United States Government Accountability Office
Washington, DC 20548

August 3, 2011

Congressional Committees

Subject: *Firms Reported in Open Sources as Having Commercial Activity in Iran's Oil, Gas, and Petrochemical Sectors*

Iran's economy and government are reliant on revenues from its oil and gas industry. According to the 2011 Central Intelligence Agency *World Factbook*, oil accounts for approximately 80 percent of Iran's exports, and, according to the International Monetary Fund, Iran's 2009 oil revenues were about 66 percent of the Government of Iran's revenues.[1] According to the Department of Energy (DOE), Iran ranks among the top three holders of proven oil and natural gas reserves in the world, and is one of the largest exporters of crude oil in the world. While Iran continues to produce significant amounts of crude oil, its peak production occurred in 1978 and has not been matched since then because of a high rate of natural decline in mature oil fields, limited investment, and sanctions. IHS Global Insight found that the oil sector will require approximately $25 billion in annual investments to maintain existing production and considerably more to develop and enhance recovery techniques that would lift Iran's daily output to 5.8 million barrels by 2015.[2] While Department of State (State) officials state that sanctions have an impact on Iran, the Iranian government continues its attempts to increase the development of its oil and gas sectors through foreign investment.

U.S. law restricts U.S. firms from investing in Iran's energy sector through a variety of sanctions administered by the Department of the Treasury to discourage Iran from supporting terrorism and developing nuclear weapons.[3] In addition, the Iran Sanctions Act, as amended, provides for sanctions against persons, including foreign firms, who

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[1]Central Intelligence Agency, World Factbook, https://www.cia.gov/library/publications/the-world-factbook/goes/ir.html and International Monetary Fund report No. 10/74, March 2010.

[2]IHS Global Insight provides economic and financial information for the energy industry on a contract basis, including analysis and forecasting for the Iranian oil, gas, and petrochemical sectors discussed in this report.

[3]International Emergency Economic Powers Act, Pub. L. No. 95-223, 91 Stat. 1625 (1977); National Emergencies Act, Pub. L. No. 94-412, 90 Stat. 1255 (1976), and 3 U.S.C. § 301 as implemented by Executive Order 12957, 60 Fed. Reg. 14615 (Mar. 15, 1995) (prohibiting U.S. involvement with petroleum development in Iran), Executive Order 12959, 60 Fed. Reg. 24757 (May 6, 1995) (banning specified exports and investment), and Executive Order 13059, 62 Fed. Reg. 44531 (Aug. 19, 1997) (prohibiting virtually all trade and investment activities with Iran by U.S. persons, wherever located).

invest more than $20 million in Iran's energy sector.[4] The Comprehensive Iran Sanctions, Accountability and Divestment Act (CISADA) of 2010 added new activities for which entities can be sanctioned under the Iran Sanctions Act.[5] In March 2010, we identified 41 firms with commercial activity in Iran's oil, gas, and petrochemical sectors, based on reliable open source reporting.[6] The Senate Committee on Armed Services directed that we update this report.[7] We also reported recently on companies that export sensitive technology to Iran and are currently working on a report of companies that sell refined petroleum products to Iran.[8]

In response to the Senate committee directive, this report (1) provides a list of companies reported to have commercial activity in Iran's oil, gas, and petrochemical sectors between January 2010 to May 2011 and companies reported to have withdrawn from commercial activity in Iran, and (2) identifies which of those companies have contracts with the U.S. government. We define commercial activity as having signed an agreement to conduct business, invested capital, or received payment for the provision of goods or services in the Iranian oil, gas, or petrochemical sectors. We identified the companies that reported having contracts, agreements, and memorandums of understanding to conduct commercial activity in Iran, but we did not determine whether these contracts or agreements represented binding agreements. We did not review the contracts and documents underlying the reported transactions and did not independently verify the transactions. We did not attempt to determine whether the activities of the firms in this list meet the legal criteria for sanctionable activities under the Iran Sanctions Act. Nor did we attempt to determine whether these activities commenced before or after the passage of CISADA. The Secretary of State is responsible for making such determinations.

To accomplish our objectives, we reviewed open source information, including industry and trade publications, corporate reports and statements, and Securities and Exchange Commission (SEC) filings. We included a firm on our list if at least three reputable industry publications or the firm's corporate statements reported the firm to have signed an agreement to conduct business; invested capital; or received payment for providing goods or services in connection with a specific Iranian oil, gas, or petrochemical project. We provided the firms an opportunity to comment on our findings. While we corroborated information from a U.S. intelligence agency, we only used open source

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[4]Iran-Libya Sanctions Act of 1996, Pub. L. No. 104-172, § 5, 110 Stat. 1541, 1543 as amended. The act also allows for sanctions against persons providing goods, technology, or services to Iran knowing that such provision would contribute materially to Iran's ability to acquire or develop chemical, biological, or nuclear weapons or related technologies, or acquire or develop destabilizing numbers and types of advanced conventional weapons.

[5]Pub. L. No. 111-195, § 102, 124 Stat. 1312, 1317-28.

[6]GAO*, Firms Reported in Open Sources as Having Commercial Activity in Iran's Oil, Gas, and Petrochemical Sectors*, GAO-10-515R (Washington, D.C.: Mar. 23, 2010)

[7]S. Rep. No. 111-201 (2011).

[8]GAO, *The U.S. Government Is Establishing Procedures for a Procurement Ban against Firms that Sell Iran Technology to Disrupt Communications but Has Not Identified Any Firms*, GAO-11-706R (Washington, D.C.: June 30, 2011).

data for this report. To determine the companies that also had contracts with the U.S. government, we searched the Federal Procurement Data System-Next Generation (FPDS-NG), the primary government wide contracting database since 1978, for active contracts from January 2010 to May 2011. We first searched in FPDS-NG for firms identified as having commercial activity in Iran. We then corroborated the information in FPDS-NG on the firms by obtaining U.S. contracts and other evidence that confirmed the existence of contracts with these firms. See enclosure I for a full description of our scope and methodology.

We conducted our work from April 2011 to July 2011 in accordance with all sections of GAO's Quality Assurance Framework that are relevant to our objectives. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objective and discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions.

Summary

Using open source information, we identified 16 foreign firms that had commercial activity in Iran's oil, gas, and petrochemical sectors from January 2010 through May 2011, including 2 firms not listed in our prior report. According to our review of reliable open sources, foreign firms have significantly decreased commercial activity in Iran's oil, gas, and petrochemical sectors since we last reported.[9] Twenty of the 41 firms listed in our 2010 report declared in their public reporting or in letters to GAO, which were also confirmed by State, that they have withdrawn or are withdrawing from commercial activity in Iran's energy sector. The companies that withdrew from Iran cited several reasons for ceasing activity, including sanctions imposed by the U.S. government, as well as other international organizations, and the difficulty associated with conducting business with Iran. According to *Oil and Gas Journal*, Iran's oil production could fall by more than 25 percent over the next 5 years because of a lack of investment in the country's energy sector. However, IHS Global Insight and DOE report that Indian and Chinese state oil companies have increased interest in the construction of Iranian refineries, and Iran is looking to India and China to increase development of oil exploration and production.

Of the 16 foreign firms identified as having commercial activities in the oil, gas, and petrochemical sectors in the latest review period, two firms have U.S. government contracts totaling approximately $4 million in obligated funds. In comparison, our 2010 report found that the U.S. government obligated almost $880 million in contracts to 7 of the 41 firms having commercial activity in the Iranian energy sectors between 2005 and 2009. However, by May 2011, 5 of these 7 companies had withdrawn from commercial activity in Iran's energy sector.

We are making no recommendations in this report.

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[9]Our March 2010 report (GAO-10-515R) did not identify any U.S. firms that reported having commercial activity in Iran's energy sector, nor did our review of open sources between January 1, 2010 and May 30, 2011.

Background

Iran's involvement in illicit nuclear activities, its support for terrorism, and abuse of human rights have led the United States and other countries to impose sanctions to curb these activities. U.S. law has restricted U.S. and foreign firms from investing in Iran's energy sector through a variety of sanctions administered since 1987. According to the Department of State, these measures are designed to

(1) block the transfer of weapons, components, technology, and dual-use items to Iran's prohibited nuclear and missile programs;

(2) target select sectors of the Iranian economy relevant to its proliferation activities; and

(3) induce Iran to engage constructively, through discussions with the United States and other countries, to return to compliance with its nonproliferation obligations.

The Iran Sanctions Act of 1996 (ISA), as amended, included sanctions on businesses or individuals engaging in certain transactions related to Iran's energy sector, intended to limit the development of Iran's ability to explore for, extract, refine, or transport by pipeline petroleum resources of Iran.[10] On July 1, 2010, CISADA was enacted,[11] adding new activities for which entities can be sanctioned under the 1996 act, including sanctions on companies involved in the development of Iran's energy sector.[12] ISA, as amended by CISADA, provides for sanctions to be imposed on companies that are determined to have made investments of over $20 million in Iran's energy sector.[13] The amended ISA also imposes sanctions for the sale of a specified market value of refined petroleum products to Iran as well as the sale, lease, or provision of goods or services of a specified market value that could directly and significantly facilitate the maintenance or expansion of Iran's domestic production of refined petroleum products.[14] The President, who delegated authority under the act to the Secretary of State, may waive the imposition of sanctions for these activities. State is the agency primarily responsible for implementing the provisions of the Iran Sanctions Act and CISADA, which target Iran's energy sectors.

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[10] Pub. L. No. 104-172, § 5, as amended.

[11] Pub. L. No. 111-95.

[12] Pub. L. No. 111-195, § 102.

[13] Pub. L. No. 104-172, § 5(a), as amended.

[14] *Id.*

Sixteen Foreign Firms Had Commercial Activity in Iran's Oil, Gas, or Petrochemical Sectors from January 2010 to May 2011, according to Open Sources

Sixteen Firms Had Commercial Activities in Iran's Energy Sector

On the basis of our review of open source information, we identified 16 foreign firms that had commercial activity in the development of the Iranian oil, gas, and petrochemical sectors between January 1, 2010, and May 30, 2011. Of these 16 companies, we identified 2 that were not in our 2010 report. In addition, 20 of the 41 firms we identified in our 2010 report are now reported to have withdrawn or intend to withdraw from commercial activity in Iran. These firms indicated their intentions to withdraw or plans to withdraw through their own public reporting or letters to GAO, as confirmed by State. We could not find sufficient open source information on 7 other companies we identified in 2010 to determine whether or not they had continued commercial activities in Iran's oil, gas, or petrochemical sectors. The firms we identified in March 2010 and any update in the status of their activities since January 2010 are listed in table 1.[15] See enclosure II for a detailed description of the firms' commercial activities in Iran. We did not attempt to determine whether the activities in this list meet the legal criteria for sanctionable activities under the Iran Sanctions Act. The Secretary of State is responsible for making such determinations.

Table 1: Comparison of Foreign Firms Reported to Have Commercial Activity in Iran's Oil, Gas, or Petrochemical Sectors for the Periods 2005 to 2009 and 2010 to 2011.

Firm	Country[a]	Sector	2005-2009 status	2010-2011 status
1. Belneftekhim/ Belarusneft	Belarus	Oil exploration and production	Active	Active
2. China National Offshore Oil Corporation	China	Natural gas	Active	Active
3. China National Petroleum Corporation	China	Oil exploration and production, natural gas	Active	Active
4. Daelim	South Korea	Natural gas	Active	Active
5. Edison	Italy	Oil exploration and production	Active	Active
6. Hyundai Heavy Industries	South Korea	Refining	Active	Active
7. INA	Croatia	Oil exploration and production, natural gas	Active	Active
8. Indian Oil Corporation Ltd.	India	Natural gas	Active	Active
9. Oil and Natural Gas Corporation (ONGC)	India	Oil exploration and production, natural gas	Active	Active

[15] Table 1 presents information gathered from reputable industry standard publications and firms' public statements. We used the terms "active," "withdrawn," and "insufficient information available" to denote the company status based upon our review of open sources. "Active" indicates companies have commercial activity in Iran. "Withdrawn" means that the company withdrew from commercial activity.

Firm	Country[a]	Sector	2005-2009 status	2010-2011 status
10. Oil India Ltd.	India	Natural gas	Active	Active
11. OMV	Austria	Natural gas	Active	Active
12. ONGC Videsh Ltd.[b]	India	Natural gas	Active	Active
13. Petroleos de Venezuela S.A.	Venezuela	Natural gas	Active	Active
14. Sasol	South Africa	Petrochemicals		Active[c]
15. Sinopec	China	Oil exploration and production, refining	Active	Active
16. Sonangol	Angola	Natural gas		Active[c]
17. ABB Lummus[d]	Not applicable	Refining, petrochemicals	Active	Withdrawn
18. Costain Oil, Gas & Process Ltd.	United Kingdom	Natural gas	Active	Withdrawn
19. Daewoo Shipbuilding & Marine Engineering	South Korea	Oil exploration and production	Active	Withdrawn
20. ENI	Italy	Oil exploration and production	Active	Withdrawn
21. GS	South Korea	Natural gas	Active	Withdrawn
22. Haldor Topso[e]	Denmark	Refining	Active	Withdrawn
23. Hinduja	United Kingdom	Oil exploration and production, natural gas	Active	Withdrawn
24. Inpex	Japan	Oil exploration and production	Active	Withdrawn
25. JGC Corporation	Japan	Refining	Active	Withdrawn
26. Lukoil	Russia	Oil exploration and production	Active	Withdrawn
27. LyondelBasell	Netherlands	Petrochemicals	Active	Withdrawn
28. Petrobras	Brazil	Oil exploration and production	Active	Withdrawn
29. PTT Exploration & Production	Thailand	Natural gas	Active	Withdrawn
30. Repsol	Spain	Natural gas	Active	Withdrawn
31. Royal Dutch Shell	Netherlands	Natural gas	Active	Withdrawn
32. Snamprogetti	Italy	Pipeline	Active	Withdrawn
33. StatoilHydro	Norway	Oil exploration and production, natural gas	Active	Withdrawn
34. Total	France	Natural gas	Active	Withdrawn
35. Turkish Petroleum Company	Turkey	Natural gas	Active	Withdrawn
36. Uhde	Germany	Petrochemicals	Active	Withdrawn
37. Amona	Malaysia	Oil exploration and production	Active	Insufficient information available
38. Gazprom	Russia	Oil exploration and production	Active	Insufficient information available
39. Petrofield	Malaysia	Natural gas	Active	Insufficient information available
40. Petronet LNG	India	Natural gas	Active	Insufficient information available

Firm	Country[a]	Sector	2005-2009 status	2010-2011 status
41. PGNiG	Poland	Natural gas	Active	Insufficient information available
42. SKS Ventures	Malaysia	Natural gas	Active	Insufficient information available
43. Tecnimont	Italy	Petrochemicals	Active	Insufficient information available

Source: GAO analysis of open source information.

[a]The country listed is the physical location of the firm as reported in open sources.

[b]ONGC Videsh Ltd. Is a subsidiary of ONGC.

[c]The company was identified as having commercial activity in open sources between January 2010 and May 2011, but was not previously identified by in open sources between 2005 and 2009.

[d]ABB Lummus no longer exists as a firm. ABB of Switzerland sold the Lummus Group in 2007 to Chicago Bridge and Iron Company (CB&I) of the United States. ABB and CB&I told us they no longer have commercial activity in Iran.

According to the open sources we reviewed, the companies listed above gave varying reasons for ending activity in Iran, including (1) the conclusion of contractual agreements with Iran, (2) the difficulty associated with conducting business with Iran, or (3) the pressure associated with sanctions. For example, Royal Dutch Shell indicated that the company ceased its involvement in the development of Iran’s South Pars natural gas field project to avoid sanctions under CISADA. In addition, open sources reported South Korea’s GS Engineering and Construction Company withdrew from its activities in Iran because of “mounting pressures of some Western powers.” In addition, State reported that the department had used CISADA authorities to persuade major multinational oil firms to withdraw from all significant activity in Iran. According to State, as of May 2011, Total, Royal Dutch Shell, ENI, Repsol, Statoil, and INPEX agreed to terminate or are in the process of terminating investments in Iran and committed not to pursue future agreements to develop Iran’s oil, gas, or petrochemical sectors.

Foreign Firms Are Primarily Active in Oil Exploration and Production and Natural Gas Development

According to open sources, 16 foreign firms continue to support Iranian activities in oil and gas exploration and production, refining, and petrochemicals. We found a reduction in the commercial activity in Iran’s oil and gas development activities. A comparison of the firms involved in each activity for the two time periods is identified in table 2. We identified 3 companies, China National Petroleum Corporation, INA, and Sinopec, that reported having commercial activity in more than one oil and gas development activity between January 1, 2010 and May 30, 2011.

Table 2: Comparison of the Number of Firms Supporting Iran Oil and Gas Development Activities, during the Period of 2005 through 2009 and 2010 through May 2011

Activity type	Number of firms reported as having commercial activity between 2005 and 2009[a]	Number of firms reported as having commercial activity between 2010 and May 2011[a]
Oil exploration and production	14	5
Refining capacity	4	2
Natural gas	23	11
Petrochemicals	4	1
Pipelines and oil tankers	4	0

Source: GAO analysis of open source information.

[a]Multiple companies reported having commercial activity in more than one oil and gas development activity.

Oil Exploration and Production

Using open source information, we identified 5 foreign firms as having commercial activity in Iran's crude oil exploration and production efforts. For example, according to open sources, Sinopec (China) signed an agreement with Iran to develop the Yadavaran oil field for an estimated $2 billion to almost $4 billion. In addition, according to open sources, the China National Petroleum Corporation is financing 90 percent of the development of the North Azadegan oil field, in an agreement estimated to be worth more than $2 billion. According to IHS Global Insight, Chinese and Indian firms are taking an increased interest in oil and gas exploration and production projects in Iran in exchange for oil and natural gas; however, new agreements for development have slowed since 2007. IHS Global Insight also reports that the government of Iran is struggling to increase oil production and exploration through investment in known fields, new exploration, and maintenance of older oilfields. According to open sources, 7 companies we identified in 2010 have withdrawn from exploration and production activities in Iran. *Oil and Gas Journal* reports that Iran's oil production could fall 27 percent over the next 5 years because of a lack of investment in the country's energy sector.

Refining Capacity

Using open source information, we identified 2 firms, Sinopec and Hyundai Heavy Industries, that are involved in expanding and upgrading Iran's refining capacity. Open sources report that Sinopec is working to expand and upgrade the Arak refinery, which will increase the plant's processing capacity from 150,000 barrels to about 250,000 barrels per day. According to open sources, Hyundai Heavy Industries delivered processing equipment to the Arak refinery. According to DOE, Iran does not currently have sufficient refining capacity to meet its domestic demand for gasoline, although Iran intends to increase refining capacity to potentially eliminate the need for imported refined petroleum. In 2009, DOE reported that Iran runs nine refineries, which provide an estimated 1.5 million barrels per day, but plans to increase capacity to 3 million barrels per day by 2013. IHS Global Insight reports that Indian and Chinese state-owned oil companies are interested in participating in Iranian refinery construction.

Natural Gas

Using open source information, we identified 11 firms as having commercial activity in the development of Iran's natural gas resources. For example, open sources reported that three Indian companies—India Oil Corporation Ltd., Oil India Ltd., and ONGC Videsh Ltd.—have agreements to develop the Farzad natural gas field, an estimated $5 billion investment. Additionally, it is reported that in October 2010, Petroleos de Venezuela agreed to invest $780 million in developing phase 12 of Iran's South Pars gas field. Iran's domestic consumption of natural gas has increased rapidly over the past 20 years, and development of natural gas resources would better position Iran to meet domestic demand. According to open sources, China National Offshore Oil Corporation has a 25-year agreement with Iran to purchase liquefied natural gas from the North Pars field. IHS Global Insight also reports that decades of spiraling domestic demand and escalating use of gas to inject into mature oil fields have resulted in lower gas volumes available for export. According to IHS Global Insight, Iran has missed targets to increase total gas exports and its natural gas production remains considerably below sustainable capacity. However, Iran continues to develop gas fields throughout the country, including fields in Fars province and the Persian Gulf. Iran also plans to expand its development of liquefied natural gas, but this plan requires significant investment from international partners and has become less of a priority as Iran has recently focused limited funds on oil exploration and production projects.

Petrochemicals

Using open source information, we identified 1 firm involved in the production of Iranian petrochemicals. Sasol of South Africa is reported to be producing polyethylene at two polymer production plants in Bandar Assaluyeh, Iran. The main raw materials used in petrochemical production are derived from oil and natural gas, according to DOE. Natural gas and other products of the refining process are shipped to chemical plants, where they are used to manufacture more complex petrochemicals and plastics. According to the Institute for Defense Analyses, petrochemicals account for approximately 40 percent of Iran's non-oil exports. According to *Oil and Gas Journal*, expanding petrochemical production allows a country with large oil and natural gas resources to use them more profitably. IHS Global Insight reports that the government of Iran is targeting the petrochemical sector as an area for economic diversification and job creation.

The Secretary of State Imposed Sanctions on Two Foreign Firms for Investment in Iran's Oil, Gas, and Petrochemical Sectors

Since the passage of CISADA in July 2010, the Secretary of State has imposed sanctions under the Iran Sanctions Act of 1996 on two companies for investment in

Iran's oil, gas, and petrochemical sectors.[16] In October 2010, State imposed sanctions against NaftIran Intertrade Company, a Swiss-based oil trade company, for its sanctionable investment in the Iranian petroleum sector. In April 2011, State sanctioned Belarusneft, a Belarusian company, for entering into a $500 million contract with the NaftIran Intertrade Company to develop the Jofeir oil field. The sanctions imposed on NaftIran and Belarusneft include the denial of Export-Import Bank financing, U.S. export licenses, and U.S. loans above $10 million, as well as a mandatory ban on U.S. government contracts with these firms.

Two Firms Also Had Contracts with the U.S. Government

From January 2010 through May 2011, the U.S. government obligated about $4 million in contracts to 2 of the 16 firms we identified in open sources as having commercial activity in Iran's oil, gas, and petrochemical sectors. The firms that have U.S. government contracts, as reported in FPDS-NG, are identified in table 3. In 2010, we reported that from fiscal years 2005 through 2009, the U.S. government obligated almost $880 million in contracts to 7 of the 41 firms identified in our March 2010 report. U.S. agencies obligated almost 90 percent of these funds for purchases of fuel and petroleum products overseas. Five of the 7 companies, identified in our March 2010 report, had withdrawn their commercial activity as of May 2011.

Table 3: Firms Reported in Open Sources as Having Commercial Activity in the Iranian Energy Sector That Have U.S. Government Contracts

Firm/country	Contract actions	Total obligated funds between January 1, 2010 and May 30, 2011
Daelim Industrial Co./South Korea	Housing construction at a U.S. military base in South Korea	**$4,213,920**
Hyundai Heavy Industries/South Korea	Vehicles and construction equipment	**$131,848**

Source: GAO analysis of FPDS-NG records and other government sources.

According to the contract information identified in FPDS-NG, the Department of Defense entered into contracts with the two companies identified in the table. The Department obligated over $4 million to Daelim Industrial Company for construction of family housing on a military base in South Korea between January 1, 2010 and May 30, 2011. In addition, during the same period, the Department of Defense obligated approximately $132,000 to Hyundai Heavy Industries Co. toward the purchase of vehicles and construction equipment, such as forklifts.

[16] *See* Public Notice 7408, 76 *Fed. Reg.* 18,821 (Apr. 5, 2011) and Public Notice 7197, 75 *Fed. Reg.* 62,916 (Oct. 13, 2010). In addition, on May 24, 2011, the Secretary of State imposed sanctions on seven companies, Petrochemical Commercial Company International (located in New Jersey), Royal Oyster Group (United Arab Emirates), Speedy Ship (United Arab Emriates), Tanker Pacific (Singapore), Ofer Brothers Group (Israel), Associated Shipbroking (Monaco), and Petróleos de Venezuela (Venezuela) for the sale of refined petroleum products to Iran. Under the ISA as amended by CISADA, the President may impose sanctions on the sale of refined petroleum products to Iran, but this activity falls outside the scope of this review.

Agency Comments

We provided the Departments of State, Energy, and Defense a draft of this report for comment. The agencies provided technical comments, which we incorporated into the report as appropriate.

In addition, we provided the firms listed in this report as having commercial activity in Iran's energy sector an opportunity to comment on the open source information about their firms. We incorporated any responses we received from firms into the report.

We are sending copies of this report to appropriate congressional committees, Secretary of State, Secretary of Energy, and Secretary of Defense. We will also make copies available to others upon request. In addition, the report will be available at no charge on GAO's website at http://www.gao.gov.

If you or your staffs have any questions about this report, please contact me at 202-512-8979 or christoffj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributors to this report are listed in enclosure IV.

Joseph A. Christoff

Joseph A. Christoff
Director, International Affairs and Trade

Enclosures -- 4

List of Committees

The Honorable Carl Levin
Chairman
The Honorable John McCain
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Howard P. McKeon
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

Enclosure I: Scope and Methodology

In order to identify companies with commercial activity in Iran's oil, gas, and petrochemical sectors, we searched open source information that was determined to be credible and comprehensive by an energy economist and information specialists within GAO who have conducted work on the energy sector and worked for firms that conduct audits in the process industries (such as refining and petrochemical production). We defined commercial activity as having signed an agreement to conduct business, invested capital, or received payment for the provision of goods or services in the Iranian oil, gas, or petrochemical sectors. We excluded companies that reported purchasing crude oil or natural gas from Iran because these purchases do not meet our definition of commercial activity in Iran's oil, gas, or petrochemical sectors. To generate the preliminary list, we analyzed information in *Oil and Gas Journal*'s Worldwide Construction Update reports in December 2010 and April 2011. This publication conducts a global survey of ongoing and planned oil and gas contractors and firms working in sectors such as oil exploration, refining, and engineering, and is trusted and utilized by other U.S. government agencies and those familiar with the international oil industry. We verified the survey methodology with *Oil and Gas Journal*'s Survey Editor and found it sufficiently reliable for our purposes.

We confirmed the firms' commercial activity in Iran by conducting searches in industry publications and company reports and statements between January 2, 2010 and May 30, 2011. See enclosure III for a list of industry publications that we reviewed for this report. To compile the publications used for our searches, information specialists in GAO used the Nexus Oil and Energy databases, which contain industry publications where more than 60 percent of the stories pertain to the oil industry and energy industry. The information specialists then screened the publications and excluded sources that were deemed insufficiently reliable, such as newspaper reports, newswires, and direct news releases from the Iranian government. The information specialists searched for the specific names of firms identified in our 2010 report, as well as key terms, such as "Iran" within 25 words of "explore", "drill", "refinery", "natural gas", and "petroleum." We also searched for locations in Iran where oil, gas, and petrochemical activities are being conducted. In addition, we reviewed company publications, including annual reports; Securities and Exchange Commission (SEC) filings, if available; press releases and corporate statements that publicly reported their commercial activities in Iran; or corrected information that had been publicly reported. In addition, we reviewed government reports and information from the Department of State, Department of Energy, and Congressional Research Service, and met with an energy expert from a U.S. intelligence agency.

We reviewed the list and confirmed that one of the following criteria had been met: (1) At least three standard industry publications cited the firm as having commercial activity in a specific project, (2) the firm provided information on its corporate website about its involvement in a specific project and the firm's involvement in the specific project was also cited by at least one standard industry publication, or (3) the firm provided information in a corporate annual report, SEC filing, or an official press release that identified its involvement in a commercial activity in Iran. To determine whether the firm had withdrawn from commercial activity in Iran, we reviewed the list and confirmed that one of the following criteria had been met: (1) At least three standard industry publications cited the firm as ending commercial activity on a project, (2) the firm provided information on its corporate website about the end of its involvement in a specific project and the firm's withdrawal in the specific project was also cited by at least one standard industry publication, or (3) the firm provided information in a corporate annual report, SEC filing, or an official press release, or was confirmed by State as having withdrawn or planned to withdraw from its commercial activity in Iran. We determined that if three separate open sources identified a firm as having commercial activity in Iran, it could be reasonably assumed that the firm had commercial activity. In addition, if the firm reported having commercial activity on its website, but not in the company's official reports or statements, then we determined it necessary to corroborate the information through one open source.

After confirming that a firm had commercial activity in a specific project in Iran, we obtained additional information presented in the table in enclosure II—including the firm's activity and the project's status—from industry publications. We included companies that reported having contracts, agreements, and memorandums of understanding to engage in commercial activities in Iran, but we did not determine whether these contracts or agreements represented binding agreements. When reports varied about certain details of a firm's project, we presented the information reported in the most recent source available. Where information was not available on the value of a specific firm's commercial activity, we reviewed the relevant sources to determine the total value of the project in which the firm was involved. In some cases, specific information was not reported and is reflected as such in the tables. Beginning on June 3, 2010, we contacted the firms directly to receive an official comment on its commercial activity in Iran. We also worked with State Department officials to identify appropriate points of contact at the firms that could officially comment on the reported information. Beginning on June 9, 2011, we e-mailed the firms a letter containing information from enclosure II that concerned the firms' reported commercial activities in Iran, and provided the firms an opportunity to comment on the information. As of July 28, 2011, we received responses from eight companies, and we have incorporated the firms' responses into the report.

To identify which firms also have contracts with the United States government, we searched the Federal Procurement Data System-Next Generation (FPDS-NG). We chose FPDS-NG because it has served as the primary government wide contracting database since 1978. Congress, executive branch agencies, and the public rely on FPDS-NG for a broad range of data on agency contracting actions, procurement, and spending.[1] The Office of Management and Budget established FPDS-NG, and the U.S. General Services Administration administers the system.[2] We searched the FPDS-NG

[1]FPDS-NG can be accessed at https://www.fpds.gov/fpdsng_cms/. Reporting requirements for FPDS-NG are in Federal Acquisition Regulation (FAR) subpart 4.6; FPDS-NG data are described in FAR 4.602.

[2]For more information on FPDS-NG and other federal procurement data systems, see GAO, *Federal Contracting: Observations on the Government's Contracting Data Systems,* GAO-09-1032T (Washington, D.C.: Sept. 29, 2009).

archives from January 2010 to May 2011 using search terms that would select any record with the same firm name as identified as having commercial activities in Iran. After matching firms from our list with records in FPDS-NG, we obtained the contract number and the Data Universal Numbering System (DUNS) numbers for the firms determined to be identical matches, and searched FPDS-NG for these DUNS numbers.[3] With certain exceptions, all firms that do business with U.S. agencies are required to register with the U.S. government's central contractor registry and obtain a unique DUNS number. We matched all of the data in enclosure II to individual firms' DUNS numbers. We took steps to corroborate key FPDS-NG information by reviewing U.S. government documents of the firms identified in FPDS-NG. To do so, we searched the Department of Defense's Electronic Document Access system to locate copies of relevant contract documents, and reviewed the content of these contract documents and checked the contract obligations to corroborate FPDS-NG data.[4]

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[3]Data Universal Numbering System numbers are nine-digit identifying numbers obtained by firms through Dunn and Bradstreet to uniquely identify a firm. Dunn and Bradstreet is a leading source of commercial information, and maintains a commercial database with more than 140 million business records. U.S. vendors must be registered in the U.S. Central Contract Registry prior to the award of a U.S. government contract and a firm must have a DUNS number to register.

[4]The Electronic Document Access system is a Department of Defense online system designed to provide acquisition-related information.

Enclosure II: Publicly Reported Commercial Activity of Foreign Firms in the Iranian Oil, Gas, or Petrochemical Sectors

The following table presents information gathered and organized from reputable industry standard publications and firms' public statements. We provided the firms an opportunity to comment on the information found in open sources. We did not attempt to determine whether the firms in this list meet the legal criteria specified in the Iran Sanctions Act, as it is the responsibility of the Department of State to do so.

Table 4: Foreign Firms with Reported Commercial Activity in Iran and Firms' Comments Regarding Their Activity

Firm/country[a]	Firm Activity	Status	Commercial activity	Firm comment
Belarusneft/Belarus	Development of the Jofeir oil field.	Signed a contract in September 2007 and started the second phase of development in February 2011.	Buy-back contract valued at $500 million.	Contacted on June 15, 2011; no response as of July 28, 2011.
China National Offshore Oil Corporation (CNOOC)/China	Development of the North Pars natural gas field.	Twenty-five-year agreement to purchase natural gas.	The North Pars project is estimated to cost $16 billion.	Contacted on June 9, 2011; no response as of July 28, 2011.
China National Petroleum Corporation (CNPC)/China	Development of the Masjed-i-Suleiman oil field. Development of Block 3 oil field in the Zagros Basin. Development of the North Azadegan oil field. Development of South Pars phase 11 gas project.	Progress stalled since 2010 and the February 2011 completion deadline was missed. Second exploration well started in December 2007. Equipment procurement problems will likely delay production by 2 years as of November 2010. CNPC has yet to drill its first well as of November 2010.	CNPC has a 75 percent share. Not reported. Estimated $2 billion oil project with CNPC financing 90 percent. Project is valued at $4.7 billion.	Contacted on June 17, 2011; no response as of July 28, 2011.
Daelim/South Korea	Construction of storage tanks for liquefied natural gas at Tombak. Development of phase 12 of the South Pars gas field.	Project scheduled for completion in April 2011. Scheduled for completion in 2013.	Project valued at $260 million. Project valued at $612 million.	Confirmed roles in both projects. Storage tank construction is valued at 120 million euros. South Pars gas development began in 2009 and is valued at $612 million.

Firm/country[a]	Firm Activity	Status	Commercial activity	Firm comment
Edison/Italy	Holds a hydrocarbon exploration license in Iran and has a hydrocarbons branch located in Iran.	Not reported.	Not reported.	Stated that no exploration licenses are held. However, a four-year contract ending April 2012 to explore the Dayeyr Block is ongoing. Once the contract ends, Edison will not make further investments in Iran.
Hyundai Heavy Industries/South Korea	Project Regenerator for the Arak refinery.	Not reported.	Not reported.	Contacted on June 7, 2011; no response as of July 28, 2011.
INA/Croatia	Exploration of Moghan 2 oil and gas block.	Four-year contract signed in 2008.	The minimum financial obligation is $40.3 million.	Contacted on June 10, 2011; no response as of July 28, 2011.
Indian Oil Corporation Ltd. (IOCL)/India	Development of the Farzard natural gas field in the Farsi block.	Negotiations ongoing as of January 2011.	Investment of $5 billion with a 40 percent stake.	Contacted on June 9, 2011; no response as of July 28, 2011.
Oil and Natural Gas Corporation (ONGC)/India	Development of natural gas field South Pars phase 12.	Finalizing contracts as of November 2010.	Estimated cost of $7.8 billion. Part of a consortium developing the field.	Contacted on June 9, 2011; no response as of July 28, 2011
Oil India Ltd. (OIL)/India	Development of the Farzard natural gas field in the Farsi block.	Negotiations ongoing as of January 2011.	Investment of $5 billion with a 20 percent share.	Contacted on June 9, 2011; no response as of July 28, 2011.
OMV/Austria	Onshore exploration.	Not reported.	100 percent share.	Contacted on June 9, 2011; no response as of July 28, 2011.
ONGC Videsh Ltd. (OVL)/India[b]	Development of the Farzad natural gas field in the Farsi block. Development of natural gas field South Pars phase 12.	Negotiations ongoing as of January 2011. Finalizing contracts as of November 2010.	Investment of $5 billion with a 40 percent share. Estimated cost of $7.5 billion. In a consortium with a total share of 40 percent.	Contacted on June 13, 2011; no response as of July 28, 2011.
Petroleos de Venezuela S.A. (PDVSA)/Venezuela	Development of natural gas field South Pars phase 12.	Agreement made in October 2010.	PDVSA agreed to invest $780 million.	Contacted on June 22, 2011; no response as of July 28, 2011.
Sasol/South Africa[c]	Production of polyethylene at two polymer plants in Bushehr Province.	Operation began in 2009.	Capacity is 1million tons/year.	Confirmed the two polyethylene plants and the existence of an Ethane Cracker. Noted that products from the facilities are exported from Iran.

Firm/country[a]	Firm Activity	Status	Commercial activity	Firm comment
Sinopec/China	Development of the Yadavaran oil field. Expansion and upgrades to the Arak refinery.	Production is scheduled to begin in the next 1-2 years with a targeted peak output of 300,000 barrels per day, as of June 2010. The upgrades will increase processing capacity to 250,000 barrels per day and increase gasoline output to 100,000 barrels per day.	Signed an agreement valued between $2 billion and $3.6 billion. Not reported.	Contacted on June 9, 2011; no response as of July 28, 2011.
Sonangol/Angola	Project to extract and liquefy natural gas from the South Pars field phase 12.	Original 2011 deadline is not expected to be met.	Investment of $1.5 billion, a 20 percent share.	Contacted on June 27, 2011; no response as of July 28, 2011.

Source: GAO analysis of open source information.

[a]The country listed is the physical location of the firm as reported in open sources.

[b]ONGC Videsh Limited is a subsidiary of Oil and Natural Gas Corporation (ONGC).

[c]Sasol Arya Polymer Company is the subsidiary of Sasol responsible for the project.

Enclosure III: Industry Sources and Publications Used to Identify Companies that Reported Having Commercial Activities in Iran's Oil, Gas, and Petrochemical Sectors

The following list identifies the open source information that was determined to be credible and comprehensive by information specialists within GAO. The industry and trade publications identified in the table were compiled and searched through Nexis.

1.	Africa Energy Intelligence
2.	Africa Mining Intelligence
3.	Australian Mining & Oil News Bites
4.	BMI Americas Oil and Gas Insights
5.	BBC Monitoring Middle East
6.	Biotech Financial Reports
7.	BMI Asia Pacific Oil and Gas Insights
8.	BMI Emerging Europe Oil and Gas Insights
9.	BMI Middle East and Africa Oil and Gas Insights
10.	BMI Western Europe Oil and Gas Insights
11.	Central Europe Energy Weekly
12.	Chemweek Daily
13.	Chemical News and Intelligence
14.	Chemical Week
15.	Chemweek Daily Newswire
16.	China Energy Weekly
17.	China News
18.	CIO Insight
19.	CIO Insight.com
20.	Contractor
21.	CT Reports
22.	CT's Pipeline
23.	CT's Voice Report
24.	Daily Oil Bulletin
25.	Diesel Fuel News
26.	Electric Power Daily
27.	Electric Utility Week
28.	Electronic Chemicals News
29.	Energy
30.	Energy & Ecology
31.	Energy & Ecology Business
32.	Energy Business Journal
33.	Energy Compass
34.	Energy in East Europe
35.	Energy Insights
36.	Energy Intelligence Briefing
37.	Energy Network
38.	Energy Optimization News

39.	Energy Prices & Taxes
40.	Energy Processing Canada
41.	Energy Trader
42.	Energy Weekly News
43.	EnergyWashington Week Energy Stories
44.	Engineering Business Journal
45.	Engineering Management
46.	Engineering News-Record
47.	Environment and Energy Daily
48.	Environmental Policy Alert
49.	Ethanol & Biodiesel News
50.	European Daily Electricity Markets
51.	European Gas Markets
52.	European Management Journal
53.	European Spot Gas Markets
54.	Financial Services Review
55.	Fleet Owner
56.	FT Energy Newsletters
57.	Fuel Cell Technology News
58.	Gas Daily
59.	Gas Processors Report
60.	Gasification News
61.	Global Power Report
62.	Global Refining & Fuels Report
63.	Government Procurement Report
64.	Government Security
65.	Hydrocarbon Processing
66.	ICIS Chemical Business
67.	ICIS Chemical Business America
68.	IET Generation, Transmission & Distribution
69.	India Business Insight
70.	India Energy News
71.	Industrial Environment
72.	Industrial Marketing Management
73.	Inside Cal/EPA
74.	Inside CMS
75.	Inside Energy Extra
76.	Inside Energy/with Federal Lands
77.	Inside EPA Weekly Report
78.	Inside F.E.R.C.
79.	Inside F.E.R.C.'s Gas Market Report
80.	Inside Fuels & Vehicles Energy Stories
81.	Inside US-China Trade
82.	Interfax
83.	Interfax Global markets

84.	International Journal of Forecasting
85.	International Journal of Research in Marketing
86.	International Oil Daily
87.	International Petroleum Finance
88.	International Securities Finance
89.	Iraq Revenue Watch
90.	Kazakhstan Oil & Gas Weekly
91.	Liquid Real Estate
92.	Media Industry Newsletter
93.	Medical Design (Penton)
94.	Medical Materials Update
95.	Megawatt Daily
96.	Metal Bulletin Daily Alerts
97.	Metal Bulletin Monthly
98.	Metal Bulletin Weekly
99.	Metals Week
100.	Micro Engineering & Nanotechnology News
101.	Mid-Atlantic Construction
102.	Middle East Energy, Oil and Gas News Wire
103.	Mining Annual Review
104.	Mining Journal
105.	Mining Magazine
106.	Monthly Energy ReviewNatural Gas Week
107.	Nanoparticle News
108.	National Journal's Daily Energy Briefing
109.	Natural Gas Week
110.	NDT Update
111.	NEFT Trader
112.	Nefte Compass
113.	Nuclear Fuel
114.	Nuclear News
115.	Nuclear Plant Journal
116.	Nucleonics Week
117.	Nucleonics Week Offshore
118.	Octane Week
119.	Offshore
120.	Oil & Gas Journal
121.	Oil & Gas News
122.	Oil and Gas Investor This Week
123.	Oil Daily
124.	Oil Market Intelligence
125.	Oil Market Report
126.	Operations Management
127.	Overhaul & Maintenance
128.	Petroleum Accounting and Financial Management Journal

129. Petroleum Economist
130. Petroleum Intelligence Weekly
131. Physics Week
132. Pipeline and Gas Journal
133. PipeLine and Gas Technology
134. Platts Coal Outlook
135. Platts Coal Trader
136. Platts Coal Trader International
137. Platts Energy Business & Technology
138. Platts Energy Economist
139. Platts EU Energy
140. Platts International Coal Report
141. Platts International Gas Report
142. Platts North Sea Letter
143. Platts Oilgram News
144. Platts Oilgram Price Report
145. Platts Power in Asia
146. Platts Power in Europe
147. Platts Power in Latin America
148. Platts Power UK
149. Platts Renewable Energy Report
150. Platts Retail Energy
151. Politics & Government Business
152. Power Electronics Technology
153. Power Engineer
154. Power Magazine
155. Power Markets Week
156. Power, Finance and Risk
157. Project Finance
158. Propane Canada
159. Public Utilities Fortnightly
160. RDS Business & Industry Selected Documents
161. RDS Business and Management Practices
162. Risk Policy Report Envirn stories
163. Russia & CIS Oil and Gas Weekly
164. Securities Week
165. Terror Response Technology Report
166. The Electricity Daily
167. The Electricity Journal
168. The Platts Petrochemical Report
169. The Review of Securities and Commodities Regulation
170. Total Alternatives
171. Total Securitization
172. Trade Finance
173. UPI Energy

174.	US Coal Review
175.	Utility Environment Report
176.	Utility Week
177.	World Gas Intelligence
178.	World Oil
179.	World Refining & Fuels
180.	World Refining & Fuels Today
181.	Worldwide Databases

Source: GAO.

Enclosure IV7 GAO Contact and Staff Acknowledgments

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