

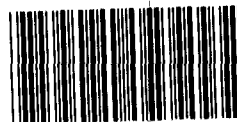
GAO

Report to the Chairman, Subcommittee
on International Economic Policy and
Trade, Committee on Foreign Affairs,
House of Representatives

March 1992

MEXICAN OIL

Issues Affecting Potential U.S. Trade and Investment



146219



United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-247884

March 18, 1992

The Honorable Sam Gejdenson
Chairman, Subcommittee on International
Economic Policy and Trade
Committee on Foreign Affairs
House of Representatives

Dear Mr. Chairman:

As you requested, we have reviewed issues affecting potential future U.S. trade with and investment in Mexico's petroleum industry. This report provides information on Mexican oil production and exports, the views of U.S. oil companies on trade with and investment in Mexico and Mexican officials' response to those views, and U.S. government efforts to assist Mexico's petroleum sector.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, we will send copies to the Departments of State, Commerce, Energy, and the Treasury; the Office of the U.S. Trade Representative; the U.S. Export-Import Bank; the Government of Mexico; and other interested congressional committees. Copies will also be made available to others on request.

Please contact me at (202) 275-4812 if you or your staff have any questions concerning this report. The major contributors to this report are listed in appendix III.

Sincerely yours,

Allan I. Mendelowitz, Director
International Trade, Energy, and
Finance Issues

Executive Summary

Purpose

In 1990 the U.S. and Mexican Presidents announced their intent to pursue negotiations leading to a free trade agreement. However, efforts to address trade and investment barriers in Mexico's petroleum sector have not yet been successfully integrated into overall free trade agreement negotiations.

The Chairman of the Subcommittee on International Economic Policy and Trade, House Committee on Foreign Affairs, asked GAO to provide information on the issues affecting potential future U.S. trade with and investment in Mexico's petroleum sector. More specifically, GAO obtained information on (1) the recent trends in Mexican oil production and exports and the primary factors affecting Mexico's ability to meet current production and export goals, (2) the views of U.S. oil-producing and oil service contracting companies regarding principal barriers to and potential benefits of U.S. trade with and investment in Mexico's petroleum sector and the response of Mexican officials to those views, and (3) U.S. government efforts to assist Mexico's petroleum sector.

Background

During 1990 Mexico provided about 12 percent of the net crude oil imported by the United States; it ranked third behind Saudi Arabia and Nigeria as a source of net U.S. crude oil imports. Its oil industry was initially developed by foreign oil producers in the early 1900s. However, conflict between foreign producers and the Mexican government eventually led to the nationalization of the oil industry in 1938, a move that has since become a symbol of Mexican sovereignty. Since that time, the Mexican government has controlled the right to explore, produce, transport, market, and refine all crude oil in Mexico. Petroleos Mexicanos (PEMEX), a government-owned company, is responsible for managing all of Mexico's petroleum operations.

During the 1980s, Mexico experienced a financial crisis when declining oil prices led to a shortfall in expected revenues. Since this crisis, Mexico has diversified its economy to protect itself against the volatility of the world oil market. However, the government-controlled oil industry continues to play an important role in the economy in part because it is a significant source of foreign currency earnings.

Results in Brief

After declining through 1986 from a 1982 peak, Mexico's oil production and exports have remained relatively constant. The primary factors affecting Mexico's ability to meet current government production and

export goals include (1) the ability of PEMEX to obtain investment capital for exploration and production and (2) the success of PEMEX's strategy to modernize operations. PEMEX has limitations on its ability to raise the necessary capital, and its modernization efforts are incomplete.

Mexican policies continue to restrict private and foreign investment in Mexico's oil sector. Since 1938, when Mexico nationalized its oil industry, the Mexican government has not allowed foreigners or private oil companies to invest in oil exploration and production in Mexico. Should this investment barrier be removed, several U.S. oil-producing companies that GAO spoke to indicated an interest in investing in Mexico. However, U.S. oil-producing companies and Mexican officials differ over the benefits of investment by U.S. companies in Mexico's oil industry.

Mexican policies impede foreign involvement in Mexico's oil service contracting industry. GAO interviewed representatives of 30 U.S. oil service contracting companies who provide services such as oil well drilling, maintenance, and transportation. They told GAO that barriers to trade include Mexico's unclear tariff system and PEMEX's use of procurement practices that favor Mexican suppliers and contractors. Despite these barriers, both U.S. oil service contracting companies and PEMEX officials told GAO they saw mutual benefits to having U.S. firms contract to provide goods and services to Mexico. Modernization efforts by PEMEX may increase business opportunities for U.S. oil service contracting companies.

U.S. agencies have undertaken efforts to support Mexico's petroleum sector. For example, the U.S. Export-Import Bank has agreed to provide loan guarantees for large purchases of U.S. oil and gas equipment and related services, and similar loan guarantees could provide a significant percentage of investment capital PEMEX plans to obtain from foreign sources. Also, the U.S. Trade and Development Program has funded a feasibility study for the upgrade of two petrochemical plants in Mexico. In addition, to enhance energy cooperation the Department of Energy has held bilateral consultations with its Mexican counterpart since 1982.

Principal Findings

Factors Affecting Mexico's Continued Oil Production and Exports

Mexico's oil production peaked in 1982 at 2.7-million barrels per day, declined through 1986, and has since remained at an average of about 2.5-million barrels per day through 1991. Oil exports also remained

constant, averaging about 1.3-million barrels per day from 1986 through 1991. The current Mexican National Energy Modernization Program calls for oil production to meet projected annual internal demand increases of about 5 percent while keeping exports constant at about 1.3-million barrels per day.

To meet the energy program, PEMEX estimates that it will need a minimum of \$20 billion in new investment over a 5-year period and must modernize its operations to increase its efficiency. However, PEMEX faces limitations on its ability to raise the necessary capital. For example, the government has placed a ceiling on PEMEX's annual budgetary expenditures. Also, PEMEX's plans for obtaining funds through foreign capital markets have not been fully realized. Although oil production is the highest PEMEX investment priority, PEMEX faces competing investment demands in such areas as construction of refineries, gasoline stations, and petrochemical plants. Finally, PEMEX's modernization efforts have not yet led to increased oil production and may be difficult to implement fully.

U.S. Oil Companies' Views and Mexican Officials' Responses

PEMEX continues to be solely responsible for petroleum operations in Mexico. These circumstances make Mexico unattractive to U.S. oil-producing companies. They told GAO that they would not provide funds to PEMEX projects without receiving a share of equity or output.

U.S. oil-producing companies told GAO that both they and Mexico could benefit should they be allowed to invest in Mexico's oil industry. For example, some U.S. oil-producing companies told GAO they have the capital and management expertise needed to maximize Mexico's oil production. In response, Mexican officials interviewed by GAO said that Mexico does not need investment by U.S. oil-producing companies because there is virtually no risk in exploring and developing Mexico's oil reserves since the location of the oil is well known.

While many oil service contractors told GAO that they also face barriers to selling goods and services in Mexico, they do have opportunities for some business there. However, they said that Mexico's unclear tariff system, which may effectively assess their equipment and supplies at a combined tariff and tax rate as high as 33-percent, makes operations in Mexico difficult. They also added that PEMEX gives preference to Mexican-owned companies over foreign companies when hiring contractors and suppliers. According to Mexican officials, this practice is consistent with the Mexican procurement law.

U.S. oil service contractors and PEMEX both cite benefits to their business relationships. According to virtually all of the 30 U.S. oil service contractors GAO interviewed, contracts in Mexico may help compensate for declining oil service business in the United States. Most of these U.S. oil service contractors told GAO that they have a competitive edge in Mexico and that Mexico offers strong prospects as a long-term market. U.S. contractors state that they can provide technology that PEMEX cannot, such as the use of three-dimensional imaging to find underground oil deposits. PEMEX officials add that PEMEX now is using U.S. service contractors to improve its drilling operations as part of its modernization efforts. Similar projects now planned by PEMEX are likely to increase business opportunities for U.S. oil service contractors.

U.S. Government Efforts to Assist Mexico's Petroleum Sector

The U.S. Export-Import Bank recently agreed to authorize a guarantee of \$1.3 billion in loans to PEMEX to purchase U.S. oil and gas equipment and related services. This program could eventually expand into a \$6-billion loan guarantee, which would represent 75 percent of the investment capital PEMEX estimates it will seek from foreign sources.

Furthermore, the U.S. Trade and Development Program is currently financing a \$350,000 study for the upgrading of two Mexican petrochemical plants. In addition, since 1982 the Department of Energy has cosponsored bilateral energy meetings with Mexican government officials to exchange technical information and discuss topics of mutual interest.

Recommendations

This report contains no recommendations.

Agency Comments

As requested, GAO did not obtain agency comments on this report. However, GAO discussed the information contained in this report with program officials from the Departments of State, Commerce, Energy, and the Treasury; the Office of the U.S. Trade Representative; the U.S. Export-Import Bank; the U.S. embassy in Mexico; and the Mexican embassy in Washington, D.C., and included their comments where appropriate.

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Abbreviations

Eximbank	U.S. Export-Import Bank
GAO	General Accounting Office
OPEC	Organization of Petroleum Exporting Countries
PEMEX	Petroleos Mexicanos
SEC	Securities and Exchange Commission
TDP	Trade and Development Program

Introduction

The Mexican oil industry has played an important part in the political and economic relationship between Mexico and the United States throughout this century. Mexico has long been a world-class oil producer. However, in 1990 when the U.S. and Mexican Presidents announced their intent to pursue negotiations leading to a free trade agreement, oil issues were not included in the initial discussions. This omission is a symptom of the sensitivity that permeates U.S.-Mexican petroleum relations.

History of Mexico's Oil Industry

Oil has played a central role in Mexico's history. Mexico's first oil boom began in the early 1900s with discoveries of world-class oil fields in the Gulf Coast area near Tampico that became known as the "Golden Lane." These fields made Mexico one of the world's largest oil suppliers through the mid-1920s, and attracted 160 American and European oil companies.

The period of high oil production was followed, however, by declining production caused by the depletion of these oil fields by foreign oil companies. In addition, the relationship between foreign oil companies and the Mexican government gradually deteriorated over conflicting interpretations of petroleum reserve ownership. Ultimately, Mexican President Lazaro Cardenas nationalized the oil industry in 1938 and expelled the foreign oil companies, citing as the reason the refusal by foreign oil companies to abide by a ruling of the Mexican Supreme Court.

The world petroleum industry reacted to the expropriation by boycotting Mexico's oil industry. Mexico was limited in its ability to sell its oil to foreign customers and buy energy equipment and technology from foreign suppliers. Consequently, Mexico's new national industry was forced to rely on its own resources. The Mexican government established a national petroleum company, Petroleos Mexicanos (PEMEX). PEMEX is solely responsible for managing Mexico's oil industry, including exploration, production, refining, transportation, and marketing of oil products.

From 1938 until today, Mexico has strictly prohibited foreign and private oil producers from exploring and developing Mexican oil fields. The Mexican Constitution vests direct ownership of petroleum deposits in the Mexican government and precludes the government from transferring to private parties its ownership and ability to exploit oil and gas deposits. Mexico developed a legal system of laws, regulations, and rules interpreting its constitutional provisions, which include restrictions against private firms controlling activities in the petroleum industry or

receiving payment in the form of oil production, profits, or facilities for services rendered to PEMEX.

U.S.-Mexico Relations

Oil has been an extremely sensitive subject for U.S.-Mexico relations. Mexico's petroleum resources serve as a powerful symbol of Mexico's sovereignty. March 18, the date of the 1938 expulsion of foreign oil companies, is still celebrated annually in Mexico. Also, Mexicans have expressed concern that U.S. investment in Mexico's oil, or large oil exports to the United States, would give the United States undue political and economic influence in Mexico.

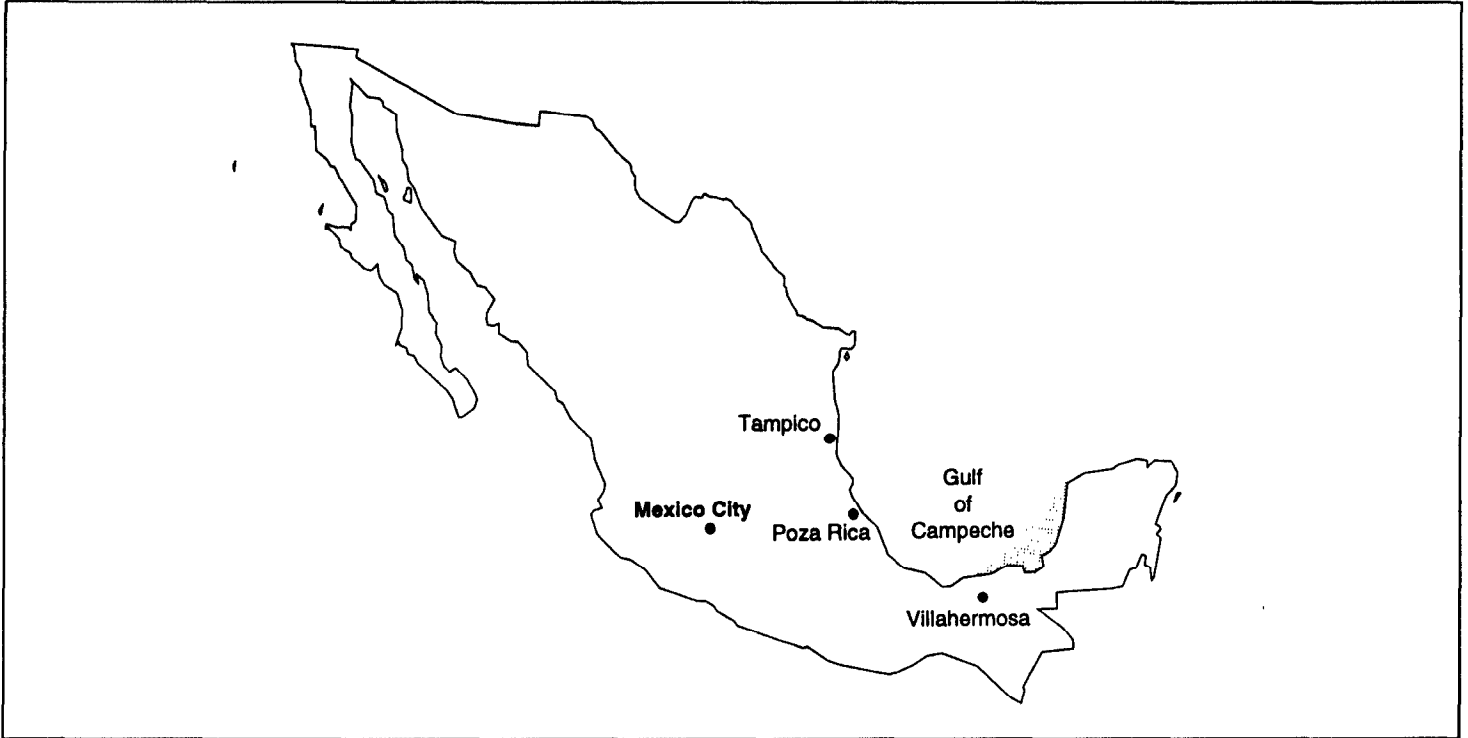
At the same time, Mexican oil plays an important role in the U.S. energy strategy. During 1990 Mexico provided about 12 percent of the net crude oil imported by the United States; it ranked third behind Saudi Arabia and Nigeria as a source of net U.S. crude oil imports. In addition, the Department of Energy's February 1991 report entitled U.S. National Energy Strategy calls for the diversification of U.S. oil sources and a greater reliance on imports from countries outside the Persian Gulf, such as Mexico.

Mexico's Oil Reserves

Mexico has the eighth largest oil reserves in the world, according to the Oil and Gas Journal. With current reserves, Mexico estimates it could maintain current production rates for another 50 years. As of January 1991, the Mexican government estimated that Mexico has about 45-billion barrels of proven crude oil reserves.¹ Mexico's major oil-producing areas are located primarily in offshore fields in the Gulf of Campeche and in onshore fields in Villahermosa and Poza Rica (see fig. 1.1).

¹Crude oil reserves are generally classified as "proven" if they are profitably recoverable under existing economic and operating conditions.

Figure 1.1: Mexico's Oil Producing Areas



Source: PEMEX.

Some oil experts have accused PEMEX in the past of inflating its proven reserve figures. One observer also noted that outside experts have not independently verified Mexican proven reserves since 1977. Nevertheless, substantial oil deposits continue to be found. PEMEX officials told us that they have recently discovered a large field in the state of Chiapas near Ocosingo. In addition, a PEMEX engineer told us that PEMEX believes there are substantial oil deposits, which have been identified but not yet exploited, that are both shallower and deeper than the Campeche fields now under production. Finally, PEMEX has reported that only 20 percent of Mexican territory with favorable geological potential has been explored.

Role of Oil in the Mexican Economy

Since the mid-1970s, the discovery of vast new oil reserves has had a substantial impact on the Mexican economy. Anticipating large increases in revenues from this new-found oil, the Mexican government pursued a debt-led strategy for economic development and expansion of the oil industry. Counting on revenues from its oil exports, Mexico borrowed

heavily from foreign sources to finance industrial development. At the same time that the Mexican government began to rely on income from oil exports, however, world oil prices dropped below the point at which Mexico could make sufficient income to meet its foreign loan obligations. Mexico was saddled with an external debt of about \$80 billion without the means to service it and in 1982 was forced to suspend payments on its accumulated foreign debt, provoking a severe financial crisis.

Since this crisis, Mexico has diversified its economy to protect itself against the volatility of the world oil market. However, oil still remains an important component of the Mexican economy and is considered a "strategic" sector by the government. In 1990 oil exports provided approximately 38 percent of all foreign currency earnings for Mexico, with sales of about \$9 billion.

Objectives, Scope, and Methodology

The Chairman of the Subcommittee on International Economic Policy and Trade, House Committee on Foreign Affairs, asked us to provide information on the issues affecting potential future U.S. trade with and investment in Mexico's petroleum sector. More specifically, we obtained information on (1) the recent trends in Mexican oil production and exports and the primary factors affecting Mexico's ability to meet current production and export goals; (2) the views of U.S. oil-producing and oil service contracting companies regarding the principal barriers to and potential benefits of U.S. trade with and investment in Mexico's petroleum sector, and Mexican officials' response to these views; and (3) the U.S. government's efforts to assist Mexico's petroleum sector.

To obtain information on recent trends in and primary factors affecting Mexico's ability to meet current oil production and export goals, we reviewed the Mexican National Energy Modernization Program and discussed its objectives with Mexican officials from the Ministries of Finance and Public Credit; Energy, Mines, and State Owned Industries; and Programming and Budget. We reviewed PEMEX's most recent statistical data and discussed these data and PEMEX's plan to meet the national energy program with officials from each of PEMEX's eight subdirectorates: Primary Production, Refining, Petrochemicals, Finance, Sales, Administration, Projects and Construction, and Planning. We also visited one of Mexico's largest refineries, the Miguel Hidalgo refinery, located in Tula, Mexico.

Commission; the U.S. Geological Survey; the Securities and Exchange Commission (SEC); the U.S. embassy in Mexico; and various oil industry organizations.

To determine the principal barriers to trade with and investment in Mexico's petroleum sector, we obtained information on Mexican constitutional and regulatory restrictions affecting the oil industry and discussed their implications with U.S. and Mexican officials. Information in this report on Mexican legal matters does not reflect our independent analysis of the matters but rather is a synopsis of what Mexican and U.S. government officials provided us.

To determine U.S. oil companies' views on the principal barriers to and potential benefits of U.S. trade with and investment in the Mexican oil sector, we interviewed representatives from the following industry associations: the American Petroleum Institute, the National Ocean Industries Association, the International Association of Geophysical Contractors, the International Association of Drilling Contractors, the Offshore Marine Service Association, the Association of Oilwell Servicing Contractors, and the Petroleum Equipment Suppliers Association. From these groups, we compiled a list of 15 oil-producing companies and 36 oil service contracting companies that these groups believed would be interested in doing business in Mexico. Ten of the oil producers and 30 oil service contractors responded to our questions about their views on the major barriers to and benefits of doing business in Mexico's oil sector. (See app. I for a profile of selected U.S. oil producers and oil service contractors.)

To obtain information on U.S. government efforts to assist Mexico's petroleum sector, we interviewed officials and obtained information from the U.S. Export-Import Bank (Eximbank), the U.S. Trade and Development Program (TDP),² and the Department of Energy.

We conducted our work between July 1991 and February 1992 in accordance with generally accepted government auditing standards.

As requested, we did not obtain agency comments on this report. However, we discussed the information contained in this report with program officials from the Departments of State, Commerce, Energy, and the Treasury; the Office of the U.S. Trade Representative; the U.S.

²The U.S. Trade and Development Program, an independent U.S. government agency, funds feasibility studies for major projects in middle-income and developing countries where there is potential for exporting U.S. goods and services.

Export-Import Bank; the U.S. embassy in Mexico; and the Mexican embassy in Washington, D.C., and included their comments where appropriate.

Factors Affecting Mexico's Continued Oil Production and Exports

After declining from 1982 through 1986, Mexico's oil production and exports settled on a plateau lasting through 1990. While the factors that govern Mexico's oil production are primarily economic ones, political objectives have also influenced its actual export patterns. The Mexican government's current energy program calls for meeting growing internal energy demand and at the same time keeping oil exports constant. However, PEMEX's ability to meet these goals is uncertain. PEMEX must invest at least \$20 billion to meet the government objectives, but its ability to raise capital faces both internal and external limitations. At the same time, PEMEX's need for capital to invest in production faces competition from other oil sector areas such as retail sales, storage capacity, and petrochemicals for limited funds. To date, these other areas have been given lower government priorities. Finally, a PEMEX modernization program, designed to improve production efficiency and maximize economic resources, has not yet affected production rates due to incomplete implementation.

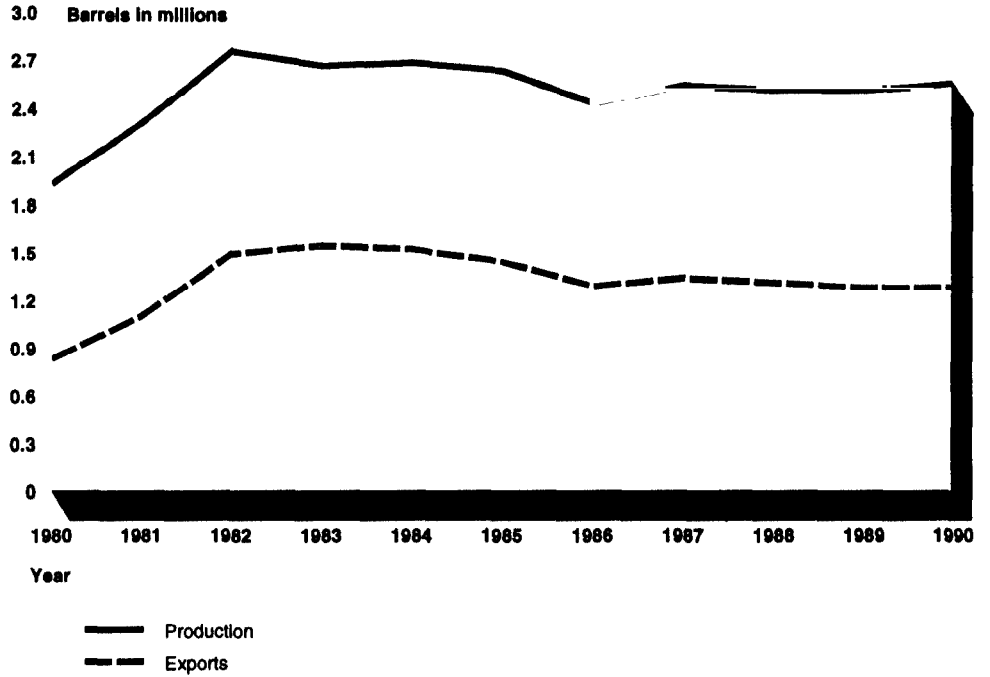
Trends in Mexican Oil Production and Exports

Mexico's most recent oil boom, from 1976 through 1981, was due to the discovery of significant new oil reserves. Between 1976 and 1981, PEMEX estimates of its crude oil reserves went from approximately 6-billion barrels to 48-billion barrels due to important discoveries in southern Mexico. In 1979 the Organization of Petroleum Exporting Countries (OPEC)¹ increased its oil prices, and the average price of Mexican oil rose as well to \$31.19 per barrel in 1980. The combination of increased oil resources and high oil prices allowed PEMEX to undertake a major oil investment program. From 1977 through 1982, PEMEX's investment totalled about \$40 billion, according to a top PEMEX Finance official. PEMEX reports that during this period, average crude oil production nearly tripled from about 1-million to 2.7-million barrels per day.

Starting in 1982, falling world crude oil prices and cuts in PEMEX investment have lead to a plateau in Mexico's oil production at about 2.5-million barrels per day on average since 1986 (see fig. 2.1).

¹OPEC was established in 1960 to negotiate with oil companies on matters of oil production, price, and future concession rights. It is made up of oil-producing and exporting countries including Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

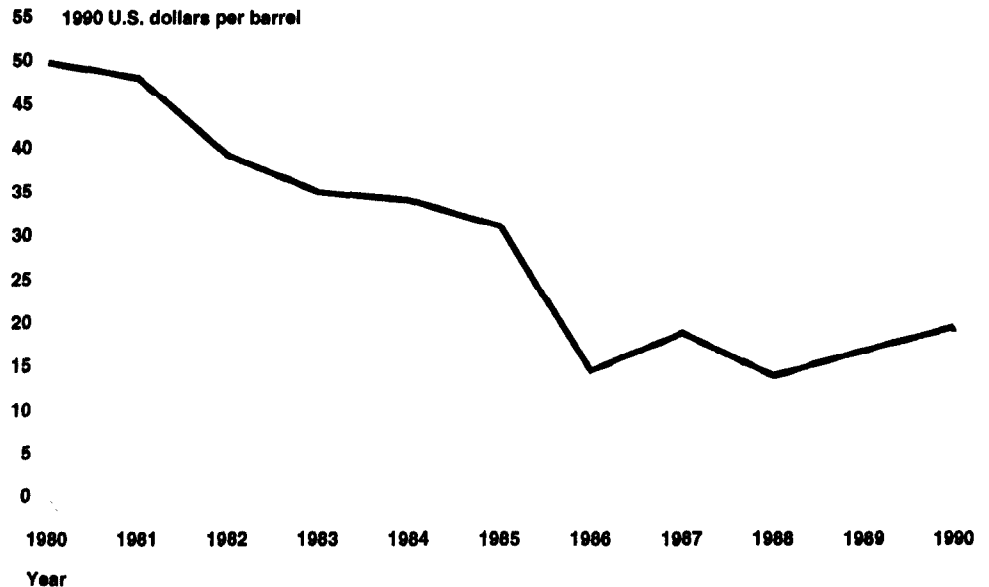
Figure 2.1: Daily Mexican Oil
Production and Exports, 1980-1990



Source: PEMEX.

During 1982, the world price of crude oil began to fall as non-OPEC sources increased oil production and international conservation measures reduced world demand for oil. The average price of Mexican crude oil also fell (see fig. 2.2).

Figure 2.2: Mexican Crude Oil Prices,
1980-1990



Note: Mexican crude oil prices are PEMEX's average weighted price of its Isthmus, Maya, and Olmeca crude oil.

Source: PEMEX

According to a U.S. Department of Energy report, the Mexican government cut PEMEX's investment budget over the years, from a 1981 high of \$9.5 billion to a 1989 low of around \$2 billion, which led to a decline in oil development activities. For example, between 1982 and 1990, the number of exploratory wells completed annually by PEMEX declined from 65 wells to 43 wells.

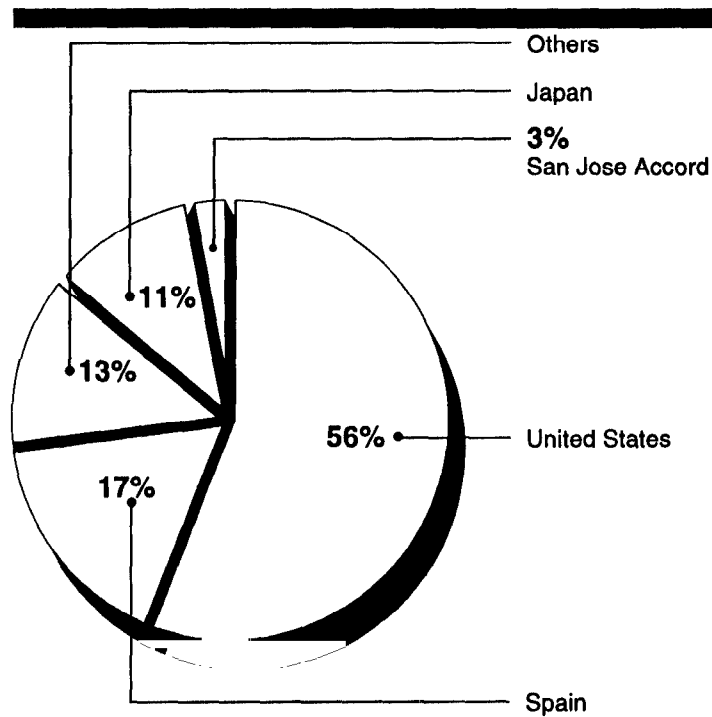
Mexico's crude oil exports, mirroring trends in crude oil production, flattened out during the late 1980s. During the 1980s, Mexico's crude oil exports had been a constant proportion—approximately one-half—of crude oil production, as shown in appendix II. This trend was maintained during 1991, when Mexico's crude oil production was 2.69-million barrels per day, and crude oil exports were 1.37-million barrels per day.

Mexico has chosen its oil export markets in part to promote its foreign policy objectives. For example, in 1980, a Mexican government policy of reduced dependence on the United States as its major oil customer was

implemented by cutting the U.S. share of total crude oil exports from 80 to 50 percent. Since 1980 the United States has received, on average, a 53-percent share of Mexico's annual crude oil exports by volume. Further, in 1980 Mexico agreed to provide annual crude oil exports to several Central American and Caribbean countries under favorable sale conditions, in partnership with Venezuela. This agreement, known as the San Jose Accord, has been renewed annually as a symbol of Mexico's willingness to support and cooperate with its regional neighbors. In 1990 San Jose Accord countries received 3 percent of Mexico's total crude oil exports.

In 1990 the United States was Mexico's largest single crude oil export market, followed by Spain and Japan (see fig. 2.3).

Figure 2.3: Percentage of Mexican Exports of Crude Oil, 1990 (by Trade Partner)



Note: In 1990 the San Jose Accord included Costa Rica, El Salvador, Guatemala, Honduras, Jamaica, Dominican Republic, Panama, and Nicaragua.

Source: PEMEX.

Continued Oil Production and Exports Are Subject to Certain Strategies

A number of factors will affect Mexico's future oil production and exports. The government has laid out a program that calls for increased production. PEMEX's ability to meet the program's goal is uncertain, however.

Mexico's National Energy Program Calls for Production Increases

The Mexican government acknowledges the need to increase oil production. The current goals of the National Energy Modernization Program, issued in 1990 by the Ministry of Energy, Mines, and State Owned Industries, call for oil production to increase to cover domestic demand, which was projected to rise by about 5 percent per year. At the same time, the program's goals were to keep hydrocarbon exports relatively constant at about 1.3-million barrels per day. The program strikes a balance between the domestic energy needs of the country and the need to generate foreign currency through oil exports.

The success of Mexico's energy program depends on PEMEX's ability to increase oil production. Mexican government officials explained to us that the program assumes that the Mexican Constitution will not be modified to permit either foreign or private companies to explore for or produce oil in Mexico. PEMEX must, therefore, unilaterally increase production by expanding its exploration efforts and by becoming a more modern and efficient oil company.

PEMEX's Ability to Meet National Production Goals Is Uncertain

PEMEX faces a number of limitations while trying to meet the goals of the national energy program. PEMEX currently does not have adequate accessible oil reserves to meet the long-term goals of the program without substantial new capital investment. In addition, PEMEX cannot raise all the necessary capital internally. Finally, PEMEX's oil investment plans may be threatened by competing resource demands from the oil sector.

The Mexican Oil Industry Requires New Investment

PEMEX is at risk of not meeting the oil production goals of the national energy program. The diminished investment of the 1980s severely limited PEMEX's exploration and production efforts, upon which it relies to supply the future needs of the country. Without new investment, PEMEX is not able to increase the production rates of its existing fields without running the risk of damaging the fields, according to government officials. In addition, a PEMEX Primary Production official told us that while PEMEX had a good exploration year in 1991, it currently has projects that are ready to be implemented to meet the next 2 years of increased demand. Beyond that,

PEMEX must rely on discoveries it makes beginning in 1992 in order to meet the program's goals.

PEMEX must undergo a major investment program in order to offset the effects of investment reductions in the 1980s. Senior PEMEX officials explained to us that the company has a 5-year plan requiring a minimum funding of approximately \$20 billion to meet the immediate investment needs of the company. The plan's investment priorities are in two areas: exploration and production, and refining. PEMEX planners believe they will need about \$14 billion to increase production rates to meet the program needs. In refining, PEMEX anticipates needing about \$5 billion to build a new refinery with a capacity of about 300,000 barrels per day, to add additional refinery capacity of about 70,000 barrels per day, and also to upgrade existing refineries to produce more low sulfur fuel, for environmental reasons. The remaining \$1 billion would go to improving infrastructure for the industry and other lower-priority items.

PEMEX plans to obtain the \$20 billion necessary for its investment through a combination of increasing its sales revenues and raising foreign capital. A PEMEX Finance official explained that PEMEX expects to raise about \$12 billion of its investment through the sale of oil. PEMEX anticipates that it will be able to obtain an additional \$8 billion on the international capital market.

PEMEX officials believe that recent improvements to its financial position will make raising international capital easier. For example, PEMEX reduced its external debt in 1990 by about \$7 billion through recapitalization by the government. This improved financial position permitted PEMEX to reenter the world capital market for the first time in 8 years in 1990 with a bond placement in the European bond market. By January 1992 PEMEX had placed bond issues worth a total of about \$800 million. These placements have been very successful, according to Mexican officials, based on the fact that all the placements have sold out, and the terms of the placements have become increasingly favorable. PEMEX plans to continue raising foreign capital through such placements.

PEMEX's Capital Strategy Faces Limitations

PEMEX has limitations on its ability to meet its goal of raising \$20 billion, however. Government officials stated that PEMEX has been able to raise its capital needs in the past without difficulty and should be able to do so in the future. Nevertheless, a senior official from the Ministry of Planning and Budget explained that PEMEX's 5-year plan has not been officially

sanctioned by the government. Rather, the PEMEX budget is approved year by year, based on overall Mexican economic policy, and PEMEX must operate within the government budget goals, which are to reduce inflation, balance the budget, and reduce the national debt. For example, the official stated that the government is placing an overall ceiling on the amount of investment allowed by government agencies. New PEMEX investments must fall within this ceiling despite the industry's needs. The official explained that the government is carefully controlling the amount of new PEMEX investment in order to avoid overheating the economy as took place in the late 1970s.

PEMEX investment authorizations to date leave it short of the amount necessary to meet its investment plan. PEMEX was authorized \$3.3 billion in new investment by the government for 1992, amounting to a real annual increase of about 14 percent. However, a senior PEMEX Planning official told us that at current levels of funding PEMEX will not be able to complete the implementation of its 5-year plan on schedule. A further difficulty is that the government has not yet approved the investment needed for the new refinery planned by PEMEX, although government officials acknowledge the need for new refinery capacity. Instead, the government has authorized investment for the environmental upgrading of existing PEMEX refineries to produce low sulfur fuel, which is considered a higher immediate priority.

An additional limitation facing PEMEX is that U.S. government approval to make public bond placements in the United States is still pending. PEMEX hopes to reach U.S. institutional investors, according to a PEMEX Finance official, who told us that such bond placements would provide American investors with a means to invest in PEMEX. However, as of March 1992 PEMEX had not yet satisfied SEC requirements that would permit PEMEX to sell bonds in the United States.

Mexican officials identified a number of areas that do not now receive the financial resources they require.

- Refinery construction. Mexico currently has to import unleaded gasoline because of a shortage in refining capacity. However, current investment in the refining sector is dedicated to environmental upgrading of existing refineries because of the severe pollution problems in the Mexico City area and the high sulfur content of Mexican oil. As previously noted,

PEMEX Investment Plans
Threatened by Competing
Demands

PEMEX's plans for a new refinery have not yet been funded by the government.

- **Onshore development.** Mexico has a number of promising onshore oil prospects that are not receiving priority financing. PEMEX officials explained that they want to pursue offshore development in the Gulf of Campeche area because the potential yields are much greater than in many alternative onshore fields.
- **Storage capacity.** Mexico has insufficient storage tank capacity for holding petroleum products. This limitation reduces the flexibility PEMEX needs to take advantage of rapid shifts in world oil prices, according to a PEMEX Sales official.
- **Retail Sales.** Mexico's retail sales outlets for gasoline are inadequate and out of date. Government officials said that while the number and quality of gasoline stations should be increased, investment capital is now being used to improve the quality of fuel instead.
- **Petrochemicals.** Mexico's petrochemical sector, much of which is operated by PEMEX, needs substantial investment to prevent the need for costly chemical imports.² However, Mexican government officials told us that this sector currently is a relatively low investment priority.

PEMEX's Modernization Efforts Have Not Yet Affected Production

An additional component of PEMEX's plan to meet government oil production goals is its effort to modernize operations. Through modernization, PEMEX expects to increase efficiency and strengthen its market position. However, these efforts have not yet affected production rates, in part because the modernization efforts have not been completed and face obstacles.

PEMEX Modernization Is Necessary

PEMEX recognizes the need to overhaul its operations and structure in order to maximize its production ability. Senior PEMEX officials told us that it must become more profit oriented in order to meet the national energy program. PEMEX officials acknowledge that PEMEX has been criticized in the past for being inefficient and corrupt. They added that PEMEX's additional social and economic development responsibilities, such as rural hospital and school construction, have placed financial demands on the company far beyond that of a typical private oil company. This burden has also hurt its efficiency as an oil producer.

PEMEX is now implementing a modernization program. PEMEX's annual report states that the goals of its modernization program are to increase

²See U.S.-Mexico Energy: The U.S. Reaction to Recent Reforms in Mexico's Petrochemical Industry (GAO/NSIAD-91-212, May 3, 1991).

reserves and production, eliminate waste, streamline administrative procedures, and raise efficiency levels to meet world market levels. Both PEMEX and U.S. embassy officials pointed to the arrest of a certain powerful union leader in 1989 as the first step in permitting modernization to accelerate.

PEMEX officials explained that the primary modernization components include

- restructuring the company into less vertically integrated units with more authority and accountability,
- establishing profit centers within each subdirectorate to make managers more economically accountable for production in their units,
- developing a transfer pricing policy to better identify costs among production units,
- using a new unit within the Sales subdirectorate that can be more flexible and efficient in dealing with the international oil market,
- reducing the work force from about 212,000 in 1989 to about 150,000 in 1992 by eliminating unnecessary positions, and
- hiring foreign service contractors and consulting firms to provide a benchmarking system for measuring the company's efficiency.

PEMEX's Modernization Efforts Are Incomplete

PEMEX's efforts to modernize cannot be counted on to have an effect on short-term production rates. Since 1989, when the modernization efforts gained momentum, oil production rates have remained flat. Mexican government officials told us that while modernization efforts are eventually expected to lead to greater production efficiency, it is unrealistic to believe that short-term oil production rate benefits could be measured while modernization is implemented.

At the same time, PEMEX's modernization efforts face internal obstacles. PEMEX officials told us that what is needed to truly transform the company is a total change of attitude within the company to achieve a market-oriented approach to oil production. This change may be difficult to achieve. Petroleum observers note that while PEMEX has a core of managers that are committed to modernization, other groups within PEMEX are threatened by the changes and are resisting.

PEMEX's traditional social responsibilities may also prove an obstacle to modernization. PEMEX officials told us that balancing the need for more efficient business operations is still often hampered by non-oil-producing

PEMEX's traditional social responsibilities may also prove an obstacle to modernization. PEMEX officials told us that balancing the need for more efficient business operations is still often hampered by non-oil-producing responsibilities (such as rural economic development and hospital and school construction) that are laid on PEMEX due to the enormous economic assets it has at its disposal.

Finally, the union does not agree with all the modernization components. For example, a top Petroleum Workers Union official told us that he believes some of the reforms, such as using foreign service companies, are illegal based on the union's interpretation of Mexican law.

Conclusion

While Mexican oil production and exports have recently leveled off, the prospects for increased oil production and exports in the near future are affected by a number of factors. To meet the government's immediate energy goals, PEMEX must expand its capital investment by at least \$20 billion. PEMEX's ability to do so is uncertain, given the limitations it faces to obtaining the necessary capital, the competing demands for investment in other segments of the petroleum product supply chain, and the fact that PEMEX's modernization program has not yet been fully implemented.

U.S. Oil Producers' Views on Investment in Mexico and Mexican Officials' Response to These Views

The Mexican government continues to prohibit foreign and private investment in oil exploration, production, and refining in Mexico. U.S. oil-producing companies indicated an interest in investing in Mexico's oil industry, should Mexico relax its current restrictions. In general, U.S. oil producers and Mexican officials differ over the benefits of U.S. oil-producing companies' involvement in Mexico's oil industry.

Mexico Continues to Prohibit Foreign and Private Oil Investment

Senior Mexican government officials we interviewed emphasized that the oil industry remains off-limits to profit-sharing ventures with private and foreign oil producers, and added that constitutional and regulatory restrictions remain unchanged. Further, the U.S. embassy reports that the current President of Mexico has proclaimed that Mexico will retain its ownership and complete control over the petroleum industry. Thus, PEMEX will continue to be solely responsible for oil exploration and production activities in Mexico.

Most U.S. oil producers we contacted indicated that without receiving a share of equity or output, they would not provide management expertise or funds for oil exploration and development projects in Mexico. For example, four representatives of major U.S. oil producers reported that their companies expect a return on their investment commensurate with the risks of oil exploration and development activities. Two representatives stated their companies will not simply act as "banks" for PEMEX.

Several oil industry representatives report that since current conditions discourage U.S. oil producers from investing in Mexico, they are investing in many other countries that are liberalizing policies toward foreign oil investment. The industry representatives stated that countries in Latin America, Eastern Europe, Southeast Asia, and the Commonwealth of Independent States are (1) opening their oil industries to foreign and private investment in oil exploration and development and (2) offering favorable terms to attract foreign investment.

Views of U.S. Oil Producers Should Mexico Remove Investment Prohibitions

Representatives of 10 U.S. oil producers indicated their companies would be interested in investing in Mexico's oil industry if prohibitions against foreign investment were lifted. However, their companies' decision to invest in Mexico would be affected by Mexico's rules and regulations governing their operations.

The following comments summarize the views of the representatives of the 10 U.S. oil producers we interviewed:

- Representatives of the 10 U.S. oil producers stated that their companies would be interested in participating in concessions, production-sharing contracts, or joint ventures with PEMEX. Nine companies would consider participating in risk-sharing contracts with PEMEX. The Mexican government currently prohibits such foreign and private participation in the petroleum sector.
- Each of the 10 U.S. oil company representatives reported that Mexico's tax regime should be competitive with terms offered in other countries and that Mexico should allow them to repatriate profits, i.e., permit profits to be exported. Eight of the U.S. oil producers reported that they operate in several foreign countries and would allocate their investment dollars to the countries that offer the highest return.
- Ten U.S. oil company representatives emphasized that they would prefer equal treatment with Mexicans under Mexico's investment regulations. This is not currently the case in all instances. For example, while Mexico allows privately owned Mexican companies to own 100 percent of companies that produce certain petrochemical products, foreign-owned companies' direct investment in the same products is limited to 40 percent.
- Ten U.S. oil company representatives indicated that whether they would have to use PEMEX labor, equipment, or supplies in their operations would be a significant consideration in their decision to invest in Mexico.
- Representatives from six oil companies said that the possibility that Mexico may require them to employ local (non-PEMEX) workers was only a moderate impediment. The representative for one major U.S. oil company said it is in the company's best interest to provide benefits to the local economy because the company usually establishes a long-term presence in a foreign country.

U.S. Oil Companies' and Mexican Officials' Perspectives on Potential Investment Benefits Differ

U.S. oil producers we contacted stated that their companies could benefit from the opportunity to invest in the exploration and development of Mexico's oil reserves because they have limited prospects for new, large-scale oil development projects in the United States. U.S. oil production and reserves are declining, and the U.S. government has restricted the regions open to oil exploration and development, according to Department of Interior officials.

A U.S. industry advisory committee believes U.S. oil-producing companies could develop contracts with Mexico that would meet current Mexican

constitutional provisions, assure Mexico favorable investment returns, and provide U.S. producers with incentives to invest in Mexico. For example, it indicated that the U.S. industry has demonstrated great flexibility in developing contractual arrangements for oil and gas exploration and production to accommodate a variety of legal, political, and economic situations.

At the same time, several U.S. oil producers stated that Mexico's oil exploration and development projects would benefit from their companies' management expertise. Also, according to an attorney at a U.S. oil-producing company, oil companies provide significant capital investment for foreign oil development projects and are not reimbursed unless the project is successful. He added that this arrangement would protect foreign countries, such as Mexico, from risking its own capital in unsuccessful oil development projects.

In response, Mexican officials say they have no need for so-called "risk" capital or assistance from foreign or private companies. A senior PEMEX official told us that Mexico does not need the technology, risk management, or general management services offered by U.S. oil producers. For example, he stated that there is virtually no risk in exploring for and developing oil in the Mexican offshore area because everyone knows where the oil is located. In addition, he stated that U.S. oil companies do not have technology that PEMEX cannot easily obtain for itself. Finally, he said that PEMEX has set goals to improve its management operations, which it must do regardless of foreign assistance.

Conclusion

The Mexican government continues to prohibit foreign and private investment in the oil industry. Should Mexico open its oil industry to foreign investment, U.S. oil producers see mutual benefits and believe they could operate in Mexico under certain conditions. U.S. oil companies' and Mexican officials' attitudes differ toward the benefits of U.S. oil producers' involvement in Mexico.

U.S. Oil Service Contractors' Views on Trade With Mexico and Mexican Officials' Response to These Views

Representatives of U.S. oil service contractors stated that the main barriers to trade in Mexico's petroleum sector are (1) an unclear tariff system that makes it difficult for them to project profits and (2) PEMEX's use of procurement practices that favor Mexican suppliers and contractors. Despite these barriers, both U.S. oil service contractors and PEMEX cite examples of mutual benefits to their doing business with each other. In addition, PEMEX's program to modernize its operations may improve U.S. oil service contractors' business opportunities in Mexico.

Views of Oil Service Contractors on Barriers to Trade

According to Department of Commerce officials, the Mexican government (1) could impose a tariff of up to 20 percent on imported oil field equipment and (2) subject such imports to a variety of other duties and taxes that could increase the effective amount to as high as 33 percent. Documents from the Mexican embassy show that the Mexican government's procurement law requires that PEMEX give preferential treatment to Mexican contractors and suppliers, unless there are mitigating circumstances. We obtained the views of 30 U.S. oil service contractors concerning these trade barriers.

Tariff System

Representatives of 22 U.S. oil service contractors indicated that Mexico's unclear tariff system makes it difficult to project profits from operations in Mexico. For example, a representative for one contractor said that his firm had difficulty understanding import license requirements and the tariff system. It therefore had to hire a Mexican agent to help it import necessary supplies into Mexico. A representative for another contractor told us that his confusion over how much his company would have to pay in tariffs would force it to increase the amount of its bid on PEMEX contracts. Otherwise, if the company underbid, it could lose money on unexpected tariff costs.

PEMEX's Procurement Practices

U.S. oil service contractor representatives made the following comments on PEMEX's procurement practices:

- Representatives from 25 U.S. oil service contractors believe that PEMEX uses foreign companies to provide supplies, services, and equipment only if they are not available from a Mexican company. This practice could have the effect of limiting contractors' ability to obtain a PEMEX contract. Thirteen of the U.S. oil service contractors reported forming Mexican partnerships or subsidiaries to obtain their current business in Mexico. A

Mexican embassy official stated that the Mexican partnerships or subsidiaries formed by U.S. oil service contractors are considered Mexican companies and thus are also eligible for favorable treatment under PEMEX procurement practices.

- Representatives from 18 U.S. oil service contractors believe that once a PEMEX contract is obtained, a Mexican requirement to use domestic sources of supplies, services, and equipment causes problems. For example, one U.S. contractor now seeking business in Mexico expressed concerns that having to use unfamiliar equipment and labor could adversely affect the firm's operations.

The Mexican embassy official told us that PEMEX traditionally has encouraged foreign contractors to use Mexican labor, equipment, and supplies. The official said that PEMEX tries to promote domestic employment in Mexico's oil industry. However, the official added that PEMEX recently hired several U.S. oil service contractors to drill offshore wells without requiring them to use Mexican supplies, services, and equipment. The official predicted that this trend would continue due to the success of these service contracts.

- Representatives from 22 U.S. oil service contractors indicated that Mexican providers of supplies, services, and equipment may not be reliable, and their equipment may be of lower quality. For example, one contractor stated that PEMEX was unable to maintain a supply of "mud" used to clean rock cuttings from an oil well as it is drilled, causing seven oil rigs to cease operations for 3 weeks. Another contractor told us that poor quality PEMEX lubricants caused damage to the engines of company vessels operating in Mexico. A Mexican official responded to concerns about the quality of Mexican providers of supplies, services, and equipment by stating that PEMEX is making efforts to improve its performance.

U.S. Contractors and PEMEX Cite Benefits to Doing Business

Both U.S. oil service contractors and PEMEX officials we interviewed acknowledge the benefits of their business relationships.

U.S. Contractor Benefits

Virtually all of the 30 U.S. oil service contractors we contacted believe that Mexico offers strong long-term business prospects that may help compensate for declining U.S. business. They also believe that they have a

competitive advantage in Mexico. The following comments summarize their views:

- Representatives of 29 U.S. oil service contractors indicated that Mexico offers strong long-term prospects as a market because of its large oil reserves. Ten of the U.S. oil service contractors now operating in Mexico plan to extend their Mexican operations for 1 or more years.
- Representatives of 25 U.S. oil service contractors reported that declining U.S. oil production required that their firms develop business in foreign oil-producing countries such as Mexico. Statistics from the Department of Commerce show that from 1982 to 1990, U.S. employment in oil and gas drilling, exploration, and field services declined about 54 percent.
- Representatives of 23 U.S. oil service contractors indicated that they have a competitive edge over Mexican companies due to their management, methods, and expertise. PEMEX officials agreed, saying that a recent contract with Triton Engineering Services Company demonstrated the competitive advantage of U.S. management. Triton is a U.S. oil service contractor that specializes in the management of drilling, construction, and engineering projects.

PEMEX Benefits

Hiring foreign oil-drilling contractors could result in lower PEMEX drilling costs and reduced drilling times. For example, according to PEMEX, it hired Triton Engineering Services Company to (1) use Triton's performance as a benchmark for comparing PEMEX drilling operations, (2) improve Mexican drilling techniques, and (3) save time and money. PEMEX officials told us that the Triton project exceeded their expectations by completing its drilling operations in one-half of PEMEX's average time for a similar project.

U.S. oil service contractors also indicated that they can provide PEMEX with modern techniques not otherwise available within the Mexican oil industry. For example, some U.S. contractors have the technology to project three-dimensional images that are highly accurate in identifying underground oil deposits.

PEMEX Modernization Program May Improve Business Opportunities

Mexican government officials told us that through its modernization program, PEMEX has become more receptive to new sources of project financing, a change that could create additional opportunities for U.S. oil service contractors. For example, the Japanese government agreed to extend a \$775-million loan for PEMEX to improve the environmental quality of its refinery products. PEMEX will be able to use the loan funds to purchase goods and services from foreign, including U.S., contractors.

This environmental initiative may increase contracts for U.S. engineering and construction firms.

New PEMEX policies may expand the number of PEMEX contracts awarded to international suppliers and facilitate trade. According to the U.S. embassy in Mexico, PEMEX recently opened the supply of some services and equipment to international bidding. PEMEX is also paying foreign suppliers within 30 days, while it is delaying payment to Mexican suppliers for up to 120 days, in order to maintain a good image in international markets.

As previously discussed, in 1991, for the first time in recent history, PEMEX issued a service contract that allowed a U.S. drilling contractor to drill an offshore well in the Gulf of Campeche. In January 1992, a senior PEMEX engineer told us that PEMEX had recently issued two additional service contracts to a U.S. company, with each contract requiring the company to drill three offshore wells in the Gulf of Campeche. These contracts will allow the U.S. contractor to use U.S. equipment, supplies, and labor, if it so chooses. PEMEX plans to offer two additional service contracts in the near future, according to the engineer.

Conclusion

U.S. oil service contractors face barriers to trade with Mexico, notably a confusing tariff system and PEMEX's practice of favoring Mexican contractors and suppliers. However, despite these barriers, both U.S. oil service contractors and PEMEX cite benefits to their doing business with each other. PEMEX's modernization program, recognizing these benefits, may improve business opportunities for U.S. oil service contractors.

U.S. Government Efforts to Assist Mexico's Petroleum Sector

U.S. government agencies have undertaken several efforts to assist Mexico's petroleum sector. Eximbank has agreed to provide loan guarantees to PEMEX. Similar loan guarantees eventually could be expanded to about \$6 billion and could have a significant financial impact on Mexico's oil industry. TDP agreed to finance a feasibility study for the upgrade of two petrochemical plants in Mexico. Also, the Department of Energy has held bilateral consultations with its Mexican counterpart to enhance energy cooperation.

Eximbank Loan Guarantee Could Have Significant Impact

Mexico is the largest recipient of export financing support from Eximbank. In 1991 Eximbank approved a final commitment to provide a guarantee for \$1.3 billion in loans to PEMEX for purchases of U.S. oil and gas equipment and related services. PEMEX will use the loans to purchase U.S. equipment and services for four oil exploration and development projects. One of the four projects is exploratory and will use U.S. drilling services, oil field services, and heavy marine construction. The other three projects will develop existing oil fields. U.S. oil service contractors will participate in activities such as drilling oil wells and supplying and installing fixed platforms, production-handling equipment, oil pipelines, and gas lift equipment.

Eximbank may be asked to guarantee a total of \$6 billion in loans to PEMEX over the next 5 or 6 years, which would represent three-quarters of the estimated capital PEMEX plans to obtain from foreign sources. Mexican government officials explained that the Eximbank loan guarantee was the most important component in PEMEX's strategy for raising foreign capital.

As of February 1992, Eximbank officials told us that PEMEX was still completing financial arrangements regarding the initial loans that will be guaranteed by Eximbank. According to an Eximbank attorney, the Eximbank's loan guarantee agreement is best suited for a commercial bank loan to PEMEX. However, PEMEX officials told us that they would prefer using the U.S. public bond market instead of a commercial bank loan in order to save on financing costs. Final loan arrangements are pending as PEMEX explores this alternative with the SEC.

While the Eximbank loan guarantee to PEMEX will directly benefit U.S. oil service contractors, at the same time some people believe that it may reinforce the Mexican government's reluctance to allow foreign and private investment in oil production. For example, a Congressional Research Service report concluded that the Eximbank loan guarantee will

allow PEMEX to continue excluding equity investment by private oil producers.¹ In addition, the report notes that direct investment by international oil producers would be much more likely to expand oil output than would a loan guarantee from Eximbank.

U.S. Trade and Development Program Funds Feasibility Study

TDP agreed to fund \$350,000 in 1992 for a U.S. company to study possible upgrades of two identical PEMEX petrochemical plants. A TDP consultant reported that the study would identify options to increase the plants' capacity, reduce their energy consumption, and make environmental improvements. The upgrades could have a possible value of about \$21 million-\$33 million in U.S. exports to Mexico.

Bilateral Energy Consultations Enhance Energy Cooperation

Since 1982 the U.S. Department of Energy has sponsored informal bilateral consultations between U.S. and Mexican government energy specialists to enhance energy cooperation. At these meetings, the delegates exchange technical information on energy issues and discuss each country's energy market and energy policies as well as conditions in the international oil market. The meetings also have led the United States and Mexico to identify ways to assist and cooperate with each other. According to a Mexican participant, the meetings have been most helpful because they have not encountered the usual political burdens that accompany U.S.-Mexico petroleum relations.

As a result of these meetings, the Department of Energy and the Mexican government initiated a joint study to identify and analyze the energy-related sources of pollution in the Mexico City basin. The study will measure the levels of pollution emitted and analyze the alternatives for reducing pollution. Each country agreed to provide \$4.5 million to support this 3-year project, which began in 1990.

¹Mexican Oil: Less Than Meets the Eye, Congressional Research Service, Report 91-535, SPR (Washington, D.C.: July 3, 1991).

Profile of Selected U.S. Oil Producers and Oil Service Contractors

Industry group	Industry group definition	Estimated 1990 employment	Estimated 1990 value of output
Oil producers	Invest in and manage crude oil and gas exploration and extraction projects	394,123	\$85.5 billion
Oil service contractors			
Geophysical contractors	Explore for underground oil and gas deposits using geological maps and specialized equipment	20,000- 22,000	\$530 million
Drilling contractors	Drill wells to explore for and produce oil and gas from underground deposits	408,000 ^a	\$3.3 billion
Petroleum equipment suppliers	Produce equipment used in oil and gas drilling, production, and processing	240,000	\$35.2 billion
Marine service contractors	Transport supplies, equipment, and personnel between the shore and offshore oil and gas platforms	25,000	\$500 million
Oil well servicing contractors	Conduct maintenance on oil wells to ensure efficient operation	35,000	\$650 million

^a1989 estimate.

Mexican Oil Production and Exports, 1980-1991

Barrels in millions

Year	Average production per day	Average exports per day
1980	1.9	0.8
1981	2.3	1.1
1982	2.7	1.5
1983	2.7	1.5
1984	2.7	1.5
1985	2.6	1.4
1986	2.4	1.3
1987	2.5	1.3
1988	2.5	1.3
1989	2.5	1.3
1990	2.5	1.3
1991	2.7	1.4

Source: PEMEX.

Major Contributors to This Report

**National Security and
International Affairs
Division,
Washington, D.C.**

Elliott C. Smith, Assistant Director

**Los Angeles Regional
Office**

**Patrick F. Gormley, Regional Management Representative
Anthony Moran, Evaluator-in-Charge
Amy Finkelstein, Senior Evaluator
James C. Geibel, Evaluator
Victoria Hughes, Adviser**

**Office of the General
Counsel**

Raymond J. Wyrsh, Attorney

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