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Petroleum Exploration in Venezuela between 1942 and 1961 A Statistical Review

by W. A. MOHLER, Gelterkinden BL

Introduction

The present statistical review was originally written for the textbook «Aspectos de la Industria Petrolera en Venezuela», issued by the «Primer Congreso Venezolano de Petroleo» 1962 of which congress the author was a committee member. For various reasons the paper was not included in the textbook, but as the facts contained in it have documental value, it was considered worth publishing.

The paper is essentially based on data received from operating oil companies in Venezuela. Additional figures were taken from the «Informe Anual» issued by the Ministry of Mines and from the «Bulletin of the American Association of Petroleum Geologists» special issue on «Development in Foreign Fields» published each year in the July number. Detailed figures are only available until 1961. The last review in A.A.P.G. Bulletin No. 7, 1963, page 1287 summarizes activities in Venezuela as follows: «Oil production in 1962 rose to a record high, reserves declined slightly, and while rig time dropped sharply and newfield wildcatting fell off to new lows, the total of all wells drilled was substantially higher than in 1961.»

General Remarks

The trend of exploration activities is closely related to local and international political events and economic factors. A period of twenty years (1942-1961) has been chosen to demonstrate in graphs and absolute figures the following items:

1. Concession movement.
2. Field exploration (seismic, gravity, surface geology, structural/stratigraphic drilling).
3. Completed exploration wells.
4. Crude production.
5. Deepest wells drilled each year between 1939 and 1961.

The following local and international events may be recalled as they have decidedly influenced exploration activities in Venezuela.

In 1942 World War II had gone into its fourth year. Due to the loss of tankers there was a transportation shortage and consequently crude production fell to 148 million barrels, the lowest since 1934. In addition, materials were scarce and development programmes could not be carried out. The result was a general depression of the industry and reduced exploration activity.

In March 1943 the new «Venezuelan Law of Hydrocarbons» went into effect. Old concessions were converted into new forty years titles and in 1944 new concessions

amounting to 6.500.000 hectares were granted to the industry under the terms of the new hydrocarbons law.

When in 1943 the transportation and material shortage had eased and more tankers became available, possibilities of producing Venezuelan oil increased sharply. The oil companies resumed exploration work, especially on the newly granted concessions and in 1946/47 exploration activity reached its highest level in history.

In the midst of the economic boom the government was overthrown in October 1945 and a revolutionary junta took over. On the last day of 1945 an extraordinary tax on Company profits was decreed. In addition the new Government stated that it «will never grant concessions in the manner in which it had been done up to now.» All this was not very stimulating for the industry. In November 1948 a military junta took over. In the same year world production had caught up with demand and over-production became a problem. The labour force was drastically reduced and in 1949 and 1950 exploration activity decreased rapidly.

In June 1950, due to the communist invasion of South Korea the demand of crude oil increased and the industry expanded again.

In October 1951 representatives of the oil industry were informed that the Government had in principle decided to issue new concessions. This gave a new impulse to exploration of open areas in order to be prepared for the selection of new concessions once they were offered.

Due to oversaturation of the world's crude oil market after the Korea effect had deminished, production began to drop early in 1953. Exploration activity still showed an upward trend, due to the fact that the issue of new concessions was expected.

In July 1956 the Suez Canal was closed and production in 1957 rose for the first time in history to over 1.000 million barrels/year.

New concessions were granted to the industry in 1956 and 1957 totalling 311.000 hectares of exploitation and 510.000 hectares of exploration concessions. In 1957 field-work, particularly seismic, rose to a very high level in connection with the evaluation of the newly granted concessions.

In January 1958 a change of Government took place and at the end of the same year income tax was drastically increased. In February 1959 the newly elected Government was installed and has since repeatedly stated that no new concessions will be offered to private oil companies.

Exploration activity is undergoing very drastical restriction since 1959 due partly to the increased income tax and the dim outlook for new concessions, but also partly because the concessions given out in 1956/57 are now evaluated. During 1960 exploration activity further dropped and was close to nothing in 1961. All geophysical service companies had left the country.

As a consequence of the new tax law and possibly also in respect to repeated statements by the Ministry of Mines, that the oil companies were using only a low percentage of their concessions and therefore had ample space for exploration and finding additional reserves, the industry has started to renounce concessions which have no commercial prospects. Since 1st January 1958 the industry renounced 2.577.438 hectares of concessions which is 38,5 % of the holdings on that date, when 6.691.246 hectares were under concession by the private oil industry. The total amount of hydrocarbon concessions held by the private industry on the 31st December 1961 amounted to 4.120.851 hectares.

In April 1960 the «Corporacion Venezolana de Petroleo» was created and in January and December 1961 exploration and exploitation areas were granted to the national

oil company. By the end of December 1961 the total «asignaciones» to the C.V.P. was 141.457,94 hectares. The areas assigned to C.V.P. are not included in our figures showing concession movements, as C.V.P.'s acreage is not subject to the same clauses of the «Law of Hydrocarbons» as the concessions of the private oil companies are.

Although production figures still show an upward trend, exploration activities are alarmingly low and sooner or later this situation will have its effect on the companies reserve position.

In this connection a statement may be recalled made by Herbert Hoover, Jr., at the Annual Convention of the «American Association of Petroleum Geologists» held in St. Louis, Missouri, in April 1957:

«Petroleum exploration is not an activity that can be turned on and off like a water faucet whenever an emergency arises. It must be kept going continuously if it is to be successful.»

This statement should be kept in mind by all parties responsible for the future of Venezuela's oil industry.

Movement of hydrocarbon concessions

(Exploration & Exploitation)

Areas in hectares under concession on the 31st of December of each year

1942	9.230.000 (approximately)
1943	5.700.319
1944	8.948.971
1945	11.729.686
1946	11.384.270
1947	10.758.767
1948	8.489.945
1949	7.510.813
1950	6.562.957
1951	6.295.718
1952	6.266.981
1953	6.205.719
1954	6.026.552
1955	5.871.168
1956	6.171.869
1957	6.691.246
1958	6.351.716
1959	5.752.170
1960	4.718.445
1961	4.120.851

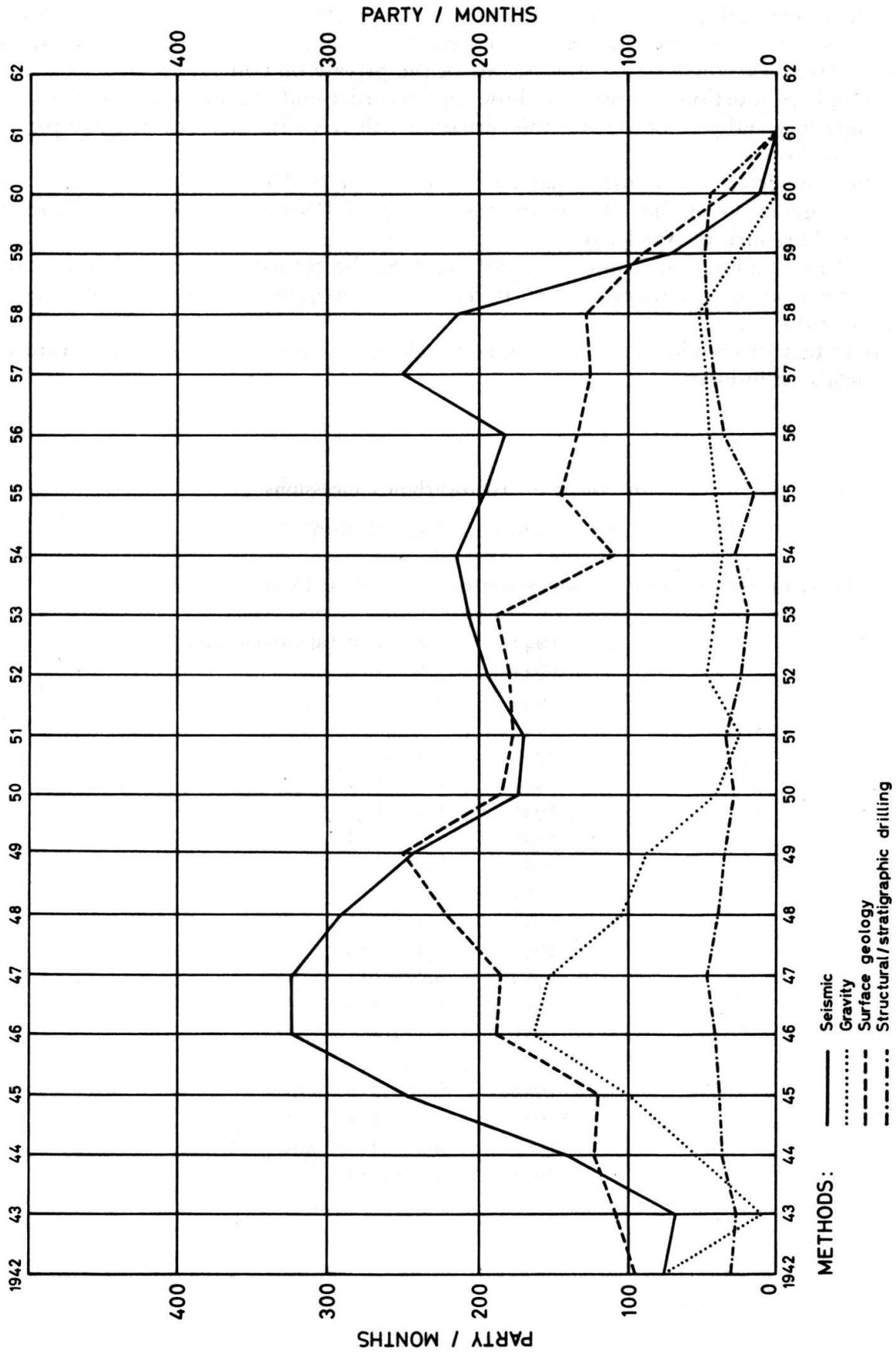


Fig. 1 -- Field exploration

Field exploration

in party months

Year	Surface Geology	Seismic *	Gravity †	Structural/stratigraphic drilling
1942	96	72,50	68	27
1943	108,25	66,50	41	24
1944	125,75	134,25	56	39
1945	125,50	244,25	98	41,50
1946	196,25	323,50	165	47
1947	187	322	154,25	52
1948	219,50	291,50	103,25	37
1949	248,50	236,25	92	32,75
1950	175	170,50	36,50	26,50
1951	179	168,75	23	29,75
1952	180,25	196,25	51,25	24,25
1953	196	210,50	41,75	16,50
1954	106,50	216,50	32,50	22,75
1955	138,75	197,50	38,50	14,50
1956	121,75	183,50	45,25	32,50
1957	114	252,50	44,50	41,25
1958	117,50	209	51	46,50
1959	81	66,50	25	48,50
1960	32,75	9,50	0	44
1961	1	0	0	2,17

* Including Sparker

† Including magnetometer

Exploration wells* completed per year

1942-1961

1942	17
1943	18
1944	26
1945	32
1946	68
1947	67
1948	55
1949	64
1950	61
1951	110
1952	114
1953	176
1954	216
1955	164
1956	140
1957	141
1958	169
1959	107

Lahee classification applied by the industry since 1960

1960	66
1961	68

* Classification before drilling, suspended wells are not included.

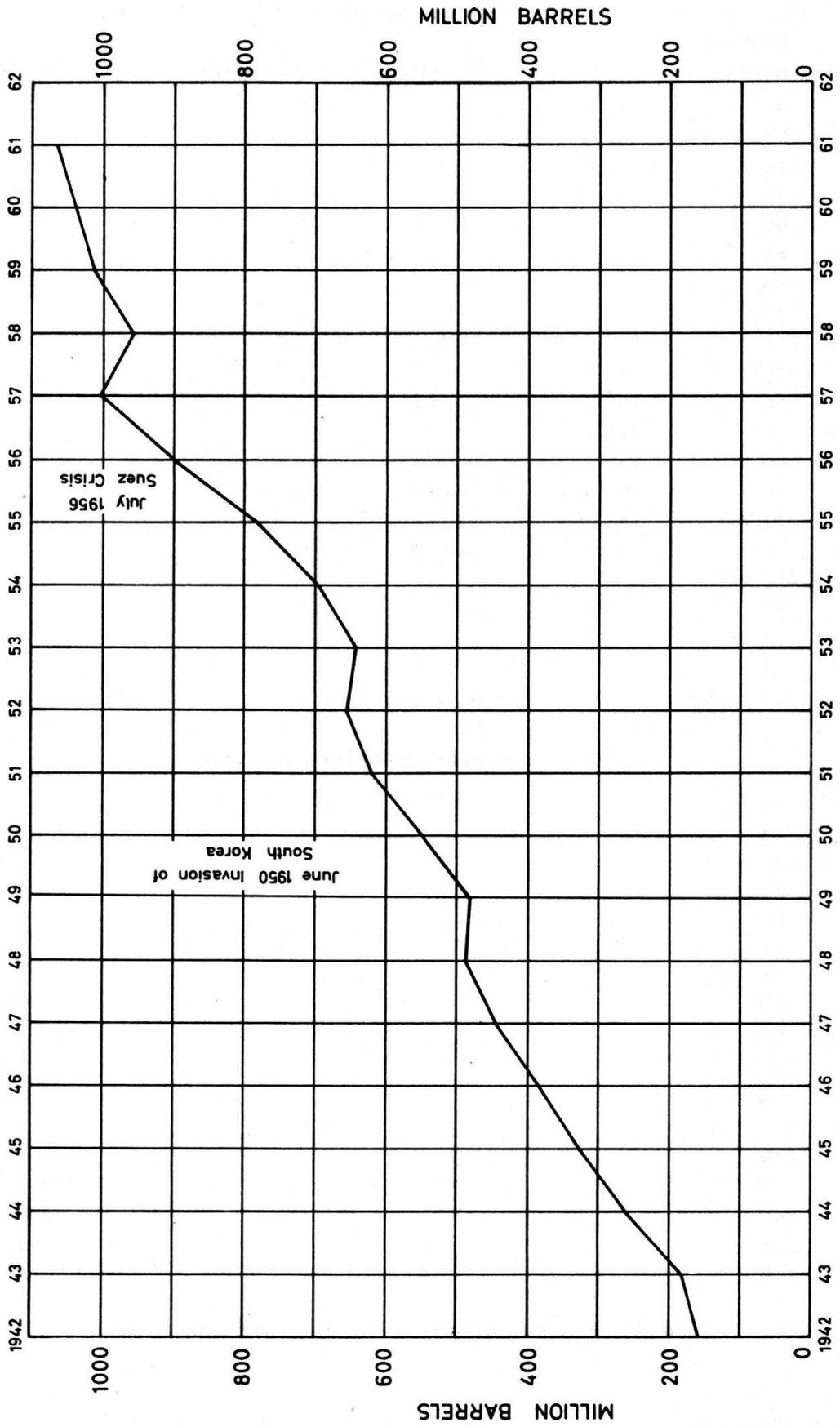


Fig. 2 - Annual crude production

Annual crude production
in barrels of 42 U.S. gallons of net petroleum at 60° F

1942	148.027.899
1943	179.422.397
1944	257.037.828
1945	323.359.745
1946	388.522.695
1947	434.808.921
1948	489.958.796
1949	482.338.858
1950	546.747.779
1951	622.194.849
1952	660.515.597
1953	644.538.439
1954	692.145.235
1955	787.741.462
1956	899.562.459
1957	1.014.929.190
1958	950.834.974
1959	1.011.408.600
1960	1.041.672.214
1961	1.065.756.000

Deepest wells drilled in Venezuela between 1939 and 1961

<u>Year</u>	<u>Well</u>	<u>Depth in ft.</u>	<u>Company</u>
1939	Motatan-1	10.302'	Creole
1940	Roble-1	9.605'	Creole
1941	Rincon-1	9.631'	Texas
1942	Anaco-1	11.294'	Mobil
1943	RG-5	10.606'	Meneg
1944	Guario-8	10.735'	Mobil
1945	R-801	13.303'	Shell
1946	CC-2A	15.106'	Shell
1947	Zulia 7-2	13.978'	Richmond
1948	Zulia 7-1	14.085'	Richmond
1949	CT-1 Catatumbo	15.637'	Shell
1950	Alturitas-1	17.039'	Creole
1951	Guasare-1	14.460'	Guasare
1952	C-150 Concepcion	13.216'	Shell
1953	LS-1387	17.537'	Shell (deepest so far)
1954	C-155 Concepcion	13.383'	Shell
1955	Pato-1	15.795'	Meneg
1956	Aguasay-3	14.218'	Sinclair
1957	La Freitera-1	14.546'	Mobil
1958	Zulia-36 E-2	16.237'	Richmond
1959	Agua-139-1	16.402'	Superior
1960	Pato P a G-2X	16.411'	Meneg
1961	11-Y-16X (Ceuta)	15.565'	Meneg