

DEC 4 1957

Lamar State College of Technology  
Research Series

*Paper No. 3*

**The National Oil Industry  
of Mexico: 1938 - 55**

**Merrill Rippy**

Reprinted from The Southwestern Social Science Quarterly, June, 1957



**Lamar State College of Technology  
Beaumont, Texas**

**1957**



# The Nationalized Oil Industry of Mexico: 1938-55

MERRILL RIPPY

[From THE SOUTHWESTERN SOCIAL SCIENCE QUARTERLY, June, 1957]

# The Nationalized Oil Industry of Mexico: 1938-55

MERRILL RIPPY

LAMAR STATE COLLEGE OF TECHNOLOGY

THE OIL INDUSTRY OF MEXICO, nationalized almost completely in 1938, has been functioning for nearly twenty years as a socialized enterprise. As the first large-scale socialized industry involving modern technology and international trade to begin operations in Latin America, the Mexican oil undertaking has unusual significance. With the passage of nearly two decades the daring of the expropriation in 1938 has become less an experiment in nationalization than the demonstration of a technique. Considering the predictions made so widely in 1938 and afterward as to the success or failure of nationalized productive enterprise, an examination of the accomplishments of *Petróleos Mexicanos*—the national oil corporation, known as

TABLE 1

Production of Crude Oil in Mexico

<i>Year</i>	<i>Barrels</i>
1937	48,472,690
1940	45,506,695
1945	43,877,427
1950	73,881,478
1955	91,748,628 (est.)

*Pemex*—is enlightening. For this examination, the question-and-answer<sup>1</sup> technique has been used, with most information shown in tables.

How was the production of crude oil affected by expropriation and nationalization?

Table 1 shows that the output of crude oil in 1955 had increased by 205

<sup>1</sup> Data used in this paper are primarily from two studies, "Realizaciones de *Petróleos Mexicanos* de 1951 a 1955" and "*Petróleos Mexicanos*," questionnaires prepared by me. Answers to the questionnaires were prepared for me by the Department of Control and Statistics of *Pemex*, through the co-operation of Don Antonio Bermúdez, director of *Pemex*, and Lic. Raúl Medina Mora, executive secretary to the director. Estimates throughout are based on first-quarter reports.

per cent over the 1940 level of production, 1940 being taken as the first "normal" year after expropriation.

After the 1938 expropriation, it was not until 1946 that production again reached the 1937 level. Output has risen steadily, however, since 1942. The amount of crude pumped daily by Mexico is indicative of the pattern of production, and in 1955 that amount reached 217 per cent of the 1940 level.

The efforts of Pemex to increase crude production are indicated by the larger number of wells drilled after 1938. As Table 2<sup>2</sup> shows, the number of exploratory wells particularly increased after 1938. The total number of

TABLE 2

Oil Wells Drilled, 1938-55

<i>Year</i>	<i>Number</i>	<i>Producers</i>	<i>Exploratory</i>
1938	31	15	...
1940	33	23	...
1945	49	31	...
1950	127	86	17
1955	448 (est.)	268 (est.)	132 (est.)

wells drilled in 1955 was 1,457 per cent of the number put down in 1940. Wells drilled for exploratory purposes in 1955 represent an absolute increase over the number drilled in 1940.

The number of wells being exploited in Mexico also rose significantly—from 924 in 1941 to 1,331 in 1952, an increase of 43 per cent. Interest in exploratory work is indicated by the fact that there were two exploratory parties in 1939 and an estimated forty-seven in 1954. As a consequence of vigorous efforts in exploration, Mexico has enlarged her oil reserves considerably during the period of nationalization, increasing them from 835,000,000 barrels in 1938 to an estimated 2,609,000,000 barrels in 1955, or 312 per cent of known reserves in 1938.

The problem facing Mexico with regard to her crude production—her dependence on one area—is shown in Table 3. The proportion of production coming from Veracruz, the major oil-producing state, during the past ten years has been between 96 and 97 per cent of Mexico's total production.

<sup>2</sup> For data for years earlier than 1938 and for verification of later data I have also used statistical material from the *Memoria* of the Secretaría de la Economía Nacional; *Compendio Estadístico* of the Dirección General de Estadística; *Informe del Director General de Petróleos Mexicanos*; annual reports of Nacional Financiera, S. A.; *La Cuenta Pública* of the Secretaría de Hacienda, for the appropriate years.

Even though thirty-eight new pools came into production between 1950 and 1955, Veracruz continued to dominate all Mexican crude output, twenty-nine of the new pools being in that state.

Table 4 gives a comparison of the production of Mexico and Venezuela, the other major oil-producing country of Latin America, and reveals some

TABLE 3

Crude Production in Mexico by States: 1945, 1950, 1955  
(Cubic Meters Annually)

<i>State</i>	<i>1945</i>	<i>1950</i>	<i>1955</i>
Veracruz	4,865,583	8,306,663	13,544,000
San Luis Potosí	147,786	224,277	32,512
Tamaulipas	.....	99,825	273,656
Tobasco	.....	.....	111,668

useful facts about the petroleum industry in both. This comparison of Mexican and Venezuelan oil production is particularly valuable for the light it sheds on the operations of a nationalized oil industry in contrast to those of a privately operated business. In 1955, Venezuelan production increased 147 per cent over that of 1945, while Mexican production rose 111 per cent during the same period. In 1945, Mexican production was 14 per cent of

TABLE 4

Annual Oil Production: Mexico and Venezuela  
(Barrels)

<i>Year</i>	<i>Mexico</i>	<i>Venezuela</i>
1941	41,200,000	222,902,000
1942	32,995,000	156,000,000
1943	35,163,000	177,631,000
1944	38,203,000	257,046,000
1945	43,547,000	323,156,000
1946	49,235,000	388,486,000
1947	56,284,000	434,905,000
1948	58,508,000	490,015,000
1949	60,910,000	482,316,000
1955	91,748,628 (est.)	800,500,000 (est.)

Venezuelan; by 1955, Mexico was turning out 11 per cent of Venezuela's production. The relative worsening of Mexico's position in production in comparison with Venezuela's cannot, of course, be considered alone. In the

light of Mexico's increased domestic consumption of oil, the increased income derived by the state from production, the expanded social services offered Pemex workers, and the postexpropriation difficulties of Mexico in securing machinery for exploration, her production rates, even though somewhat smaller than Venezuela's, are impressive.

How did expropriation and nationalization affect refining?

The refining industry in Mexico, in facilities both for crude distillation and for cracking, expanded after 1938, as Table 5 shows. Between 1938

TABLE 5

Mexican Oil Refineries and Capacities  
(Barrels)

	<i>Daily Crude Capacity</i>		<i>Daily Cracking Capacity</i>	
	1938	1955	1938	1952
Arbol Grande	11,500	40,000	.....	.....
Atzacapotzalco	11,000	64,000	.....	14,000
Ciudad Madero	43,000	89,000	5,400	6,500
Mata Redonda	8,000	14,000	7,000	6,000
Minatitlan	36,000	24,000	2,500	.....
Poza Rica	.....	5,000	.....	.....
Reynosa	.....	7,000	.....	.....
Salamanca	.....	40,000	.....	5,000
Total	109,500	283,000	14,900	31,500

and 1955, Mexico's crude-oil distilleries increased their daily capacity about 106 per cent. The daily volume of oil treated in cracking units rose 112 per cent in the period 1938-52. The increase was accomplished by the building of three new crude distilleries and two new cracking units. The quantity of crude processed in refineries in Mexico was 36,344,000 barrels in 1937; it rose to 82,743,000 barrels in 1955. The amount of crude oil treated in Mexican refineries rose 177 per cent between 1940 and 1955.

What effect did expropriation and nationalization have on the marketing of Mexican petroleum?

The distribution system of Pemex naturally expanded also to take care of increased production. The volume of petroleum products marketed by Pemex is shown in Table 6. Pemex was delivering to the domestic market in 1955 a volume of production of petroleum goods 315 per cent of that of 1940. Concomitant to the large expansion in distribution was the corresponding enlargement of facilities for delivering oil products. The number of tank cars owned by Pemex rose from 1,862 in 1951 to 1,992 by 1955, and the use of long-distance type tank trucks increased rapidly, from 141

such trucks in 1950 to 305 by 1951. The Pemex tanker fleet grew from 2 ships in 1939 to 19 in 1955. The four major pipelines in use in 1942 were

TABLE 6

Volume of Products Distributed by Pemex

<i>Year</i>	<i>Barrels</i>
1938	17,112,000
1940	19,300,000
1945	29,350,000
1950	47,277,000
1955	60,000,000 (est.)

from Poza Rica to Atzacapotzalco, Poza Rica to Tuxpam, Poza Rica to Tampico, and from Poza Rica to Alamo; these four pipelines had a daily pumping capacity of 125,000 barrels. By 1950 two new pipelines had been put down from Poza Rica to Salamanca and from Minatitlan to Salina Cruz. By 1955 the capacity of pipelines was 961,800 barrels daily, and the pipelines totaled 2,025 miles in length. In 1938, storage facilities for petroleum products were adequate for 1,404,242 barrels; by 1955, storage was available for 3,826,082 barrels.

After expropriation the Mexican oil industry was forced to reorient itself toward the domestic market. Consequently a great change occurred in its

TABLE 7

Mexican Oil Markets  
(000's Barrels)

<i>Year</i>	<i>Crude Output</i>	<i>Domestic Consumption</i>		<i>Exports</i>	
		<i>Volume</i>	<i>Percentage Output</i>	<i>Volume</i>	<i>Percentage Output</i>
1937	46,907	23,842	51	23,065	49
1938	39,792	30,581	77	9,211	23
1940	44,807	31,547	70	13,269	30
1945	43,877	35,937	82	7,940	18
1950	73,881	50,529	68	23,352	32
1955	91,749	51,157	56	40,592	44

pattern of trade, with domestic consumption rising and exports declining until after 1945. Table 7 shows the switch in the marketing picture after 1938. In 1937 domestic consumption of oil in Mexico took 51 per cent of production, 82 per cent in 1945, and dropped to 56 per cent in 1955,



although the volume of domestic consumption rose 110 per cent between 1937-55. As production expanded, larger internal consumption was ac-

TABLE 8

## Export Sales of Oil and Oil Products

<i>Year</i>	<i>Barrels</i>	<i>Value</i>
1938	9,210,510	\$ 9,586,392
1940	13,260,000	12,576,729
1945	7,940,000	8,754,900
1950	23,351,553	41,649,672
1955	40,592,192 (est.)	66,218,828 (est.)

TABLE 9

## Pemex Income (Total Sales), 1940-55

1940	\$ 54,684,729
1945	96,716,500
1950	187,880,619
1955	\$240,528,467

companied by greater exports, though exports as a percentage of production dropped until after 1945. In 1937 some 49 per cent of Mexican production was exported. Export production dropped to 18 per cent in 1945 but has risen since to 44 per cent of output in 1955. The domestic consumption-exportation pattern after 1938 developed in sharp contrast to the scheme of trade that grew up in Venezuela, where it resembles that of Mexico's oil trade between 1918-35.

The volume and value of export oil sales by Mexico is shown in Table 8.<sup>3</sup> The value of oil sales abroad between 1940-55 rose 425 per cent, while by volume exports increased 215 per cent. The rise in value was a result not only of price increases typical during the period but also of Mexico's increase in exports of more valuable petroleum by-products.

<sup>3</sup> All values throughout have been translated into dollars from pesos at the current exchange rates for the years being considered. The use of dollars simplifies understanding but at some cost to accuracy, since internal prices in Mexico, as well as most other countries, are not set in relation to the dollar. The peso devaluations of 1935, 1938, 1949, and 1954 (reducing the peso from \$0.466 to \$0.08) were not made in relation to an unchanging dollar, furthermore. Since monetary constants are elusive (if not illusory) even for econometricians, the most that can be expected from monetary comparisons made over a period of years is a picture of the direction of change and something of its velocity.

The income of Pemex from all sales of petroleum products between 1940-55 is shown in Table 9. Figures in Table 9 show that Pemex income from all sales in 1955 was above that of 1940 by 338 per cent. In 1955 Pemex' return from internal sales rose 76 per cent over the 1951 total, while the dollar value of external sales in 1955 was 58 per cent above that for 1951, which indicates that the rise in income from the oil industry in Mexico is continuing.

From the chief financial arm of the Mexican government involved with capital investments—Nacional Financiera—and from the national treasury itself, Pemex also received income in the form of loans and industrial credit. Table 10 shows approximately the amount it received in that form between 1939-50.

TABLE 10

Pemex Income from Loans, Industrial Credit, and Sales, 1939-50

<i>Year</i>	<i>Loans</i>	<i>Industrial Credit</i>	
1939	\$ .....	\$ 4,276,899	
1940	.....	.....	
1941	.....	.....	
1942	875,974	.....	
1943	.....	1,672,000	
1944	.....	10,670,000	
1945	13,838,000	13,918,535	
1946	8,536,000	837,774	
1947	6,402,000	1,013,960	
1948	6,384,000	1,620,000	
1949	3,612,000	3,120,000	
1950	4,778,760	7,992,000	
	<u>\$43,550,760</u>	<u>\$45,121,168</u>	
Total (loans and industrial credit)			\$ 88,671,928
Sales (1939-50)			<u>\$1,337,355,339</u>
Grand total			<u>\$1,426,027,267</u>

Pemex' income in the period 1939-50 totaled \$1,426,027,267, of which 94 per cent was from sales and 6 per cent from loans and credits from the Mexican government, directly or indirectly. Of Pemex' total income, 27 per cent was paid to the national treasury between 1939-50—11 per cent in taxes and 16 per cent in the form of assessments (originally for the payment of the debt contracted with expropriation). In recent years Pemex has invested in capital improvements about 18 per cent of its annual gross income.

How was the income of the Mexican government affected by expropriation?

The income of the Mexican government from the oil industry over the thirty-three-year period 1922-54 is shown in Table 11.

The sum received by the Mexican government from the oil industry,

TABLE 11

## Income of Mexican Government from the Oil Industry

<i>Year</i>	<i>All Taxes</i>	<i>Taxes and Assessments</i>
1922	\$31,509,687*	\$ .....
1923	31,496,719	.....
1924	27,501,487	.....
1925	19,051,306	.....
1926	14,142,092	.....
1927	9,792,018†	.....
1928	6,899,305	.....
1929	7,066,850	.....
1930	9,098,229	.....
1931	9,547,891	.....
1932	7,323,657	.....
1933	6,402,847	.....
1934	10,281,039	.....
1935	5,915,168	.....
1936	7,174,855	12,325,880
1937	8,725,197	14,600,400
1938	4,355,554‡	12,028,500
1939	5,619,378	14,154,100
1940	5,022,994	21,254,736
1941	7,849,954	22,099,873
1942	8,344,878	18,952,522
1943	10,462,926	26,973,019
1944	11,183,602	20,581,776
1945	14,903,767	27,321,446
1946	18,780,156	29,529,897
1947	22,807,838	46,943,168
1948	26,614,636	68,081,065
1949	17,279,520	40,247,721
1950	18,645,313	51,589,800
1951	39,405,983	56,772,991
1952	40,301,307	59,188,924
1953	43,563,199	60,066,891
1954	34,955,071	49,293,702

\* Taxes on crude exports, production, and oil lands.

† New gasoline tax included.

‡ First year of expropriation, same taxes.

counting all taxes and assessments between 1939-54 (the postexpropriation period), amounted to \$651,996,410. Total income of the Mexican government derived from the oil industry rose 132 per cent from 1940 to 1954. Prior to 1936, when all receipts from the oil industry were in the

TABLE 12

Pemex Payments to the Mexican National Treasury, 1939-54

Taxes	\$324,740,222
Assessments	326,256,188
Total	\$651,996,410

form of taxes on private property, the Mexican government had not received in any year so much as had been paid by the oil companies in 1922, the peak year of "boom production" of crude oil in Mexico. In 1937 (the last full year of private control of the oil industry in Mexico), the government's income from the oil industry was only 46 per cent of the amount

TABLE 13

Doctors Employed and Medical Expenditures by Pemex, 1939-55

<i>Year</i>	<i>Doctors Employed</i>	<i>Expenditures (Not Including Medical Fees)</i>
1938	61	\$ . . . . .
1939	62	381,959
1940	..	. . . . .
1941	72	1,760,000
1942	..	. . . . .
1943	109	. . . . .
1944	..	. . . . .
1945	..	. . . . .
1946	146	1,705,000
1947	..	. . . . .
1948	..	. . . . .
1949	..	1,265,000
1950	..	. . . . .
1951	273	3,159,200
1954	..	1,669,979

taken by taxes in 1922, before the gasoline tax was levied. In 1954, however, receipts from petroleum production and sales were 156 per cent of boom year 1922, and 338 per cent of 1937. Although the amount taken from the oil industry in taxes alone did not again reach the 1922 level until

1951, the Mexican government in 1946 received in taxes and assessments only slightly less than the \$31,509,687 paid in 1922 by private industry in taxes on, primarily, exported crude.

In Table 12 the sums paid to the government by Pemex are shown as totals for the period 1939-54. It is clear that the income derived by the Mexican government from the petroleum industry after nationalization has been large. Allowing a maximum figure of \$108,000,000 for payment of the expropriation debt by 1954, the Mexican government still realized a return from its oil industry of about 604 per cent of the expropriation debt.

How were expenditures for workers' benefits affected by expropriation?

The expenditures of Pemex for services rendered to its employees for their welfare showed a large increase within the period 1939-55. As Table 13 shows, Pemex increased the amount spent on medical services and multiplied the number of doctors it supplied to its employees. Complete medical service is offered by Pemex to its workers and their families, including medicines and dental care as well as hospitalization, surgery, and special treatments.

Because of the isolation of many of the oil fields in Mexico, Pemex has maintained a school system for the children of oil-field workers. Table 14 indicates Pemex' accomplishments in supplying such schools. The number

TABLE 14

## Pemex School System

<i>Year</i>	<i>No. Schools</i>	<i>No. Students</i>	<i>No. Teachers</i>	<i>Annual Expenditures</i>
1938	26	3,187	...	\$ 32,120
1939	37	....	137	123,142
1941	38	7,200	115	132,000
1942	43	....	167	.....
1943	42	10,634	...	220,000
1946	..	....	...	399,740
1948	42	13,960	...	445,200
1949	42	17,202	...	336,000
1951	40	19,534	383	271,620
1952	40	19,978	433	340,231
1953	40	19,762	446	358,934
1954	40	20,916	477	509,265

of schools maintained by Pemex in 1954 was 108 per cent of the number in 1939, and the number of teachers employed was 348 per cent of the 1939 figure. The total number of students enrolled in Pemex-supported schools in 1938 had increased by 553 per cent by 1954. In 1954 Pemex paid out in

annual cost for the schools it supported nearly sixteen times the 1938 sum. In addition, it financed 482 scholarships for workers and workers' children for advanced study in scientific and technical fields. Pemex also spent large sums for school construction; for example, it spent \$435,173 for school construction in 1952 and \$872,056 during 1951-54.

Since the precipitating factor in the nationalization of the oil industry in

TABLE 15

Average Annual Wage for Selected Groups, 1942-52

Year	Day Laborers	Refinery Workers	Refinery Workers (Operators)	Drillers	Engineers	Administrators (Medium Category)
1942	\$ 668.14	\$1,029.12	\$1,204.50	\$2,115.96	\$3,748.36	\$5,677.98
1944	900.24	1,229.58	1,437.26	2,352.02	3,992.12	5,847.38
1946	932.19	1,411.74	1,512.94	2,424.40	4,007.08	5,910.08
1948	1,191.33	1,425.06	1,704.78	2,577.12	4,072.11	5,893.65
1950	1,063.44	1,341.60	1,483.92	2,770.80	3,208.80	3,919.68
1952	1,112.52	1,391.40	1,680.00	2,856.00	3,263.76	3,976.56

1938 was a wage dispute, it is particularly pertinent to note the wage scales of Pemex. In 1938 the average annual wage was about \$1,760, including fringe benefits (savings fund and housing allotment). In 1952 that average was about \$2,382, an increase of 35 per cent in dollars. The average annual wage between 1942-52, with fringe benefits, of selected wage groups is given in Table 15.

The percentage changes for workers affected by the wage scales shown in Table 15 are presented in Table 16.

TABLE 16

Pemex Wage Increases for Selected Workers, 1952 as Percentage of 1942

Classification	Percentage
Day laborers	167
Refinery workers	135
Refinery workers (operators)	139
Drillers	135
Engineers	87
Administrators (medium category)	70

These figures are informative, though they need to be studied in some detail. A new labor contract is automatic each two years between Pemex and

its workers; hence for contracts made in 1954 and 1956, data are not available. Moreover, the fact that percentages are calculated in terms of dollars is misleading, since the cost of living for Mexican workers is not affected to the same degree as the price for imported goods is influenced by devalua-

TABLE 17

Major Changes in Mexican Oil Industry Since Expropriation  
(1955 as Percentage of 1940 Unless Otherwise Indicated)

<i>Category</i>	<i>Percentage</i>
Crude production	205
Barrels of crude produced (daily)	217
Oil wells drilled	1,457
Oil reserves	312
Daily capacity of refineries	
Crude	206 (1938-55)
Cracking	212 (1938-52)
Daily volume of crude refined	277
Volume of production delivered to market	518
Total consumption by Mexico	212
Exports (volume)	315
Exports (value)	525
Income of Pemex	438
Income of government from oil industry	232 (1940-54)
Income of government from oil taxes	700 (1940-54)
Total Pemex expenditures for medical services	437 (1939-54)
Schools supported by Pemex	108 (1939-54)
Teachers in Pemex schools	348 (1939-54)
Students enrolled in Pemex schools	700 (1938-54)
Total sum spent for education	1,590 (1938-54)
Wage changes (including fringe benefits)	
Day laborers	167
Refinery workers	135
Refinery workers (operators)	139
Drillers	135
Engineers	87
Administrators (medium category)	70

tion of the peso in international exchange. To illustrate, the price of a gallon of regular gasoline in Mexico in March, 1955, was \$0.166; in the United States it averaged \$0.294. Mexican workers are not heavy consumers of imported goods. Even on a dollar basis, the lower echelons of workers have enjoyed real increases in their incomes, and the decreases (insofar as they really exist) have come in the upper brackets of the work force, particularly in the administrative end, a fact worthy of note in a bureaucratized industry.

The major changes which have taken place in the Mexican oil industry

after expropriation are summarized in Table 17. Percentages are 1955 as a per cent of 1940, except where indicated.

The data indicate that the expropriation of the privately owned oil industry of Mexico in 1938 has been profitable for the government, rewarding to labor, and beneficial to the Mexican economy. Whether these consequences of expropriation in 1938 and afterward were a result of nationalization or merely coincidental with twenty years of history would be, at this date, purely an academic question.





