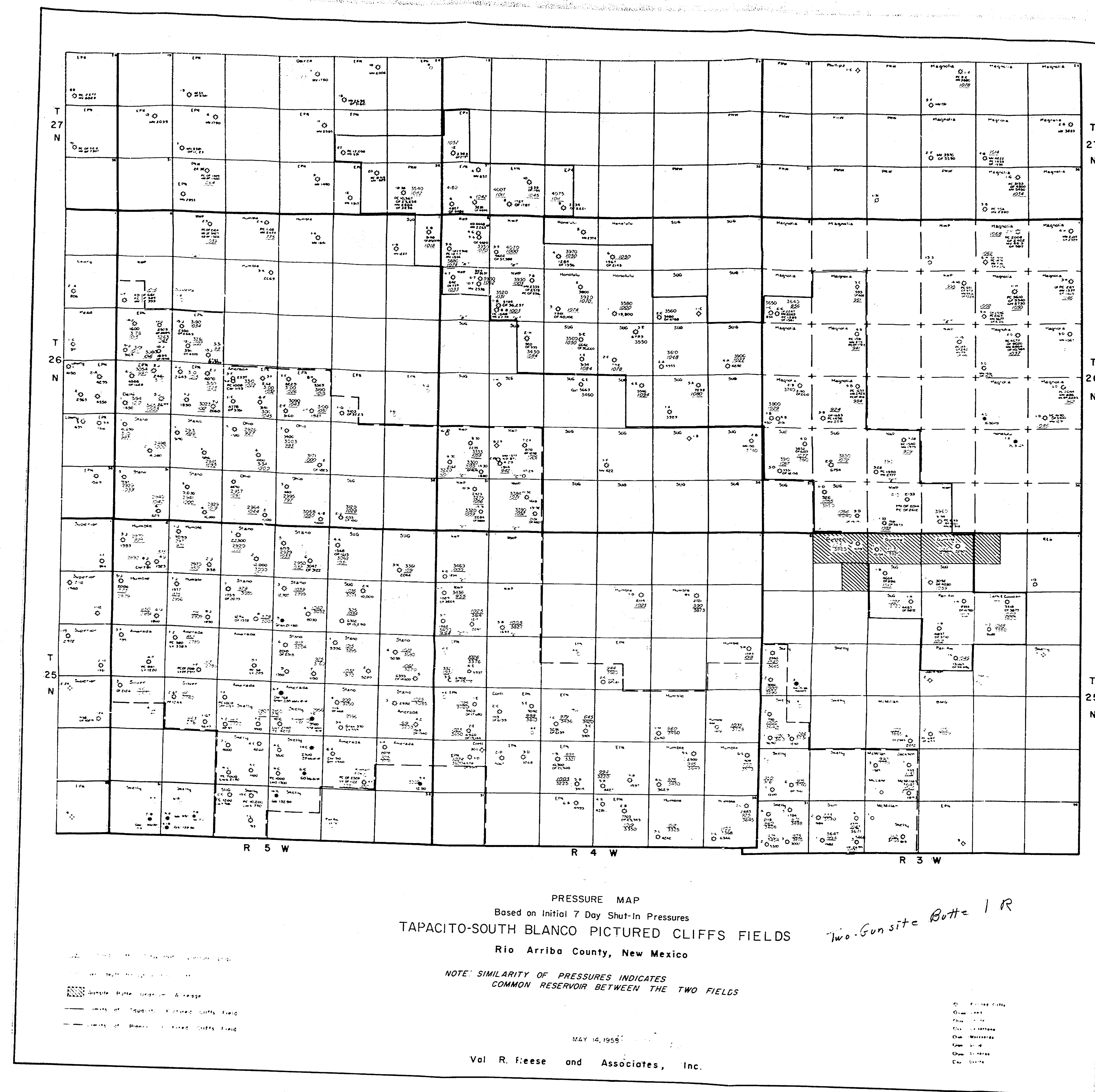
CORE ANALYSIS AND INTERPRETATION
(Figures in parentheses are in percent unless noted)

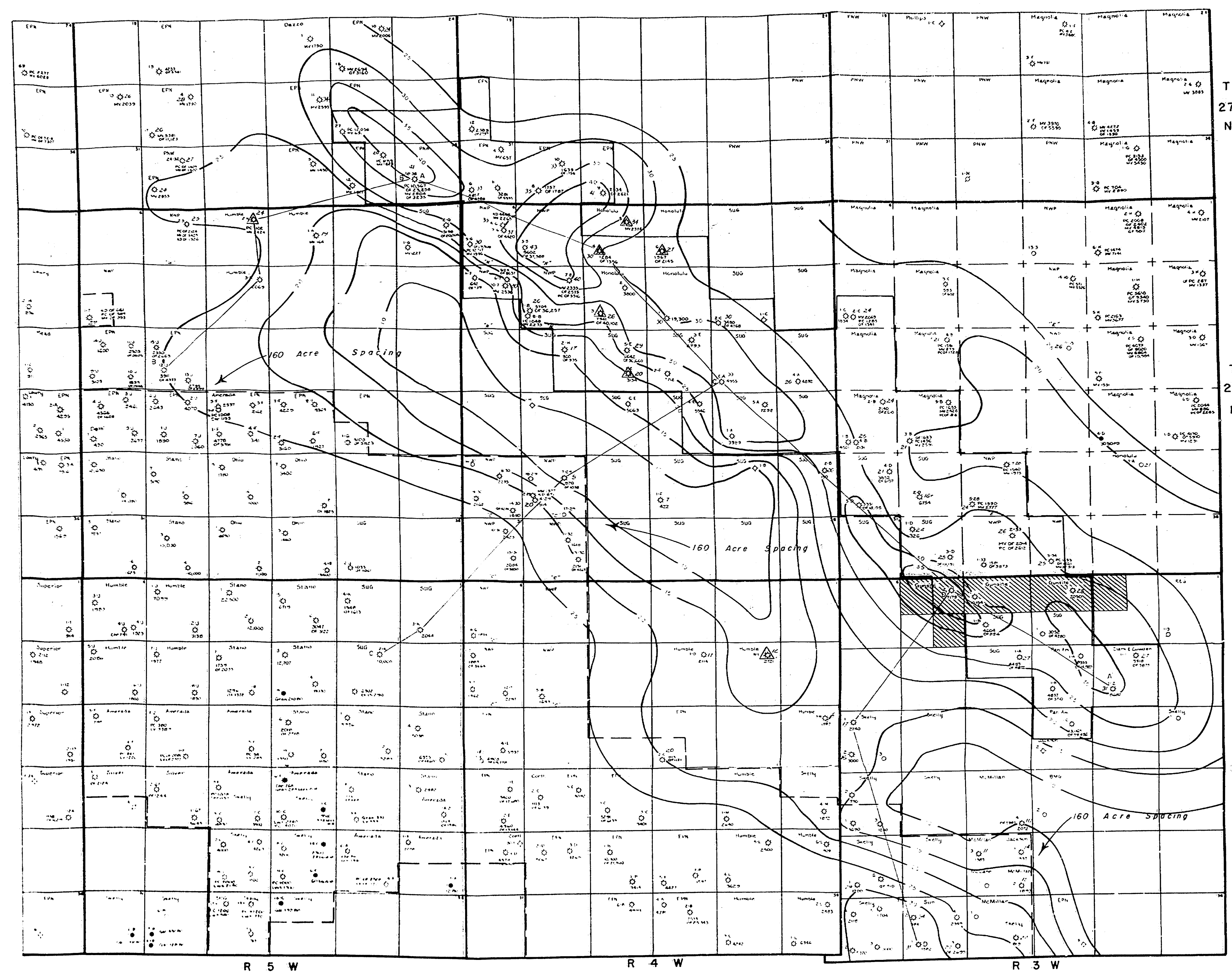
DEPTH FEET	PERMEABILITY MD/Darcy	POISSON'S RATIO	COMPRESSIBILITY 1/psi	FORMATION VOLUME FACTOR	RESISTIVITY OHM-FT	LOG K/μ
1	258.5	0.0	7.8	0.0	73.1	
2	25.5	0.0	8.3	0.0	50.7	
3	25.5	0.0	9.3	0.0	70.5	
4	25.5	0.0	11.9	27.6	53.1	
5	25.5	0.0	11.3	16.1	65.8	
6	25.5	0.0	12.0	30.5	55.1	
7	13.5	0.03	12.1	15.7	53.5	
8	13.5	0.0	6.2	0.0	52.7	
9	13.5	0.0	9.5	0.0	70.9	
10	13.5	0.0	10.2	19.6	55.5	
11	13.5	0.0	10.3	16.2	51.0	
12	13.5	0.0	9.2	0.0	63.1	
13	13.5	0.0	7.2	0.0	72.8	
14	20.5	0.0	6.5	0.0	52.3	
15	252.5	0.0	10.1	37.5	39.6	

This section is essentially non-productive due to low capacity.

CT 11,990 psi







Isopachous Map of Net Pay Sand
TAPACITO PICTURED CLIFFS FIELD
Rio Arriba County, New Mexico

Legend:
 A. Contour lines showing net pay sand thickness in feet.
 B. Contour lines showing net pay sand thickness in feet.
 C. Contour lines showing net pay sand thickness in feet.
 D. Contour lines showing net pay sand thickness in feet.
 E. Contour lines showing net pay sand thickness in feet.
 F. Contour lines showing net pay sand thickness in feet.
 G. Contour lines showing net pay sand thickness in feet.
 H. Contour lines showing net pay sand thickness in feet.
 I. Contour lines showing net pay sand thickness in feet.
 J. Contour lines showing net pay sand thickness in feet.
 K. Contour lines showing net pay sand thickness in feet.
 L. Contour lines showing net pay sand thickness in feet.
 M. Contour lines showing net pay sand thickness in feet.
 N. Contour lines showing net pay sand thickness in feet.
 O. Contour lines showing net pay sand thickness in feet.
 P. Contour lines showing net pay sand thickness in feet.
 Q. Contour lines showing net pay sand thickness in feet.
 R. Contour lines showing net pay sand thickness in feet.
 S. Contour lines showing net pay sand thickness in feet.
 T. Contour lines showing net pay sand thickness in feet.
 U. Contour lines showing net pay sand thickness in feet.
 V. Contour lines showing net pay sand thickness in feet.
 W. Contour lines showing net pay sand thickness in feet.
 X. Contour lines showing net pay sand thickness in feet.
 Y. Contour lines showing net pay sand thickness in feet.
 Z. Contour lines showing net pay sand thickness in feet.

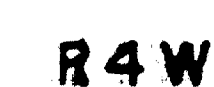
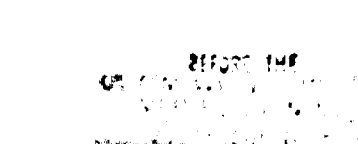
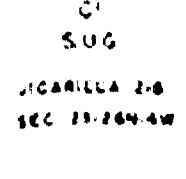
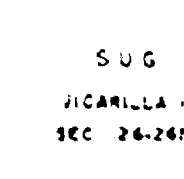
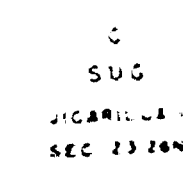
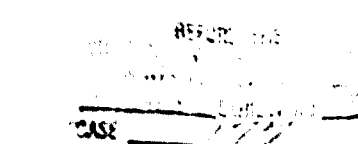
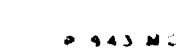
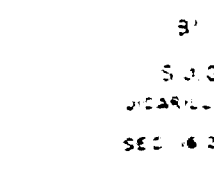
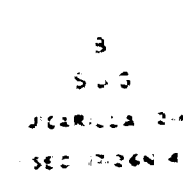
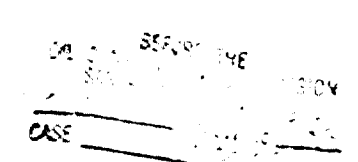
MAP I

February 1958

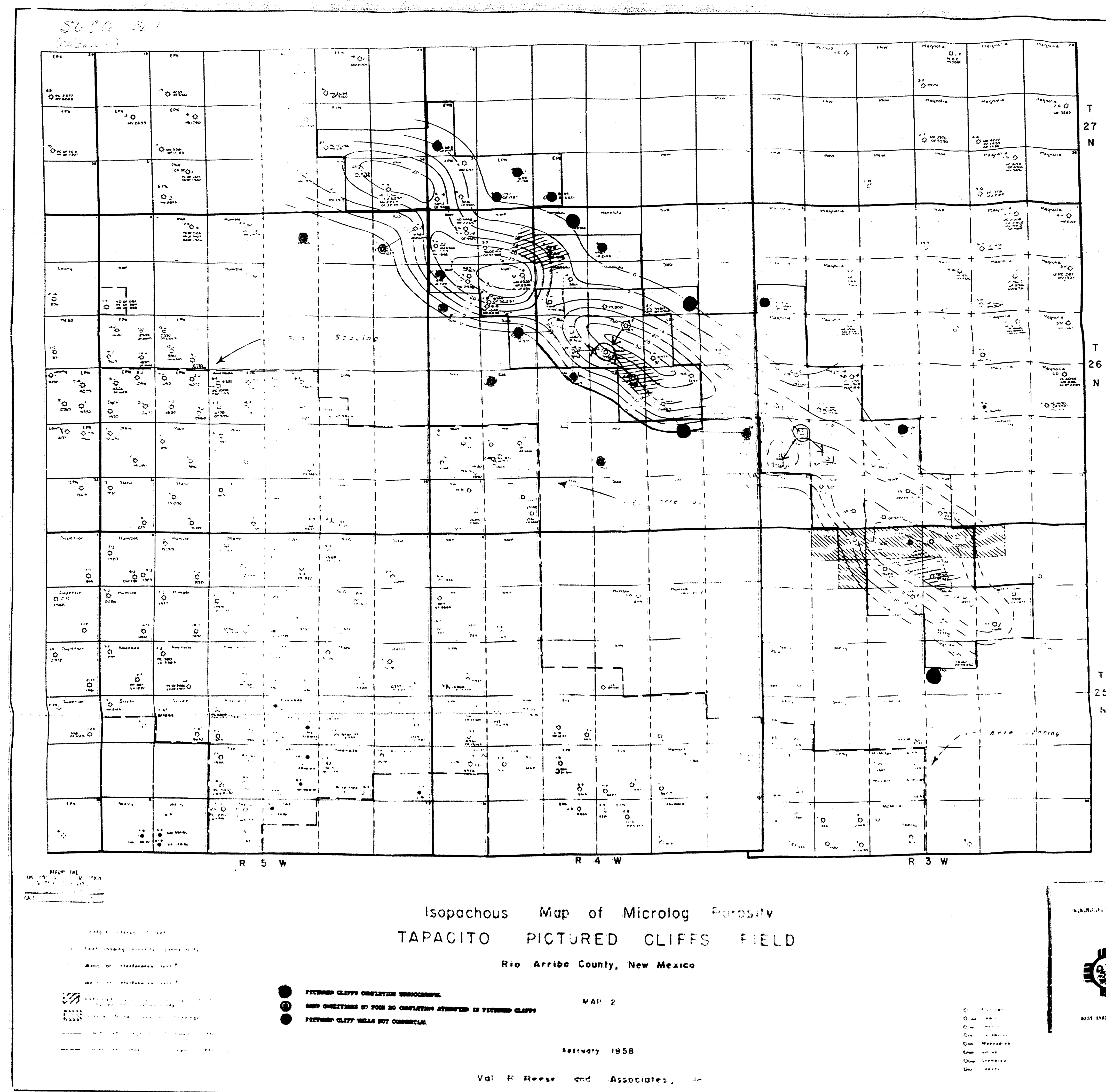
Vol R Reese and Associates, Inc.

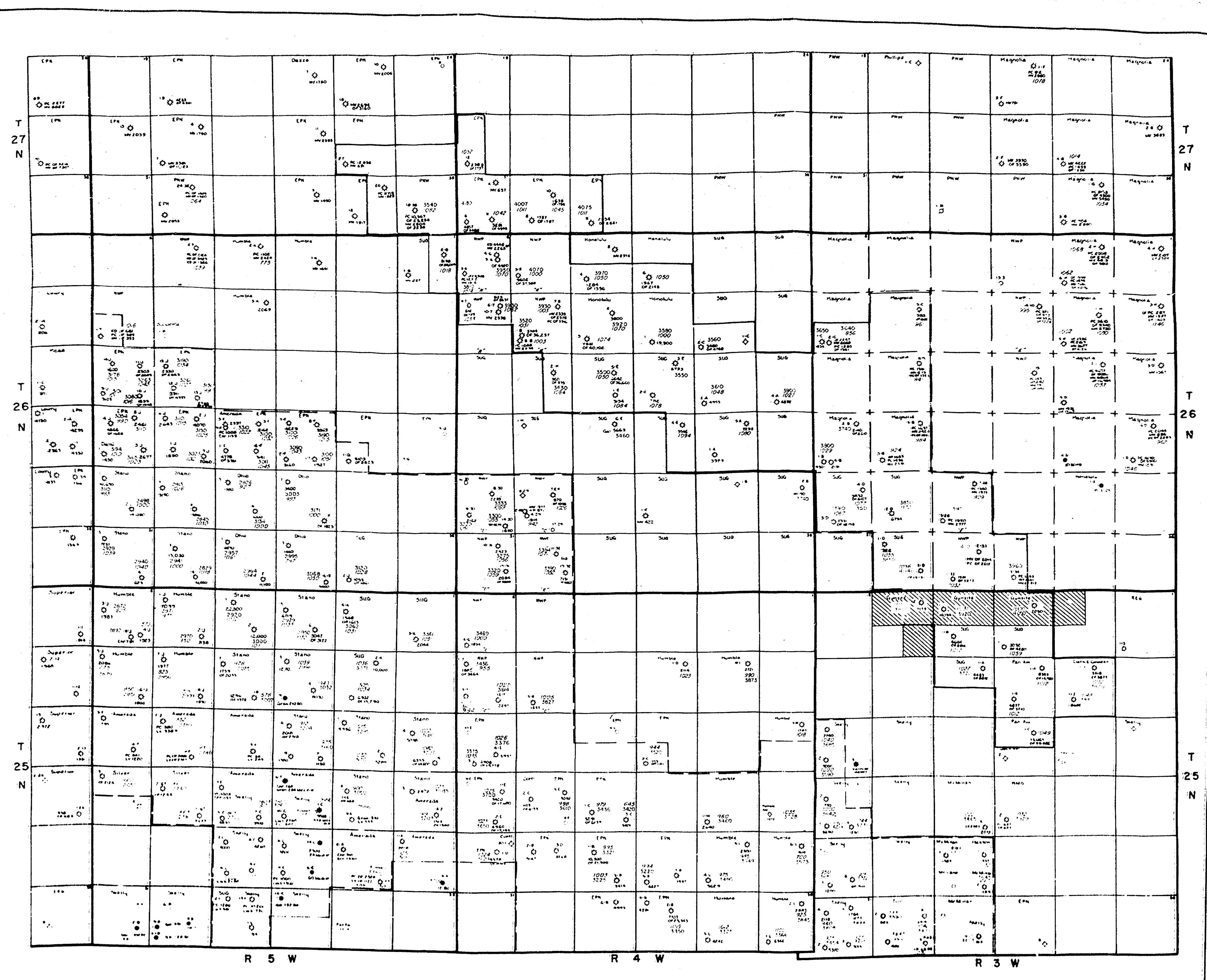
Legend:
 A. Contour lines showing net pay sand thickness in feet.
 B. Contour lines showing net pay sand thickness in feet.
 C. Contour lines showing net pay sand thickness in feet.
 D. Contour lines showing net pay sand thickness in feet.
 E. Contour lines showing net pay sand thickness in feet.
 F. Contour lines showing net pay sand thickness in feet.
 G. Contour lines showing net pay sand thickness in feet.
 H. Contour lines showing net pay sand thickness in feet.
 I. Contour lines showing net pay sand thickness in feet.
 J. Contour lines showing net pay sand thickness in feet.
 K. Contour lines showing net pay sand thickness in feet.
 L. Contour lines showing net pay sand thickness in feet.
 M. Contour lines showing net pay sand thickness in feet.
 N. Contour lines showing net pay sand thickness in feet.
 O. Contour lines showing net pay sand thickness in feet.
 P. Contour lines showing net pay sand thickness in feet.
 Q. Contour lines showing net pay sand thickness in feet.
 R. Contour lines showing net pay sand thickness in feet.
 S. Contour lines showing net pay sand thickness in feet.
 T. Contour lines showing net pay sand thickness in feet.
 U. Contour lines showing net pay sand thickness in feet.
 V. Contour lines showing net pay sand thickness in feet.
 W. Contour lines showing net pay sand thickness in feet.
 X. Contour lines showing net pay sand thickness in feet.
 Y. Contour lines showing net pay sand thickness in feet.
 Z. Contour lines showing net pay sand thickness in feet.





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, 2679, 26

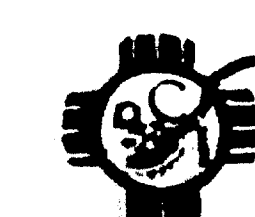




PRESSURE MAP
 Based on Initial 7 Day Shut-In Pressures
 TAPACITO-SOUTH BLANCO PICTURED CLIFFS FIELDS
 Rio Arriba County, New Mexico

NOTE: SIMILARITY OF PRESSURES INDICATES
 COMMON RESERVOIR BETWEEN THE TWO FIELDS

Val R Reese and Associates, Inc.



EQUATION OF DARCY'S LAW FOR RADIAL, HORIZONTAL GAS FLOW

$$q_{gw} = \frac{0.044 \pi K_g H 144 (P_d^2 - P_w^2)}{1000 \mu_g P_w \ln \frac{r_d}{r_w}} \quad (100)$$

OR

$$\ln \frac{r_d}{r_w} = \frac{0.044 \pi K_g H 144 (P_d^2 - P_w^2)}{1000 \mu_g P_w q_{gw}} \quad (100^2)$$

WHERE

q_{gw} = Rate of gas flow into well bore,
cubic feet/day at bottom hole
flowing conditions

K_g = Permeability to gas, millidarcys

H = Net pay thickness, feet

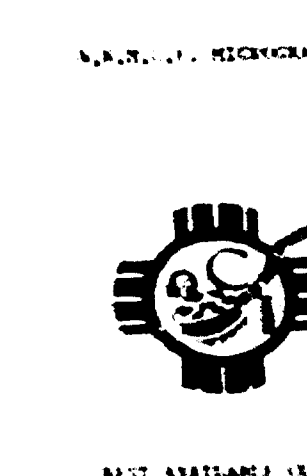
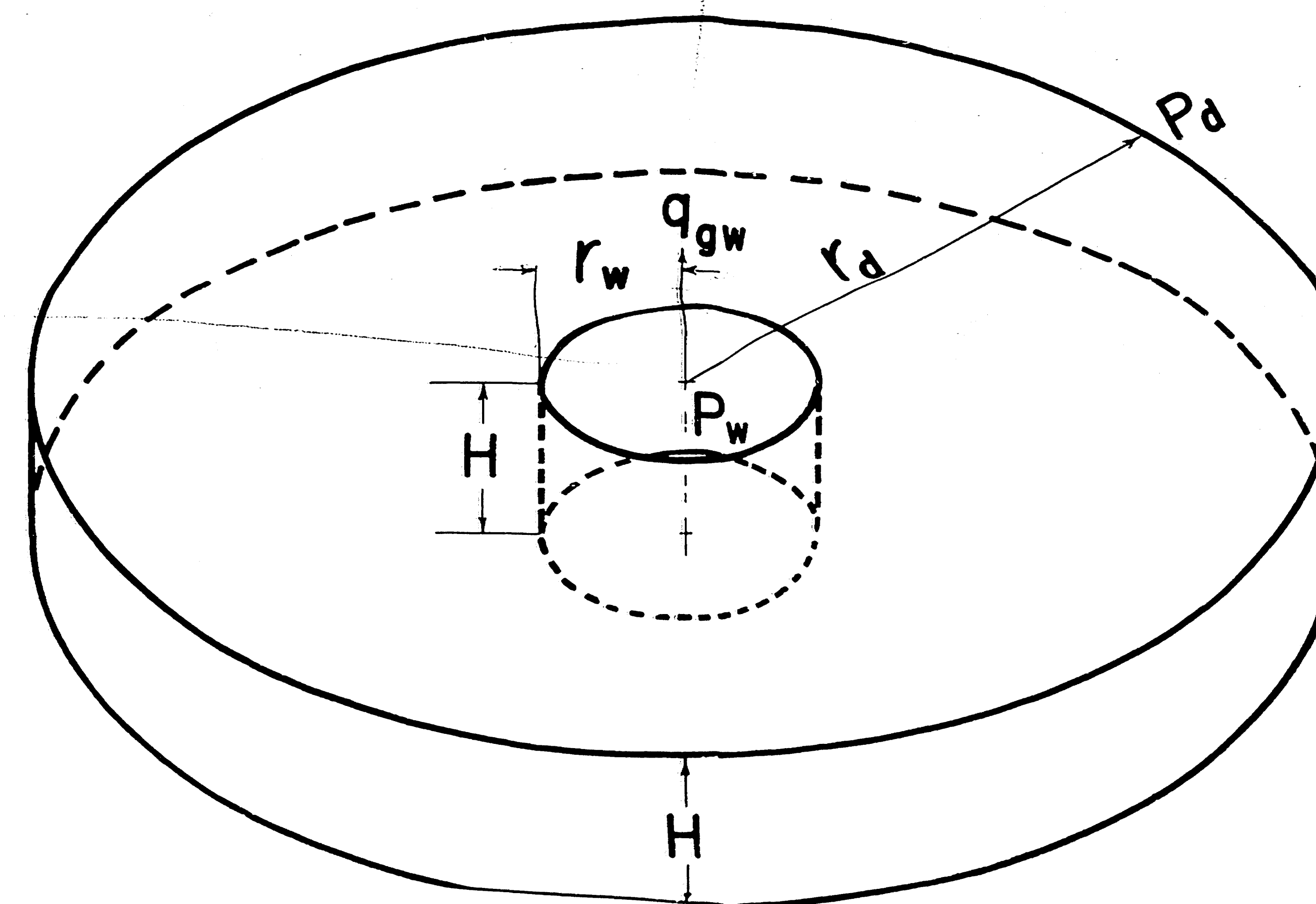
P_d = Pressure in reservoir at distance
 r_d from well bore, psia

P_w = Pressure in well bore, psia

μ_g = Viscosity of gas, centipoises

r_d = Drainage radius, feet

r_w = Effective well bore radius, feet

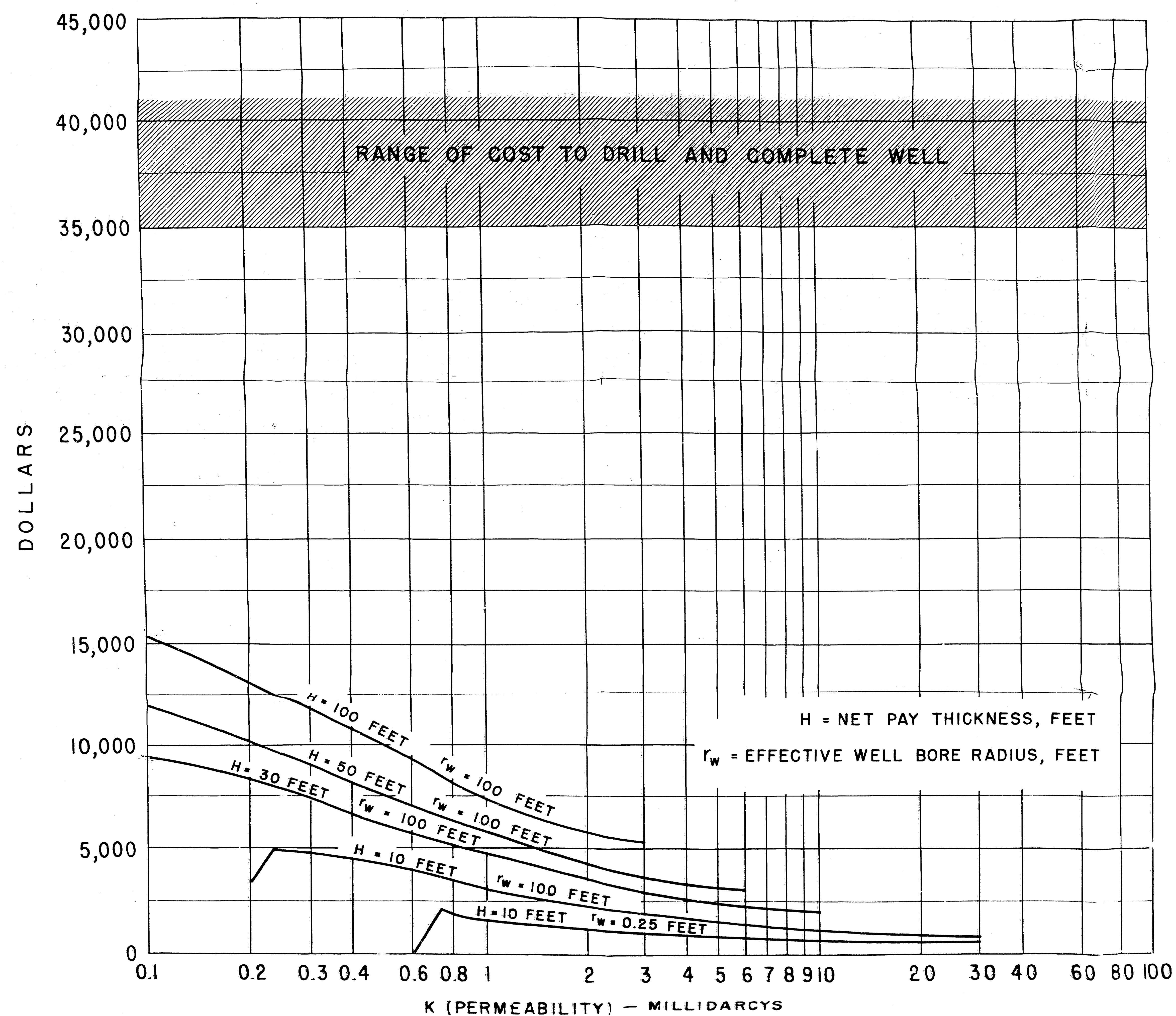


HUMBLE EXHIBIT NO. 1

INDICATED NET VALUE OF ADDITIONAL GAS RECOVERABLE UNDER 160 ACRE SPACING AS COMPARED TO 320 ACRE SPACING

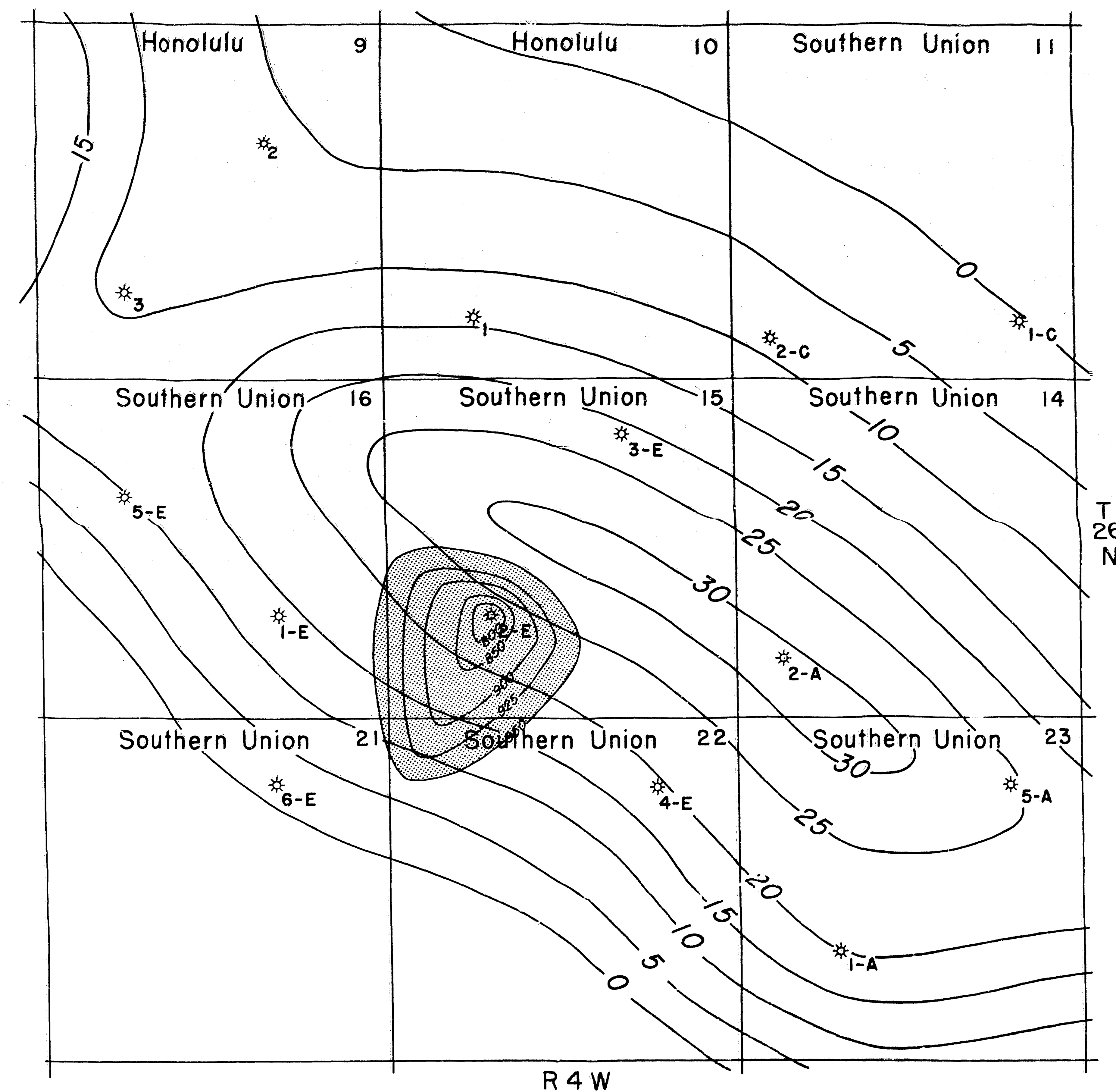
TAPACITO PICTURED CLIFFS GAS POOL
RIO ARriba COUNTY, NEW MEXICO

BASED ON NET GAS PRICE OF 10.4 ¢/Mcf AFTER ROYALTY AND SEVERANCE TAXES



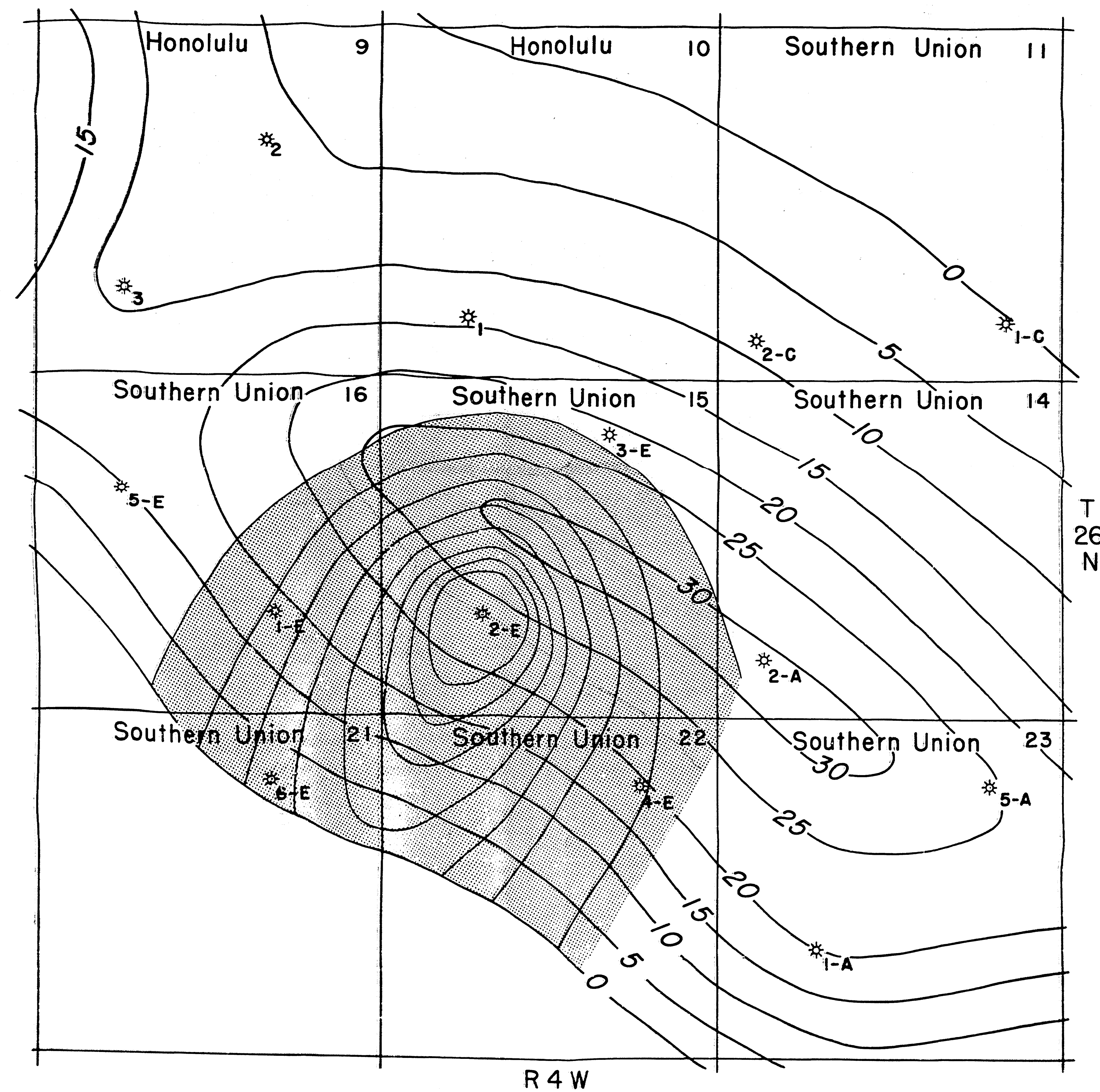
HUMBLE EXHIBIT NO. 2

ISOPACHOUS MAP OF MICROLOG POROSITY
TAPACITO PICTURED CLIFFS GAS POOL
SOUTHERN UNION JICARILLA "E" AREA
RIO ARRIBA CO., NEW MEXICO



CALCULATED PRESSURE DISTRIBUTION
IN VICINITY OF SOUTHERN UNION JICARILLA NO. 2-E
ASSUMING UNIFORM PERMEABILITY
BASED ON EQUATION OF DARCY'S LAW FOR RADIAL, HORIZONTAL GAS FLOW

ISOPACHOUS MAP OF MICROLOG POROSITY
TAPACITO PICTURED CLIFFS GAS POOL
SOUTHERN UNION JICARILLA "E" AREA
RIO ARriba CO., NEW MEXICO



CALCULATED PRESSURE DISTRIBUTION
IN VICINITY OF SOUTHERN UNION JICARILLA NO. 2-E
ASSUMING VARYING PERMEABILITY
BASED ON COMPUTER SOLUTION OF UNSTEADY STATE EQUATION FLUID FLOW

HUMBLE EXHIBIT NO. 1

