

OFFSHORE

International Oil & Gas Magazine

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Second Biggest Oil, Gas Reservoir in Iran

Shell to Pay Big Fine



Nat'l Offshore Oil Production Up 18.3%

INSIDE:
Persian Gulf
Oil & Gas
Poster

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Cover: The DP3 Pipelay Construction Vessel Jascon-5 (Sahand) is a highly versatile, multipurpose, dynamically positioned offshore vessel with an advanced hull design. It is hired on the condition of purchase by the Iranian Offshore Engineering and Construction Company (IOEC). The primary functions of this vessel are to perform pipelaying, construction and/or accommodation work. The vessel can also be readily equipped to carry out diving, pile driving, flexible pipelay and/or subsea installation work.

The vessel is 205 m long, including anchor racks and stinger. The free main deck area is approximately 1,800 square meters. The navigation equipment include features such as ARPA Radar, S-Band; X-band, W/ARPA Function; Watch Radar in Tower; Radio Weather Facsimile and Auto Pilot among other things.

Jascon-5 (Sahand) has also been fitted with a (free standing) helideck, which is located on top of the forward superstructure.

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IRAN OFFSHORE

Affiliated to Iranian Offshore Engineering & Construction Company (IOEC) P.O.Box: 19395/5999

Managing Director:

M. Ali Erami
e-mail: erami@ioec.com

Editor-in-chief:

Dr. M. R. Bahaari
e-mail: Bahaari@iranoffshore-mag.com

Executive Manager:

Babak Aghapour
e-mail: aghapour@ioec.com

Editorial Advisory Board:

Massoud Soltanpour e-mail: Soltanpour@iranoffshore-mag.com
Mehrdad Sabbaghi e-mail: Sabbaghi@iranoffshore-mag.com
M. Rahbari e-mail: Rahbari@iranoffshore-mag.com
Dr. A. Arabi e-mail: Arabi@iranoffshore-mag.com
N. Pezeshkiyan e-mail: Pezeshkiyan@iranoffshore-mag.com
M. Ali Erami e-mail: Erami@iranoffshore-mag.com

Translation and Edited by:

Goudarz Goudarzi-Savadkouhi
e-mail: Goudarzi@iranoffshore-mag.com

Graphic Design and Lay-Out:

Vahid Taghipour
e-mail: Taghipour@iranoffshore-mag.com

Logo Designer:

Beheshti
e-mail: Beheshti@iranoffshore-mag.com

Photographer:

Amir Rostami
e-mail: Rostami@iranoffshore-mag.com

Printed By:

Umm Al Quwain Computer Forms
Tel: 009714 3322993, Fax: 009714 3322994
e-mail: salewaqf@emirates.net.ae

Dubai Office:

Caspian Logistics Services
Tel: +9714 3319 121, Fax: +9714 3319 010,
P.O.Box: 9594, World Trade Center Bldg, Dubai-U.A.E.,
e-mail: info@caspianlogistics.com

Our Mission

With the advances in information and communications technology, the planet has experienced an information explosion. At this sensitive juncture, Iran Offshore is being published in a bid to disseminate news and information about the offshore industry in a strong, effective and all-out manner. We believe that this way we can transform knowledge into culture and ultimately institutionalize culture. Therefore, the most important role of Iran Offshore is essentially establishing close links among experts, researchers and university professors and in general all those who seek knowledge. We are confident that by establishing a club for all experts of the offshore industry the ground would be paved for them conveniently engaging in face-to-face encounters without any filtering. We have a tough course of action ahead of us, but we are sure that in light of the support of the readership we can meet the target in a short period of time. Our readers are actually experts of offshore industry who by becoming members in the club for experts of energy industries can learn more about the subterranean resources and industrial potentials of different countries and hence exchange technical knowledge. We shall talk more about this club and the conditions for membership in it in the next issue. However, at this point of time the most crucial consideration for us is that the readership shares its comments and criticisms with us.

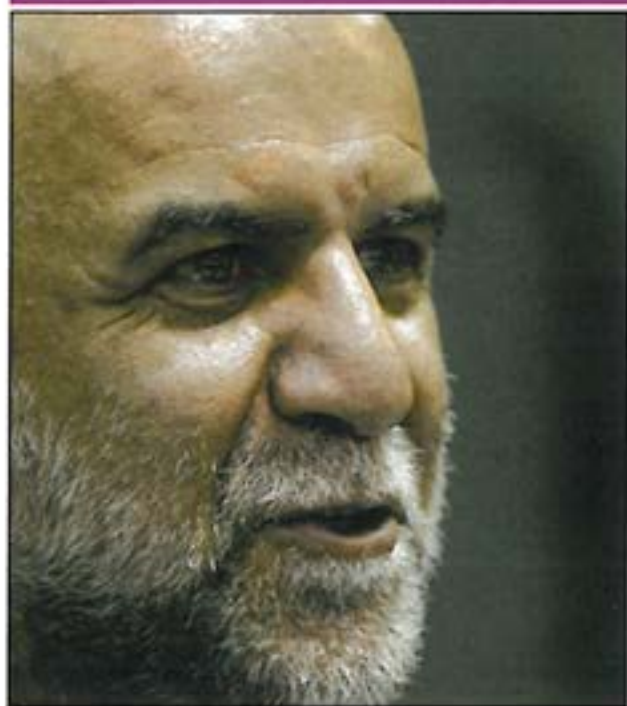
We have started our work by utilizing the services of staffers who are specialized in offshore and media industries. Nevertheless, we accept that we are at the beginning of the road. Let us once again recall that our primary goal is to transform knowledge into culture, which the world of today is in dire need of.

Iran has a unique geopolitical location and the global community pays special attention to Iran because of this. The future of offshore industry should be sought in Middle Eastern countries, especially Iran. Hence, all angles considered the good omen is that Iran Offshore has been published in a rather timely manner.

We hope that you will not deprive us of your constructive comments and viewpoints. We also hope that God Almighty would help us fulfill our objectives.

Managing Director





Second Biggest Oil, Gas Reservoir In Iran

With the discovery of the Lavan Gas Field, which holds 251 billion cubic meters of gas and Yadavaran Oilfield, with oil-in-place reserves of 17 billion barrels, Iran has been recognized as the second country in the world in terms of oil and gas reservoirs, Oil Minister Bijan Namdar-Zanganeh told reporters in early July.

Based on a report by Iran Daily newspaper, the minister added, "The gas field discovered in Lavan Island is 8 km long and 34 km wide. The thickness of the gas column is 450 m. The field holds 251 billion cubic meters of gas, some 176 billion cubic meters of which can be recovered. This field also holds 446 million barrels of gas condensate, some 155 million barrels of which are recoverable. The daily gas recovery from this field is 20 million cubic meters, which is equivalent to the total output of South Pars Project Phase One."

The minister went on to stress that this field is worth \$7 billion.

Zanganeh also referred to the discovery of the new oilfield in the Kooshk and Hosseiniyeh region in the Khuzestan province.

"After the discovery of the Kooshk Field (oil-in-place reserves of 9 billion barrels) in 2000 and Hosseiniyeh Field (oil-in-place reserves of 1.5 billion barrels) in 2002, it was clarified that these two fields were linked to each other. Ultimately, we reached a huge oilfield with oil-in-place reservoirs of 17 billion barrels, some three billion barrels of

which are recoverable. Considering the different factors involved, we can produce 300,000 to 400,000 barrels of crude from this field, which has been named 'Yadavaran' in commemoration of the martyrs of the Islamic Revolution, on a daily basis," he noted.

The minister recalled that recent years have been exceptional in terms of discovery of oil and gas fields in the Iranian history.

"In view of the new discoveries, Iran's recoverable reservoirs will amount to 132 billion barrels. Therefore, Iran is recognized as the second country in the world in terms of oil and gas reservoirs and we will have oil for another 100 years," he pointed out.

Zanganeh said that the development of Yadavaran Oilfield is currently under study.

"Related information have been given to France's Total, the Royal/Dutch Shell and reputable companies from China, India, Spain and Italy," he highlighted.

Asked about the presence of American firms for developing this field, he noted, "If American firms decided to participate in the tender, there would be no barriers in the way of their participation. However, we will not give them the valuable information about the field until we are assured that the US government's restrictions imposed on these companies (for participating in Iranian undertakings) have been removed.

Source: Iran Daily

Nat'l Offshore Oil Production Up 18.3%



Iran's offshore oil production stood at about 716,500 barrels per day (bpd) during the Iranian year 1382 (started March 21, 2003). The figure constituted about 97.7 percent of the projected figure for the said year (733,000 bpd), marking an 18.3-percent increase compared to the corresponding figure of the preceding year.

Out of four offshore oil regions (Bahregan, Kharq, Lavan and Sirri), Lavan region experienced the highest output rise due to exploitation of Balal Field during the last three months of 1381 (ended March 20, 2003) and its gradual growth during 2003 compared to 2002. In this region, Salman Field encountered a compressor problem, which led to a 4-percent output fall. Sirri region also faced an 11-percent fall in output compared to 2002. The decline was mainly related to Sirri A and E fields. Meanwhile, production in Kharq and Bahregan regions rose by over 14 percent.

For this very reason, the highest oil production figure during 2003 compared to 2002 pertained to Resalat, Hendijan and Norouz fields. Furthermore, the highest output was registered by Doroud

Oilfield. Although the field experienced slight production fall compared to 2002 due to lack of drilling new wells, it continued to be the biggest productive offshore field.

The biggest production falls during the said period were registered by Sirri A, Norouz and Sirri E fields, respectively. Based on the contract signed with France's Total Company, output from Sirri A and E fields was originally expected to hit maximum 124,000 bpd during the first few years of production, but the target was not realized.

Production in Soroush Oilfield also declined by 17 percent due to the increase in water and salt levels accompanying the produced crude oil and absence of the equipment needed for exports.

In a bid to improve the overall conditions the following cases are proposed:

1. Purchasing at least two drilling rigs for the National Iranian Offshore Oil Company to be used for drilling developmental, supplementary and repair wells in a bid to prevent serious output fall and to make up for the 15-percent annual production fall through drilling

new wells and overhauling production wells. This could be accomplished by using special drilling rigs.

2. Gradual change of intra-well pumps, which cause production fall in some cases. This is of more importance in wells where production is being carried out by such pumps. Nosrat, Resalat and Reshadat fields are facing this problem.

3. The idea of moving the construction site of Kharq Gas Refinery to the southern part of the island can be assessed technically and economically. Due to implementation of the project for accumulating associated gas in Kharq, the location of the refinery has already been determined by the consultant company. After dividing Kharq into industrial as well as residential and tourism sections, it was decided that the refinery should be moved to the southern part of the island. The project will probably increase costs by 70-80 million dollar. A report on the cost increase has been sent to oil minister. This proposal aims to encourage revision in the method used for locating the refinery.

Source: Iran Offshore News Desk

Khatami Hopeful of \$100b In Oil Investments Within Next 10 Years

Zanganeh: Iran Hub of a Huge Demand

President Mohammad Khatami, after touring the different sections of the 9th International Oil, Gas and Petrochemicals Exhibition in July, said that oil inevitably plays the most important role in the national economy.

Based on a report by the Iranian Students' News Agency (ISNA), the chief executive, who was talking to reporters, added, "We have had great success in the arena of discovering new oil and gas fields and their optimum exploitation. ... In fact, we have managed to increase our national assets." He went on to stress that the downstream oil and gas sector has currently been transformed into a recoverable asset with a higher value added than the past.

"This is mainly due to our advances in the petrochemical sector," he recalled.

Khatami expressed hope that within the next 10 years, some 100 billion dollars of investments would be attracted in the oil, gas and petrochemical sector.

"The vital point is that in view of the existing potentials and capabilities, we attract some 60 percent of the said sum for indigenous activities and hence take a great step toward industrialization and improvement of the national economy. This way we can not only meet our local market's demands, but we will also become a regional powerhouse, which could procure the regional needs. If God Almighty willing, we could even ultimately transcend the region," pointed out the president.

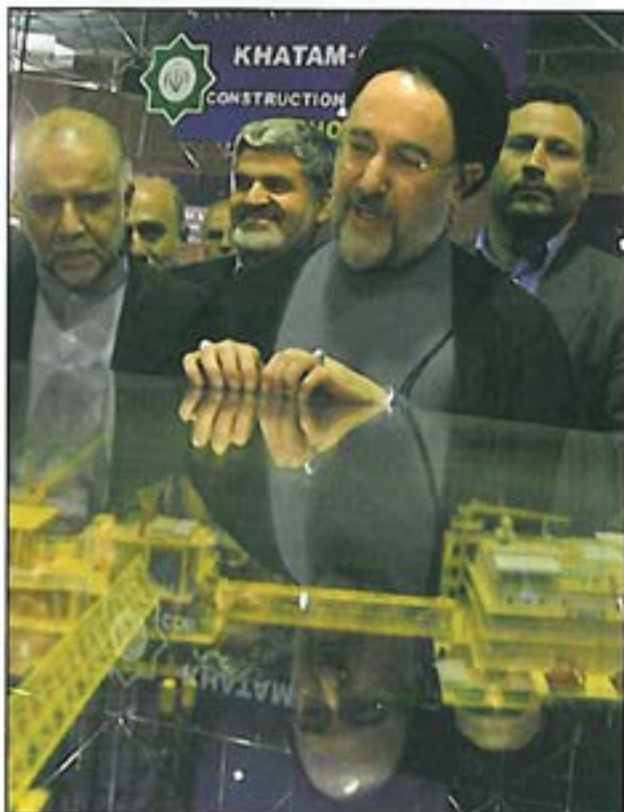
Khatami described the international oil, gas and petrochemical exhibitions as the great accomplishment of his government.

"Let us hope that within the next 20 years, we will become a powerful country, which could efficiently rely on its own capabilities. Of course, I do not mean that we become completely self-sufficient," he observed.

Meanwhile, Oil Minister Bijan Namdar-Zanganeh, addressing the inaugural ceremony of the exhibition, said that the total investments in the oil industry in recent years, inclusive of all the buy-back contracts, amounts to less than \$20 billion.

He recalled that the country needs at least 10 billion dollars of investments in the oil, gas and petrochemical sector within the next 10 years.

Underlining that two-thirds



of global recoverable oil reserves are owned by the five Persian Gulf littoral states, he asserted, "Iran is the hub of a huge demand for development of oil and gas industry. If we could allocate some 60 percent of the needed investments to local manufacturers, then they should increase their capacities by three times."

Elsewhere in his remarks, the minister noted, "Currently, we do not have many local contractors with which we could conclude contracts in the range of 2,000 billion rials. Therefore, we must work on strengthening the small contractors." Zanganeh emphasized that oil industry would grow further when we attracted management, technology and financial experts.

"The domestic companies and manufacturers should work in such a manner that their products would be consumed both inside and outside the country. We must be able of competing effectively on the international scene," he highlighted.

The International Oil, Gas, and Petrochemicals Exhibition was held in Tehran during July 6-9.

Translation: Iran Offshore News Desk



Iranian Crude Delivered To Purchasers



Director of international affairs at the National Iranian Oil Company (NIOC) announced in May that all customers of Iranian crude have received as much crude as they had demanded.

Hojjatollah Ghanimifard added that Iran and its customers had already reached agreement on the amount of crude oil.

"However, since pricing is influenced by crude price at international bourses, neither party in the agreement is aware of final crude price before reaching the actual time of oil uptake," he opined.

Emphasizing that Iran abides by the production quota set by Organization of Petroleum Exporting Countries (OPEC), the official stated: "If a domestic or foreign contract led to increased crude production for an OPEC member, it would be added to its production capacity and should OPEC quotas change in future, that capacity would be considered a privilege for that country."

Referring to the recent inauguration of Balal Oilfield Project, Ghanimifard observed, "Given Iran's production quota in OPEC, if output from a domestic field increased, the country's output from other offshore or onshore fields would be reduced."

He went on to add, "Unpredictable increase in crude price during a given period of time will boost price of industrial, non-industrial and agricultural goods in the world. Therefore, crude producers, which spend most of their revenues on acquiring such goods would be forced to return their revenues."

Ghanimifard concluded by saying that the upward trend in oil prices would stop after a while and take a reverse course, but reversal of the same trend for industrial goods would not occur at the same speed.

Source: Iran Offshore News Desk

Oil Investments A 4th Plan Priority



Iran's first vice president, Mohammad Reza Aref, said in May that increasing investments in domestic oil and gas industry was a priority of the fourth economic development plan (2005-10).

"Maintaining and increasing Iran's share of global oil and gas markets is one of the most important strategies of the country," he added.

Addressing the inaugural ceremony of Balal Oilfield's Development Project, the veep recalled that oil industry accounts for more than 60 percent of the country's forex revenues as well as 98 percent of its needed energy.

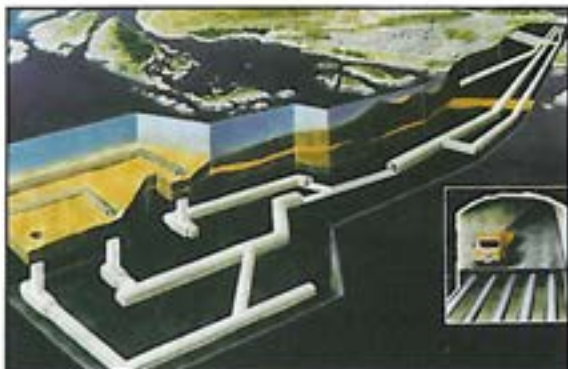
He recalled that the ratio of oil and oil products exports to total exports had decreased during recent years, adding, "The structural reforms pursued by the government during the Third Economic Development Plan (2000-5) aimed to safeguard oil as a national asset." He stressed that Balal Development Project essentially revealed the success of buy-back deals signed during the past years.

Aref also characterized the drive for replacing natural gas for other forms of energy, pursuit of the issue of LNG exports via pipeline to neighboring countries, taking advantage of cutting-edge technology and utilization of domestic workforce as the positive measures adopted by the Iranian oil industry during the past years.

Referring to Iran's cooperation with the Organization of Petroleum Exporting Countries (OPEC) for keeping oil price at a reasonable level, the first vice president opined that producers and consumers of natural gas and oil should collaborate more effectively.

Source: Iran Offshore News Desk

US LNG Developer Reports Over \$1m Loss on Expenses



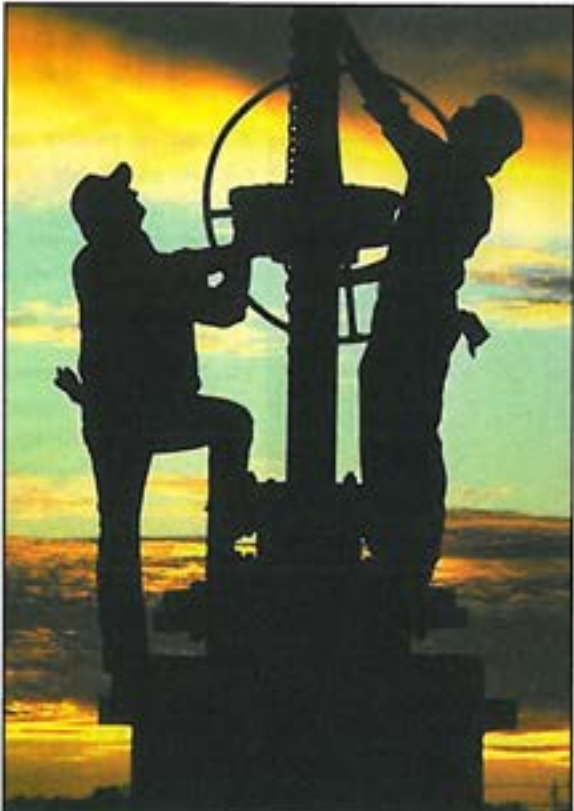
Cheniere Energy in May reported a first quarter net loss of \$1,074,959 a reversal of net income of \$3,121,309 (23 cts/share) in the first quarter of 2003.

Cheniere, a Houston-based company that is promoting the development of several LNG terminal projects in the US, linked the net loss primarily to LNG receiving terminal development expenses of just under \$3.9 million, along with stock option compensation that hit some \$1.8 million and other non-detailed expenses totalling about \$1.6-million. Those expenses were partly offset by a \$1.5-million minority interest Cheniere has in the Corpus Christi LNG limited partnership as well as reimbursement of \$2.2 million from its sale of a 60% stake in its Freeport LNG Development, a proposed terminal facility in Texas. ConocoPhillips took 50% in the partnership in January.

Cheniere currently holds a 30% stake in the project it first proposed.

Source: Petroenergy Information Network

Kazakhstan Keen on Building Oil Pipeline Via Iran



Kazakhstan President Nursultan Nazarbayev in May said that he would like to construct a pipeline through Iran as the main outlet for exports of his country's natural resources.

"It would be better than Baku-Ceyhan, better than China, better than Russia. It would be the best exit for us," Nazarbayev recalled in an interview with the Financial Times.

He also noted that a route through Iran for the country's oil and gas was the most attractive both for his country and for the US companies that operated there.

However, the Kazakh president opined that the current level of relationship between the US and Iran made such a project impossible at the moment, hoping for an improvement of the situation.

Source: Iran Offshore News Desk

Iran Finds 21 Oil, Gas Fields In 6 Years



Mehdi Mir-Moezzi

A total of twenty one oil and gas fields were discovered in Iran in a period of six years to March 2004, a senior Iranian oil official said in May.

Deputy Oil Minister Mehdi Mir-Moezzi added that the findings revealed the "brilliant achievements" of the Ministry of Oil and the National Iranian Oil Company (NIOC).

"The oil layer of South Pars with a capacity of six billion barrels and the oil layer of Azadegan with a capacity of 25 billion barrels were explored in the year to March 2003," he commented during the inauguration ceremony of the Balal Oilfield.

He further commented: "Tabnak Gas Field at Fars, Bushehr and Hormuzgan borders holds 857 billion cubic meters of gas and 545 million barrels of gas condensates. Hosseiniyeh Oilfield was discovered at the Iraqi border and it conceals 1.5 billion barrels. In the year to March 2004, we realized that Kushk and Hosseiniyeh fields were connected. Therefore, six billion barrels of crude were added to Iran's proven reserves. We also replaced 1.23 barrels for recovery of each barrel of oil and more than two cubic meters for recovery of each cubic meter of natural gas."

Mir-Moezzi, who is also the managing director of NIOC, recalled that the NIOC had signed 19 buy-back deals in the same period.

"Foreign companies involved in the buy-back deals pay more than one billion dollar to Iranian companies each year and it means job creation in the country. We have reimbursed around 5.4 billion dollars out of our 31 billion dollars in debts," the official asserted.

He went on to describe cooperation between Iranian and foreign companies as "constructive" and recalled

that joint studies have led to discovery of 10 billion crude barrels.

The deputy minister also stressed that Iranian contractors can team up to bid for oil projects offered in the country in order to speed up implementation of the projects.

"At the moment, the Ministry of Oil is encouraging Iranian contractors, manufacturers and consultants to form consortium with one another or foreign companies and hence boost their financial and management capabilities," he pointed out. Iranian lawmakers have ratified part of the country's fourth five-year economic development plan (2005-2010), which allows exploration companies to develop fields in which they strike oil.

Iran will favor firms interested in exploration and will focus on finding new fields outside the oil-rich southwest. The state oil company will not undertake fresh exploration

work in the southwest under the new five-year plan. The new legislation also loosens Iran's restrictive buy-back agreements in which developers of fields are compensated with output before the fields return to the state oil company.



Source: Iran Offshore News Desk

Qatar, Maersk Oil Sign \$30m E&P Deal



Qatar Petroleum signed an exploration and production sharing agreement with Denmark's Maersk Oil providing for \$30 million in investment in April.

The deal was signed between Qatar Petroleum and Maersk Oil Qatar, a subsidiary of the Danish firm and covers an area of 139 square kilometers in an offshore field.

Energy Minister and Qatar Petroleum chairman Abdullah bin Hamad Al Attiyah said Maersk Oil Qatar already operates the Al Shaheen Offshore Field, which has an output capacity of 240,000 barrels per day (bpd) and is producing up to 200,000 bpd. Qatar has four other offshore structures, including Al Khalij which came onstream in March 1997 and is part of a structure that runs along the maritime border with Iran.

The deal is part of a series of exploration and production-sharing agreements with Western firms, including France's Total and Occidental Petroleum of the United States. OPEC member Qatar has a production capacity of some 850,000 bpd and proven reserves of 5 billion barrels.

According to the US Energy Information Agency, recoverable reserves are higher, at 15.2 billion barrels.

Source: Daily Star

Iran, Thailand Review Oil Cooperation

The outgoing Iranian ambassador to Thailand Rassol Eslami and Thai Energy Minister Prommin Lertsuridej reviewed ways of cooperation in the arena of oil, gas and petrochemicals in Bangkok in May.

The two sides stressed the need to implement the oil and gas contract signed in January 2004.

The Thai energy minister expressed hope that the relations between the two nations as important trade partners will be further strengthened.

Given the increasing share of consumption of gas in the Thailand's energy mix in the next 10 years and its 90 percent dependency on imported oil, Iran can play a vital role in producing the energy needs of the country, he added.

Thailand has previously expressed interest to import five million tons of Liquefied Natural Gas (LNG) annually from Iran.

The trade ties between the two states have grown. In April, Iran and Thailand signed on an agreement to boost banking and



trade cooperation.

The agreement, which is expected to facilitate the trade transactions and banking cooperation between the two sides, was inked by Iran's Export Development Bank and Thailand's Exim Bank. The agreement was signed at the presence of Eslami and Director General for the Regional Cooperation Office of the Thai Foreign Ministry Sanan Chart.

According to the agreement, the measures should be adopted by the two sides to reimburse funds in trade ties and to broaden economic cooperation in line with the accord inked during the Sixth Session of the Joint Economic Commission.

Director General of the Iranian Export Development Bank Dr Kahzadi said the agreement would facilitate the opening of credits for the export and import of the two states.

The banks of the two countries have pledged to open credits for their export and import sectors and to disburse the opened credits within a period of three months.

Source: Petroenergy Information Network

History Offers Com

For oil, previous spikes in price have been followed, in time, by price reductions as demand and supply adjust. This may happen again. Indeed, is likely to happen again, in the short and medium term, if the political situation in Iraq and the Middle East can be stabilized.

However, even in this benign scenario, history may not be a good guide to the longer oil price trend. This is because oil is a depletable resource and, after a century of crying wolf on future oil supplies, the wolf may be closer to our door than we think.

Can we make sense of all this? Possibly not, but let us consider the natures of the employment and oil markets to see if this can help us face the future.

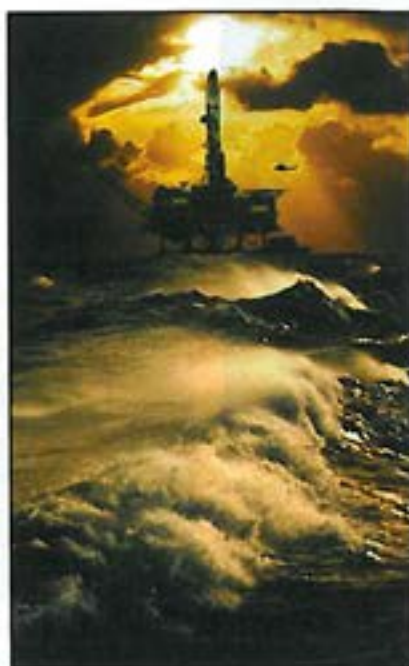
The recent marked recovery in the US jobs market was entirely predictable. It has long been a dominant viewpoint that the American recovery is robustly based. In such a recovery, employment is usually a "lazy" indicator -- it lags behind the growth of output.

The reason for this is that the previous recession left employers with substantial spare capacity, both in terms of physical assets and in terms of hoarded labor. Hence, when the recovery got underway, productivity growth was very rapid, as increased demand was met largely from the existing reserves of capital and labor.

Many commentators worried about whether this rate of productivity growth could be maintained and, simultaneously, worried about whether consumption demand would remain robust with employment rising so slowly. Well, of course, productivity growth always slows down when the existing reserves of under-utilized

labor and capital are used up, but employers then start hiring more labor and investing in new capital equipment. The recovery can then continue at a slower but more sustainable pace. It becomes less "productivity rich", but more "jobs rich".

Was there anything different about the recent US experience? Well, no cycle



mirrors exactly previous experience and the length and severity of the previous US recession were greater than in many recent cycles.

Hence, because US employers had very substantial spare capacity, they were able to increase output rapidly when demand improved. The accompanying increases in productivity were greater than those usually associated with the early stages of an economic recovery and employment was an even lazier indicator than usual.

Finally, the US authorities got their

numbers wrong. The now revised data show that employment has been rising for some time and the March 2004 increase in employment is the highest monthly rise since April 2000. Total payroll employment has risen by 750,000 since last summer.

The fly in the ointment is that the revised employment figures strongly suggest that the Federal Reserve is behind the curve that it should have begun raising interest rates earlier to slow down the growth rate of the US economy. In short, the new concern is that such is the speed and the scale of the US and the global recovery and that the real danger is a resurgence of inflation.

At this very juncture, we now experience the current spike in oil prices and the continued instability in Iraq and the Middle East. For oil importing nations, an increase in the oil price is the economic equivalent of an increase in taxes.

The UK remains, but only just, a net oil exporter.

Nonetheless, what is bad for the US and other oil importing, advanced economies is bad for us. So where does this leave the recovery of the world economy?

First, a sense of perspective, this being particularly necessary for those of us who can readily recollect the traumas of the 1970s. The Arab oil embargo of the early 1970s and the price hike of 1979 followed on from a very long period of rising oil consumption and falling oil prices. We had become complacent about the supply situation and our dependence on Organization of Petroleum Exporting Countries (OPEC) suppliers. So the shock of the rapid increase in oil prices was huge, especially as it then seemed that the

fort Over Oil Surge

demand for oil was not very sensitive to price.

Higher oil prices seemed to imply a substantial and permanent shift in income from the oil importing to the oil exporting nations.

Well, they did not. That great economist Milton Friedman predicted that the response of supply and demand to large increases in price would be very different to their response to stable or falling oil prices. That is, high prices would encourage new supplies of oil and alternative energy supplies while ensuring less oil consumption per unit of output. These factors would eventually force down the oil price.

He was right. Available data shows that the real price of oil, even after its latest increases, is less than half the level reached in 1979. And oil is much less important in the world economy, accounting for only just over 2 per cent of the global gross domestic product (GDP). According to the latest estimates, if the higher oil price is now maintained, it will knock only some 0.6 per cent off the rate of growth of US GDP.

So why the extravagant stock market reaction? In part it is because we did not expect to be here. After the end of the second Persian Gulf war it was anticipated that Iraqi oil production would rapidly recover. It desperately needs the income to finance its reconstruction. However, it is now clear that substantial new investment in Iraq's infrastructure will be necessary to enhance its exporting capacity and this is difficult to achieve rapidly given its present political instability.

The higher price of oil and the fragility of the stock market reflect the concern that there may be ongoing disruption of the supply of OPEC oil, particularly

from the Middle East.

Nobody can predict with any certainty what the immediate future will hold. However, it must be evident that if the coalition forces were to withdraw from Iraq without leaving behind a stable political situation, then future oil supplies from Iraq and other oil producing countries would be at greater risk.



Further increases in oil prices would be likely and the likelihood of a continued global economic recovery would be much reduced.

On the other hand, if the political and economic situation in the Middle East can be stabilized, then oil prices are likely to fall back in the short and medium term. In these circumstances, the US economy has the potential to continue growing and growth can be expected to be significantly faster in the emerging economies of China, India and Russia.

So far, so encouraging. Yet, we economists are notoriously short-sighted. It was, after all, Keynes who told us that "the long-run is only for undergraduates". But our undergraduates might reflect that we have slipped back into a greater dependence on the OPEC cartel than appears sensible.

Latest studies suggest that the annual growth rate in non-OPEC oil production has been falling from the second half of the 1960s onward. This is against a background of record levels of exploration and production expenditure in non-OPEC areas.

Moreover, although oil demand from China has been increasing, it has, to date, been largely offset by rising Russian production and falling Russian consumption of oil. This will not hold in the future. Russian oil consumption is now rising again and the cost of additional Russian oil production seems to be rising.

So, if political stability returns to Iraq and the Middle East, then it is quite possible, in the short and medium term, that the real price of oil will fall back from present levels.

Yet, though many previous predictions of an oil shortage have been disproved by events, we should never forget that a depletable resource will eventually get depleted. We should revisit our energy policies to ensure that they are better attuned to a future in which we will have to reduce further our dependence on oil.

Keynes also talked about "the economic possibilities of our grandchildren" and, given sensible policies, they are better than our own.

Source: Petroenergy Information Network

Sino-Iranian LNG Deal in the Pipeline

Oil giant Sinopec is in talks over a landmark multi-billion dollar deal with Iranian firms to import liquefied natural gas (LNG) from the Middle Eastern nation, in return for the right to exploit some of the country's richest oilfields.

The move, by China's second-largest oil firm, which would be one of the biggest LNG purchase transactions in the world, was revealed by Mohammad Sattarifar, currently an advisor to the Management and Planning Organization (MPO), in an interview with China Daily in April. Negotiations on the deal, which would give a major lift to trade between the two countries, come after Zhuhai Zhengrong - one of China's four State-owned oil traders - signed a memorandum of understanding (MoU) last month to import 110 million tons of LNG from Iran over a time span of 25 years.

Sinopec is in talks with the National Iranian Gas Export Company (NIGEC) and the National Iranian Oil Company (NIOC) to annually import at least 5 million tons of LNG from Iran, said Sattarifar.

In exchange, Sinopec will be allowed access to a major Iranian oilfield, he added.

Senior Sinopec executives will visit Iran next month to continue the talks, Sattarifar recalled.

"All Chinese companies are welcome to market Iranian LNG. Both China and Iran see each other as long-term partners. Iran takes China as an energy market while China can take Iran as a long-term energy supplier," he observed, adding that both countries are also hoping to strengthen cooperation in exploring and developing oil and natural gas fields and oil refinery.

Sources at Iran's Beijing embassy said Iranian Deputy Oil Minister Hadi Nejad-Hosseiniyan visited the Chinese capital last month to push through the LNG import and oilfield development deals. "Hopefully, Sinopec's deal may be concluded within this year," said sources.

Iran is now the second largest oil exporter to China after

Saudi Arabia, but it is the largest oil supplier to Sinopec. Sattarifar visited Beijing in early April to attend the 12th Meeting of the China-Iran Commission for Economic, Trade, Scientific and Technological Cooperation. Both countries committed themselves at the meeting to promoting cooperation on oil and gas exploration and production, transport, electricity, communications, nonferrous metals and project construction.

Iran has the world's second largest gas reserves after Russia, but it trades very little of this on international markets. Tehran is seeking to develop its natural gas industry by exporting more LNG to

emerging markets such as China, South Korea and India. And China is working to develop its embryonic LNG sector, in an attempt to raise natural gas consumption from the current 3 percent in the energy mix to 8 percent by 2010.

Beijing is importing LNG from Australia and Indonesia to feed its LNG receiving projects in Guangdong, Fujian and Zhejiang provinces.

More LNG receiving terminals, where imported LNG will be transformed back to natural gas and supplied to local gas users, are expected to be built along the coast in the future. More importantly, China also plans to secure foreign oil and gas reserves through LNG imports to fuel its galloping economic growth.

CNOOC Ltd, the third-largest domestic oil producer, has successfully acquired stakes in the Northwest Shelf joint venture and Gorgon in Australia as well as in Indonesia's Tangguh Field after the parent China National Offshore Oil Corp agreed to purchase LNG contracts from these fields.

Embassy sources also said that Iran is seeking international bid for the exploration and production in its three major oilfields - northern and southern Azadegan and Kooshk-Hosseiniyeh. Each tender should commit to purchase at least 5 million tons of LNG annually. Sinopec and Zhuhai Zhengrong may join the bidding.

The Azadegan Oilfield, bordering Iraq, is now thought to be one of the world's largest oilfields. A Japanese consortium signed a \$2 billion agreement in February to get a 75 percent stake in southern Azadegan, with the National Iranian Oil Company (NIOC) holding the remaining 25 percent. Sources said NIOC may offer part of its 25 percent stake in the Azadegan Oilfield to Chinese companies to encourage China to buy Iranian LNG. The Northern Azadegan and Kooshk-Hosseiniyeh oilfields are currently undeveloped.

Some southern Asian countries are also hoping to clinch similar deals with Iran.

Analysts said that if the oil and gas deals are successful, they will help Chinese companies catch up with Japan and European companies such as France's Total and Royal/Dutch Shell, becoming the largest investors in Iran's oil and gas industry.

Chinese oil companies scored few successes in Iran until last December when Sinopec succeeded in drilling a high-yield oil-gas well during venture prospecting in the country's

Kashan Oilfield. Sattarifar underscored that the oil and gas business will both play an important role in doubling bilateral trade between the two countries to \$10 billion within two or three years from last year's total of \$5.6 billion.

"Although China is a late-comer in the development of Iranian oil, we are ready to support Chinese companies wishing to invest in Iran. We welcome any Chinese company, which is willing to cooperate with Iran. China can get a long-term energy supply from Iran," asserted Sattarifar. He stressed that Sino-Iranian cooperation offers great potentials and the leaders of the two countries have reached a consensus to tap this. The official recalled China's investment in Iran will not only help meet Iran's market demand, but also demand from the whole of Central Asia.

Sattarifar also underscored that the United State's unilateral economic sanction on Iran would not dampen business ties between Iran and China.

Source: Iran Offshore News Desk



Total, the French oil company, is close to signing a \$1.2 billion agreement with the Iranian government to develop part of Iran's offshore naturalgas reserves. Negotiations are still underway, and they are in an advanced stage. There is no set date for signing the agreement with Total, which is already developing gas reserves in the country.

Iran, which holds the second global gas reserves after Russia, has commissioned foreign companies to develop the South Pars Field. The offshore area contains about 12.5 trillion cubic meters of natural gas. Deputy Minister of Oil Mehdi Mir-Moezzi said in April Iran has decided to award French oil giant Total a 1.2 billion dollar contract to develop Phase 11 of the massive South Pars Offshore Gas Field. He also observed on the sidelines of a conference on gas exports in Tehran that "Total has been chosen to develop Phase 11 of South Pars."

▶ Total Nears Iran Gas Deal

Assadollah Salehiforouz, Managing-Director of Pars Oil and Gas Company, has underlined that the winner of tender bid for Phase 11 of South Pars is to be named in two months, but Mir-Moezzi actually preferred to reveal everything at the gas

conference. British Petroleum (BP), Italy's ENI and Norway's Statoil had also been competing for the contract. However, Total is believed to have benefited from its already strong presence in Iran, including in the field of liquefied natural gas (LNG). Oil Minister Bijan Namdar Zanganeh had already voiced his desire to see a company deeply engaged in LNG operations get the deal, so as to facilitate exports.

Gas from Phase 11 is earmarked for European markets. Aside from South Pars, Total is engaged in the Sirri A and E oil fields, which began producing in 1998-99, and the already exploited Doroud and Balal fields.

In February, Total -- together with Malaysia's Petronas and the National Iranian Oil Company (NIOC) -- won a two billion dollar contract for an LNG plant at South Pars.

Source: Iran Offshore News Desk



Caspian Sea Agreement Seems More Likely

Hopes are rising that a breakthrough in long-stalled negotiations on a comprehensive Caspian Sea treaty can be achieved. Representatives of the sea's five littoral states sounded optimistic notes at a recent Moscow conference on Caspian-related issues. At the same time, some cautioned that hard bargaining remained before a comprehensive pact would be ready for signing. At the April 6 meeting in Moscow, diplomats from the five Caspian states -- Azerbaijan, Iran, Kazakhstan, Russia and Turkmenistan - explored the feasibility of holding a summit meeting later this year on the sea's territorial division. Iran proposed hosting the gathering in late 2004.

No headline-grabbing announcements or agreements came of the talks. Yet, at their conclusion, participants presented a united optimistic front that a new desire for dialogue had been found. A joint communiqué issued at the conclusion of the talks noted that "the meeting passed in an atmosphere of friendship and mutual understanding". "There is every reason to speak about recent success," the Azerbaijani news agency Bilik Dunyasi quoted Azerbaijan's Deputy Foreign Minister Khalaf Khalafov as saying. "The manifestation of political will has allowed the sides to advance more confidently, improve cooperation, make contributions, and expand regional ties," the deputy foreign minister was further quoted as saying. The chief source of optimism is a November 2003 environmental pact - the first such agreement signed by the five Caspian Basin states since they first began to hold talks on the sea's status in 1996.

Under the environmental agreement, the Caspian states pledged to tackle such problems as industrial pollution, oil refinery and tanker leaks and the energy industry's potential environmental impact on marine life, including the endangered caviar-producing sturgeon. The pact, some officials contend, shows that Caspian Basin states are prepared to set aside eight years of squabbling in an effort to forge consensus on territorial issues.



Given the lack of consensus, Russia has worked out bilateral understandings with Kazakhstan and Azerbaijan on the territorial division issue.

The three states support a formula under which Kazakhstan would end up with a 27 percent share of the Caspian Sea's territory, while Russia would receive a 19 percent share and Azerbaijan an 18 percent share. Iran is the most vocal opponent of the Russian-backed plan. Tehran has held out for all five states receiving an equal 20 percent share. Under the Russia-backed formula, Iran would receive approximately 13 percent of the Caspian Sea's territory. Turkmenistan's position on the Caspian pact has proven hard to pin down.

Before the April discussions in Moscow, Iranian Foreign Minister Kamal Kharrazi pointed to the November accord as the model for agreements to come. "This is an important development because it proves that a consensus on one of the most important issues affecting the Caspian Sea is not only possible, but ... [is] a good model for settling all other issues of the Caspian Sea," the Islamic Republic News Agency (IRNA) quoted Kharrazi as saying. Potential stumbling blocks remain concerning implementation of the environmental pact. The agreement depends primarily on a national action plan to be developed by each Caspian state. As long as disagreements exist about the division of territorial waters, little action can be expected on these plans. As a way around this obstacle, the United Nations Environment Program and the United Nations Development Program - two agencies charged with administering the environmental protection scheme - have suggested separate protocols that define each country's responsibilities. Even so, ratification of the convention by all five states and agree-

ment on the protocols could take years to fulfill. Despite the obstacles, participants in the talks see the agreement as a sign of cooperation to come. "The signing of the treaty means we can move to the next stage; work can proceed," UNDP-Tehran representative Frederick Lyons told the UN news agency IRIN. "This is very important," he added. While agreeing that the November environmental agreement was "a big breakthrough," Kazakh Foreign Minister Kasymzhomart Tokayev urged caution about the accord's impact on the broader territorial issue. "[I]t won't be possible to achieve rapid success in the Caspian settlement as there are many contradictions in the approaches of the five countries," the Itar-Tass news agency quoted Tokayev as saying.

That assessment was echoed by the Russian daily *Nezavisimaya Gazeta*, which forecast in its analysis of the April 6 conference that "autonomous" energy interests would continue to hamper progress towards a Caspian Sea pact. The five Caspian states hold divergent views on how the region's abundant natural resources should be developed. Russia and Azerbaijan are effectively competing to transport Kazakhstan's large energy reserves to Western markets. Azerbaijan wants Kazakhstan to make a significant commitment to the Baku-Tbilisi-Ceyhan (BTC) Pipeline Project.

Moscow wants Kazakhstan to primarily use an export network via the Russian port of Novorossiisk. Kazakhstan, so far, has expressed an intent to keep its export options open. Meanwhile, Turkmenistan clings to hopes for the construction of a trans-Afghan pipeline, a 932-mile long, \$3-billion conduit that would transport the country's vast natural gas supplies via Afghanistan to energy-hungry Pakistan and other world markets.

Iran, which contains the least energy-rich part of the Caspian, tends to view any oil and gas projects near its borders as a potential infringement upon its rights. Last June, Iran indicated that competition from the Caspian's four other littoral states had forced it to abandon a longstanding policy of non-development of its Caspian hydrocarbon resources so long as a treaty resolving the sea's status remained unsigned.

Iran plans to begin developing oilfields within its own undisputed territory in the next two years. At the same time, construction will begin on a pipeline running from the Caspian port of Neka to Tehran -- a card that Iran has used in the past to encourage Kazakhstan to opt for the Persian Gulf state as a shorter and more stable route to world markets than the BTC Route.

Source: Iran Offshore News desk

1st Phase of Caspian Crude Transfer to Open Soon

The first phase of Caspian crude transfer and processing project, with a capacity of 170,000 barrels, will be soon inaugurated by President Mohammad Khatami.

The managing director of Oil Engineering and Construction Company told reporters in April that, so far, 125,000 barrels crude have reached refineries in Tehran and Tabriz from Turkmenistan, Kazakhstan, Azerbaijan and Russia through pipeline.

Reza Kasaeizadeh noted that capacity of the first phase of the project has been increased to 170,000 barrels per day since January 20 by attaching the old 50,000-barrel line.

The official went on to observe that

Iranian specialists accounted for 54 percent of the project with foreign share standing at 46 percent.

"The project cost 2.69 billion rials. The cost of transfer phase was supplied from domestic sources while that of processing phase was undertaken by SVF consortium as financier," he recalled.

He further recalled that the cost of constructing 120,000-barrel line would be repaid through oil swap, which stood at 11-16 dollars for every ton.

"Project's investment would be returned in less than 4 years. So far, 15 installments of foreign costs totalling 3-3.5 million dollars have been repaid," he pointed out.

Kasaeizadeh underlined that crude

transfer capacity of the line would increase to 370,000 bpd since the middle of the next year and winner of the related tender would be determined in three months. Nine consortiums have been shortlisted for tender. He also noted that the crude storage capacity in Neka terminal stands at 1.5 million barrels.

"The National Iranian Tanker Company has built six tankers according to a contract with Russian companies and three tankers would be delivered by March 2006," he concluded.

Source: Iran Offshore News Desk



Saudi Oil Output Expected to Double By 2025

Saudi Arabia's oil production is far from peaking, and the kingdom's output will likely more than double over the next two decades, the head of the US Energy Information Administration said in April.

Some oil industry analysts believe Saudi Arabia's oilfields are near their peak production and won't be able to supply the crude the world will need in the future. Guy Caruso, who heads the Energy Department's analytical arm, said Saudi Arabia's current oil production capacity of 10.5 million barrels per day (bpd) will likely increase to 22 million bpd by the year 2025.

Speaking to reporters on the release of the EIA's long-term international energy forecast, Caruso said Saudi Arabia will be able to reach the 22 million bpd production level based on its current proven oil reserves of 264 billion barrels - one-fourth of the world's total.

"The existing (Saudi) resource base, crude reserves...are sufficient to get to this production capacity," Caruso recalled. Saudi officials have maintained that their country's crude oil production will not go into decline any time soon and that they expect the kingdom's recoverable oil reserves to actually increase over the next two decades as new deposits are discovered.

Caruso would not speculate on whether the Saudis would need to open their oil sector to investment by foreign oil com-

panies in order to produce 22 million bpd.

However, he pointed out that the kingdom is already able to produce 10.5 million bpd "without outside investment". Separately, Caruso noted that the EIA's long-term forecast has Iraq's oil production rising from 2.5 million bpd this year to 6.6 million bpd in 2025.

Many analysts believe Iraq's oil output could go even higher, because so many parts of the country have not been explored for oil. The additional barrels from Iraq and Saudi Arabia will help boost OPEC's total oil production to 56 million bpd in 2025, more than double the group's expected average output of 27 million bpd this year, according to the EIA's forecast.

Meanwhile, the global demand for all forms of energy is expected to grow by 54 percent over the next two decades, with oil consumption alone jumping by 40 million bpd, the US government agency said.

The EIA's long-term forecast to 2025 projects the strongest growth in energy use from developing countries, especially China and India, where buoyant economies will boost demand.

Energy use in developing countries is forecast to soar by 91 percent over the next two decades.

"Generally, the nations of the industrialised world can be characterized as mature energy consumers with a com-

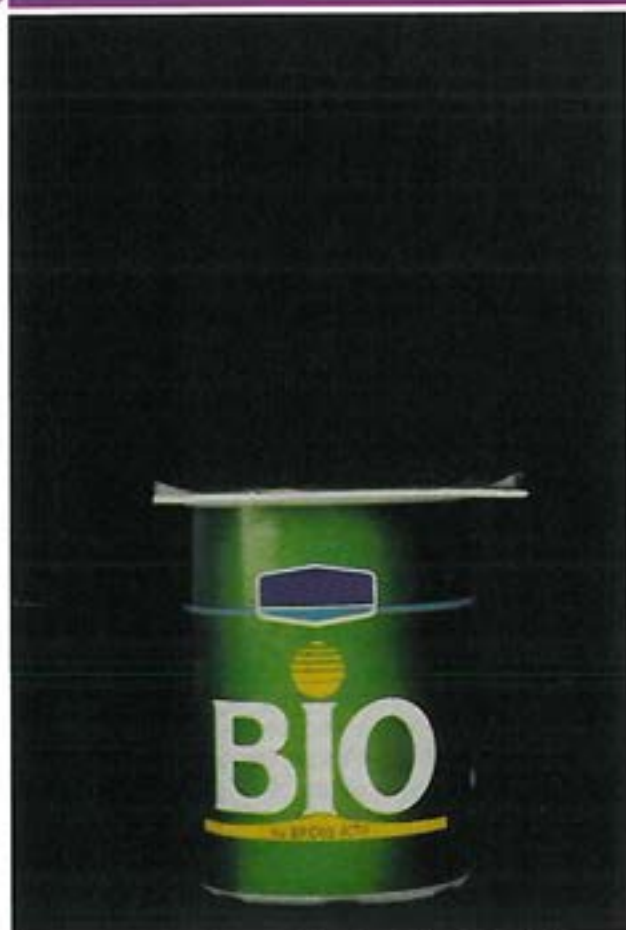
paratively slow population growth," declared the EIA. These countries are also shifting from energy-intensive manufacturing to service industries, which means slower growth in energy use, it added. Global oil demand is forecast to rise from 81 million bpd this year to 121 million bpd in 2025, with the United States, China and the rest of developing Asia soaking up almost 60 percent of those extra barrels, EIA highlighted.

"Over the past several decades, oil has been the world's foremost source of primary energy consumption, and it is expected to remain in that position," the agency recalled. To meet that demand, global oil production capacity would have to rise by 44 million bpd over current levels, it added.

Organization of Petroleum Exporting Countries (OPEC) is expected to be the major supplier of the extra oil. Additional non-OPEC barrels will also come from offshore wells in the Caspian Sea, Latin America and West Africa.

Average annual oil prices are expected to decline after this year to \$25 a barrel in inflation-adjusted 2002 dollars and then rise slowly to \$27 in 2025, which would be \$51 a barrel in nominal dollars, the agency asserted.

Source: Reuters



Biofuels are decades away from benefiting the public as an alternative to petroleum-based fuels and the UK "will come nowhere near" meeting European Union targets on renewable transport fuel, the head of a London-based company making the products claimed in June.

As the menace of terrorism continues to destabilize forecourt fuel prices, threatening to break the pound-per-liter barrier, experts acknowledge that renewable fuels are not the panacea that many believed. Biofuels are manufactured from plant oils, waste cooking oil and animal tallow. They are classed as renewable, because they originate from non-finite resources and are much better for the environment; typically producing less carbon, sulphur and particulate emissions than fossil fuels.

However, Doug Ward, the managing director of Argent Energy's £15 million biodiesel plant under construction near Motherwell, told *The Scotsman* he had no idea when his product will become competitive.

The plant will be able to produce 50 million liters of

Biodiesel Maker Forecasts Slow Progress

biodiesel a year, which would meet nearly 5 percent of Scotland's diesel needs, when it opens at the beginning of next year.

But, the only reason Ward can operate at a profit is because Gordon Brown has given a 20p tax concession on a liter of biodiesel until 2007. The customer at the forecourt does not see any of the saving; however, and there is no guarantee that the concession will continue after 2007, meaning biofuel could become more expensive than conventional fuels.

But, when asked if, without the tax break, biodiesel would ever be competitive with petroleum-based fuels, Ward replied "yes".

He went on to observe: "The EU (European Union) are seeking that from 2005 two percent of all transport fuels should be renewable. They are also asking that the target is increased by 0.75 percent each year to 2010 and eventually, by 2020, they would like to see 10 percent of all transport fuels being renewable. That is not mandatory and certainly the UK will come nowhere near it.

Roy Holloway, the director of the Petrol Retailers Association, agreed. He noted: "The public's notion that biodiesel will at some point contribute to the reduction of fuel prices at the pumps is apparently a bit of Gordon Brown kidology. It all began with the fuel protests of 2000 where it was messaged that the new biodiesel that would replace fossil-fuel diesel would be allowed a 20p reduction in tax because it was a cleaner fuel. That does not mean a reduction in the forecourt prices."

Source: Petroenergy Information Network

Oil Price A Source of Worry For Global Economy

Accelerating energy prices are a threat to the health of the world economy and oil producers should not staunch supply, finance officials from the Group of Eight industrial Nations (G-8) announced in April.

In a statement released after talks in Washington, the G-8's central bankers and finance ministers singled out energy costs as a risk to global growth. Crude oil prices are up about 37 percent from a year ago and have risen 11 percent to nearly 11-year highs around \$37 per barrel since the officials last met in Florida in February.

"It is obvious that rising oil prices can have a negative effect on world GDP growth," said U.S. Treasury Secretary John Snow. German Finance Minister Hans Eichel said the Organization of Petroleum Exporting Countries (OPEC) must "live up to their responsibility for the global economy".

OPEC, supplier of one-third of the world's oil, will probably reduce oil output by 3.2 percent this month following a March pledge designed to bolster prices on the basis of figures released by PetroLogistics Limited.

The International Monetary Fund (IMF) recently said that the outlook for oil prices is "volatile" and that a \$5 increase would shave



0.3 percentage point off global growth.

Prices have been driven higher by OPEC production cuts, the dollar's decline, higher-than-expected demand from the United States and China and delays in restoring Iraq's production.

"The oil price in dollar terms has been relatively high," said British Chancellor of the Exchequer Gordon Brown.

He went on to add, "That's obviously one of the issues that will concern people."

Bundesbank Vice President Juergen Stark noted that while the current oil price didn't "represent a significant risk," problems for the world economy will emerge if a price over \$34 per barrel is sustained.

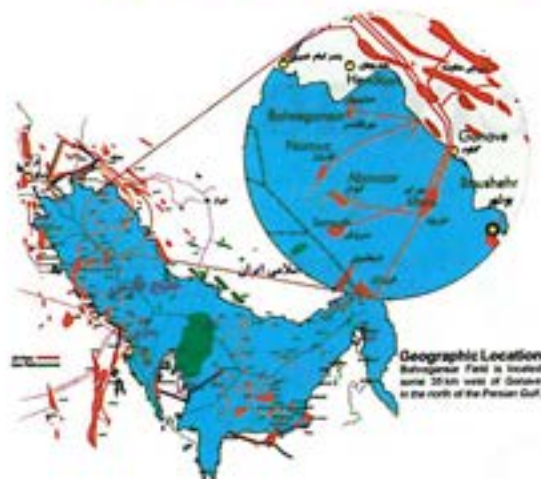
Meanwhile, Russian Finance Minister Alexei Kudrin told reporters after that Russia would not participate in OPEC's planned production cuts.

"Russia at this time increases its oil production," Kudrin observed, suggesting \$27 per barrel would be an optimal price. He also asserted, "We hope prices will be stabilized. We've been saying that all along. We are not champions of super-high prices." Kudrin was in Washington for meetings of the IMF and World Bank.

Source: Bloomberg



A Glance at A Challenging Task



H. Fazaeli

Bahregansar Project Control Engineer

M. Vafaei

Bahregansar Project Installation Coordinator

N. Dariivandi

Project Engineer

Introduction

Bahregansar Oilfield is located northwest (about 56 km) of Bahregan Oil Center, which is located some 35 km west of Ganave in the north of the Persian Gulf. Hendijan Oilfield is located about 10 km northeast of Bahregansar Oilfield.

The onshore plant is situated in Bahregan Oil Center, in the northern section of the Persian Gulf coastline. The map above shows the locations.

Bahregansar Project intends to reconstruct and renovate Bahregansar and Hendijan oil fields facilities (offshore) and install new facilities in the onshore plant in order to increase the production, refining and storage of oil from 20,000 barrels per day to 60,000 bpd.

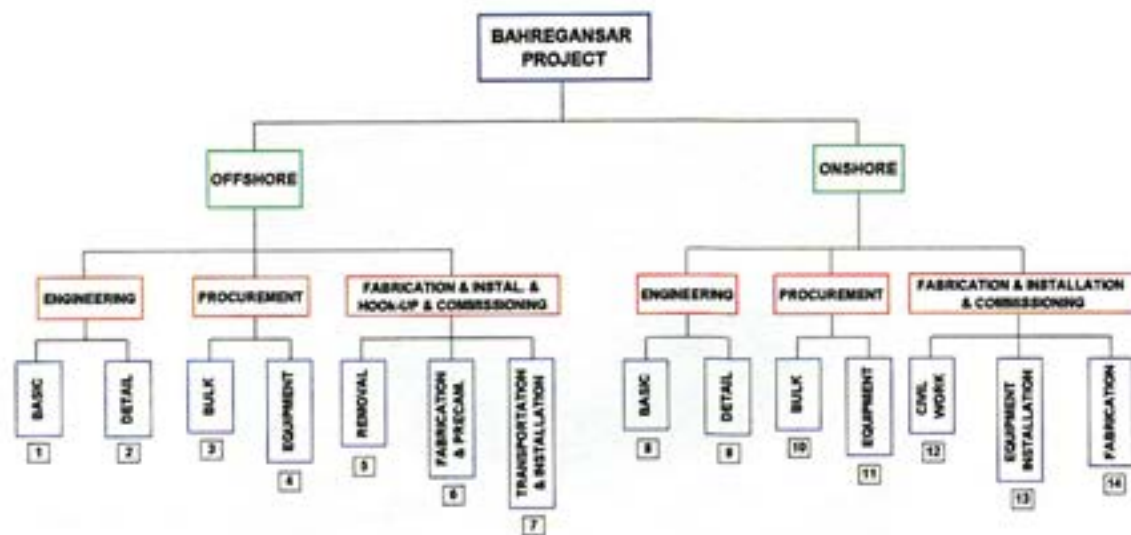
The existing facilities include Production Platform, Living Quarter Platform, Multi Wellhead Platform as well as 6 Wellhead Platforms in Bahregansar Oilfield and 5 Wellhead Platforms in Hendijan Oilfield (installed in 1959 by the Italian company AGIP and commissioned in 1962). These two oilfields, which are among the oldest in the Persian Gulf, were damaged during the Iraqi imposed war (1980-88). The National Iranian Oil Company (NIOC) has awarded this project to IOEC. The undertaking started on April 21, 2002 based on the new amendment, execution plan and the 25-month timetable.

Project Overview

According to the contract, this project will be executed in two sections: onshore and offshore.

Main activities Are as Follows:

- Management & Logistics (Onshore & Offshore).
- Basic & Detailed Design (Onshore & Offshore).
- Procurement and Supply of Equipment & Bulk Material (Onshore & Offshore).



- Construction Including Civil, Structure, Equipment Installation, Piping, Instrumentation, Electrical Work and Commissioning (Onshore).

- Fabrication Including Structure, Mechanical, Piping, Instrumentation and Electrical Work, Load Out, Transportation, Installation, Removal, Hook-up and Commissioning (Offshore).

Engineering Activities

The design life of the facilities is 20 years from the commissioning date and includes the following activities:

- Basic Design Endorsement
- Inspection of Facilities
- Detailed Design

Engineering activities consist of different engineering disciplines such as Structural, Mechanical, Process, Electrical, Instrumentation and Piping. The engineering activities are split among the three Iranian engineering consultant companies Sazeh, Nargan and Tarh Andishan.

Technip Engineering Company will carry out the task of reviewing the technical documents.

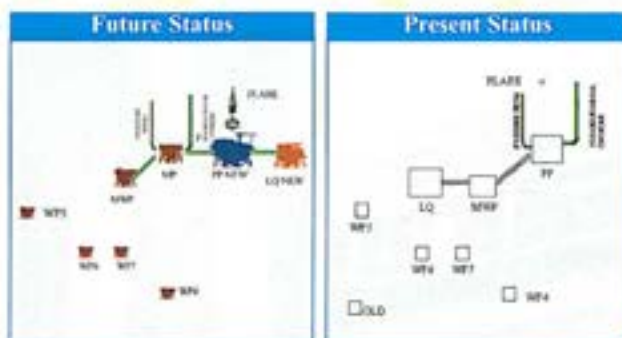
Procurement Activities

These activities include supply, inspection and transportation of all required equipment and bulk materials and are carried out by IOEC Procurement Department through its various technical disciplines.

Offshore Fabrication Activities

The following new facilities are fabricated by IOEC in its fabrication yards in Khorramshahr:

- One Production Platform PP (including Jacket, Piles & Deck).
- One Living Quarter Platform LQ (including Jacket, Piles & Deck).
- Four Wellhead Platforms (WHP).
- One Multi Wellhead Platform (MWHP).



- One Flare Structure with associated supporting platform.
- Four Bridges with three associated supporting platforms.
- One Manifold Platform (MP).

The existing and future layouts of Bahregansar Offshore Oilfield are depicted schematically here below.

The offshore section of the project involves over 6,600 tons of steel structure fabrication work. In the following table general information such as weight and dimensions of modules of all platforms is illustrated.

Load-Out and Installation

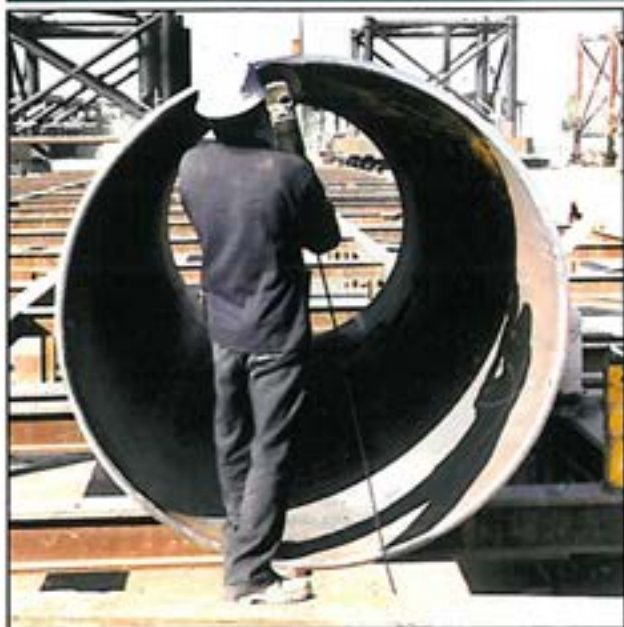


Platform	Module	Dimension (m)	Weight (t)
Light Modules			
WHP 4	Jacket (4Legs)	28* (6m x 6m x 16m)	48.6
	Topside	Deck (12m x 12m) Height=8.5m	54
WHP 5	Jacket (4Legs)	28 (6m x 6m x 16m)	48.6
	Topside	Deck (12m x 12m) Height=8.5m	54
WHP 6	Jacket (4Legs)	28* (6m x 6m x 14.7m)	41.83
	Topside	Deck (12m x 12m) Height=8.5m	54
WHP 7	Jacket (4Legs)	28* (6m x 6m x 15m)	104
	Topside	Deck (12m x 12m) Height=8.5m	54
FLARE PLATFORM	Jacket (4Legs)	4m x 4m x 13.7m	36.25
	Deck	Deck (4m x 4m) Height=6.1m	11.5
	Flare Stack	Height=30m	59
THREE SUPPORT PLATFORMS	3 Jacket (4Legs)	4m x 4m x 13.7m	108.75
	3 Decks	Deck (4m x 4m) Height=5.5m	30.387
FLARE BRIDGES	Bridge No. 1	4.0m x 4.0m x 4.0m	47.65
	Bridge No. 2	4.0m x 4.0m x 4.0m	47.65
	Bridge No. 3	4.0m x 4.0m x 4.0m	47.65
	Bridge No. 4	4.0m x 4.0m x 4.0m	47.65
MANIFOLD PLATFORM	Jacket (4Legs)	30* (19.5m x 9m x 12.5m)	78.54
	Topside	Deck (15m x 28m) Height=5.7m	92.97
	MP-PP (new) Bridge	40.6m x 4m x 4m	76.46
MULTI WHP	Jacket (4Legs)	13.716m x 9.144m x 11.9m	75.234
	Topside	Deck (13.716m x 9.144m) Height=7.29m	71.7
	MWHP-MP Bridge	41m x 4m x 4m	57.5
Heavy Modules			
P.P. PLATFORM	Jacket (4Legs)	28m x 16m x 12.5m	266.7
	Topside	Cellar Deck (30m x 26.8m) Main Deck (30m x 26.8m) Height=25.94m	2022
L.Q. PLATFORM	Jacket (4Legs)	13.71m x 13.71m x 16.4m	138
	Topside	Deck (29.08m x 20.07m) Hull Deck (17.39m x 17.39m) Height=10.90m	1033
	PP-LQ Bridge	40.4m x 4m x 4m	55.5

The main concern of this project is the installation of heavy LQ and PP decks in shallow water, which in itself requires a very light draft derrick barge with a minimum lift capacity of 2,500 Mtons.

Load-out of the PP and LQ decks will be accomplished by skidding, using 2 skidshoes for each leg point with a capacity of 500 tons each. Each skid shoe is equipped with a 500 ton hydraulic jack. The total installed jacking capacity for each deck is as follows:

Production Deck: 12x500=6,000 tons



Living Quarter Deck: 8x500=4,000 tons

The skid shoes will be arranged in three lines for PP and two lines for LQ. Push pull system will be installed and utilized for the horizontal movement. There will be at least two standby push pull systems for the contingent retrieval operation.

The skid shoes will be arranged in three hydraulic groups to provide a statically determined supporting system under the platform and the coupling beams during skidding. Thus, a system is designed, which requires minimum level adjustments during the movement.

Load-out of all jackets and light decks will be handled by self-propelled trailers.

As stated before, the main concern of the project is installation of heavy decks in shallow seawater. For the lifting activities of these heavy decks the proposed method is to use the floating sheer leg to act as the heavy lift vessel.

The lift for LQ deck is assumed to be single hook regarding the nominated sheerleg barge but for the PP deck, due to barge lift capacity, it might be more practical to lift the deck using two cranes (or hooks) on a single vessel to avoid any additional imposed consequence weight factor due to using two separate cranes on separate barges.

For the other platforms a conventional small crane barge with a minimum capacity of 300 Mtons will be used.

For pile hammering/driving regarding the soil investigation report, which has been completed by the third party, it is proposed to use an IHC-S90 (IOEC owned) hammer. For contingency reasons, another hammer with more energy will be available onboard.

Onshore Construction Activities

The Bahregansar Onshore Production Complex is erected in an area located in the Bahregan Oil Center.



The onshore production plant will receive crude oil from the Production Platform through a 16-inch submarine pipeline. Following operations will be carried out in the onshore plant:

- Separation (2 Stages)
- Preheating
- Distillation / Stripping Column
- Desalting (2 Stages)
- Cooling and Transfer to Storage Tanks

The capacity of the process plant facilities is based on 60,000 STBPD entering the stock tanks.

The pictures below show the construction, fabrication and installation works in the Bahregansar onshore site.





Torkan: Oil, a Regional Security Factor

Akbar Torkan is a well-known figure in the field of domestic industries during the post-Islamic Revolution years. He gained lots of experience during his service terms at the ministries of road and transportation and defense and logistics of the Armed Forces as well as Industrial Development and Renovation Organization (IDRO) and Petropars Company. He is currently deputy oil minister for planning and research affairs. His views can reflect the present and future situations of the Iranian oil industry from the viewpoint of large-scale planning. Using oil as a leverage for making a link among the interests of Middle East countries, establishing security interaction in the region, the need for reviewing how to use oil revenues, oil industry's special viewpoints on the country's economic development and establishment of an oil bourse in the near future form the crux of a recent interview conducted with Torkan by Iran Offshore. Full text follows:

Iran Offshore: An issue, which requires special attention at the current juncture, is the issue of joint oil and gas fields. Contracts signed by Qatar with Exxon Mobil for production of LNG and with Shell for production of GTL, as well as Kuwait's decision for developing Arash Oilfield all overlap with Iran's interests. What is your plan to take better advantage of joint fields?

Torkan: The most important of such fields is South Pars Gas Field, which is shared with Qatar. As you said, Qatari officials have signed contracts with Exxon Mobil for production of LNG and with Shell for production of GTL. We have likewise signed contracts for developing up to ten phases of the field. Tender bids for phases 11 to 16 are planned and we hope the winners will be announced by the end of the year. Phases 11 through 14 are specific to GTL and LNG production while phases 15 and 16 are special to producing sweet gas. So far, the Majlis

Oil bourse to be launched in the future

has issued the required permits for developing these phases. Permits for further phases of the field up to phase 24 will be issued by the parliament during the implementation phase of the fourth economic development plan (2005-10). However, the fourth economic development plan is bound to focus on phases 17-22.

Petropars was a contractor of South Pars Project Phase 1. This company was; however, criticized for delay in fulfilling its commitments. What is your opinion?

Many contractors are working in South

Pars Project in addition to France's Total and Italy's Agip. Norway's Statoil also is there. Phase 1 of South Pars Project was independently carried out by Petropars. The company cooperated with Agip on phases 4 and 5 and also is responsible for phases 6, 7 and 8. It shares the marine part with Statoil and has won the tender bid for onshore refinery to be constructed by a consortium led by Japan's Toyo Corporation. Many companies are members of the consortium including IDRO. However, with regard to the criticism about the delay incurred in implementing Phase 1 of South Pars Project, I must say that the refinery is fully operational now and the work on the marine section is complete. Also, laying pipeline from the sea to the land has been finished and tested. Petropars started its work one year after Total and will deliver the project about one year after Total. It is a pity that some people do not care about the delay by Total, but prefer to focus on the delay incurred on behalf of Petropars. Those who came to loss as a result of the presence of Petropars in the project are making the hallyhoo.

Does the Oil Ministry have any specific plans for balancing oil products dealings inside the country?

Oil Minister Bijan Zanganeh recently ordered Mr. Asemipour to launch an oil products market inside the country as a prelude to a forthcoming oil bourse. The

bourse is to cover such oil products as diesel, gasoline, mazut, kerosene and other products. That is, it means to give Iranians control over oil products dealings.

What is your opinion about oil research inside the country?

Many oil sectors, including research, are still incipient in Iran and we hold no licenses in any oil-related field. Due to 100 years of experience in oil activities, we are entitled to hold some licenses, but we lag behind other countries in this regard. We must hold licenses in chemical industries, catalysts as well as downstream industries. We have highly specialized and experienced engineers. Oil industry nationalization process started as of 1953, but is not complete yet and we are dependent on foreigners in many sectors, including research and oil engineering. We must try to become self-sufficient in these arenas.

The huge Azadegan Oilfield, which holds 26 billion barrels of reserves, has been a focus of attention during past months. Japan failed to take advantage of its exclusive negotiation rights for developing the field, so Iran invited other countries. However, Japan has maintained interest in the field. Which countries are expected to take part in the upcoming tender bid for the field? With which country the negotiations have been more serious?

Japan had exclusive rights over other companies before expiry of the agreement. That is we had decided to give the field in due time without formalities. Japan, unfortunately, lost the opportunity. At present, the Oil Ministry is under no commitments with regard to Japan and can hand the project over to any other country. Many companies have been invited to take part in the bid and we will give the job to the best bidder. The truth is that Japan is the loser and Iran has not lost anything.

It seems that Iran's proposal for participating in the reconstruction of Iraq put forth during Madrid conference on the basis of oil swap with that country has drawn the attention of the Iraqi Governing Council. Jalal Talabani, as the then chairman and other members of the council discussed the swap deal during a visit to Iran. If Iran received

Iraqi oil at Abadan Refinery and exported an equivalent amount of oil from Kharq Island on behalf of that country, it would be a great contribution to that country and provide it with adequate financial resources for reconstruction. Swap deals with Caspian littoral states also require due attention. How do you assess such deals and what is your plan for developing them?

I have to elaborate in more details. We have four major categories in this regard. We believe that the national economy must become independent of oil revenues through efficacious planning schemes. It is a mistake to think that an economy without oil would be beneficial for Iran. Budget must be made independent of oil, but oil is the main advantage of our country. An economy without oil for our country would be similar to an economy without electronics for Japan or an economy

The truth is that Japan is the loser and Iran has not lost anything.

without agriculture for Australia or an economy without dairy for Denmark. Therefore, oil is our advantage and we cannot separate it from the economy. The Iranian economy must be planned on the basis of oil, but in four categories: oil as energy; oil as forex earner; oil as the feed for downstream industries and oil as a source of national power. With regard to oil and the national power, we think in terms of national security. Due to Iran's strategic location (between the Caspian Sea and Persian Gulf), our oil rich neighbors need us because they lack our scientific and technological capacity. In addition to being an oil-rich country, Iran is blessed high industrial and technological capacities. Therefore, we must define our joint energy and oil projects with our neighbors. It means that we must make a link among national security concerns of various countries. To develop, we need stability and security. Today, East Asia is secure and stable and has started to grow significantly. However, West Asia has been grappling with two major hardships. The first being the Ba'athist regime in Iraq,

which caused many crises including two wars with Iran and Kuwait. This problem has been partly solved with the toppling of Saddam's regime. The second problem is Israel, which is causing instability and insecurity in the region. Of course, we think that the elimination of Saddam has paved the way for growth and development of West Asia and to accomplish this growth we must make a link among national security affairs of all regional countries through implementation of big oil and energy projects. This is an idea, which incorporates such projects as construction of gas pipeline to Pakistan to help the economy of that country grow and to ensure the national security of both countries. Another example is the gas supply pipeline to Turkey or the issue of buying oil and gas from Central Asian countries. We have already started swap deals with Central Asia and purchase as much as 370,000 barrels crude from them. This figure has the potential to increase to 500,000 barrels. We buy Central Asian oil, use it and then give these countries an equivalent amount in the south. We can greatly increase the capacity of the project. Therefore, we have defined the conception of joint project with Caspian Sea littoral states. We also pursue joint oil and petrochemical projects with Saudi Arabia, Qatar and Kuwait and we hope that one day we would construct a joint oil platform with Qatar in South Pars region and subsequently start joint production. We pursue the same idea with Saudi Arabia too. Petrochemical industries of Iran and Saudi Arabia can get a big share of global markets through a strategic cooperation. Now if you consider this big basket, Iraq could be a part of it. We have had a long history of insecurity and tension with Iraq, but we must reach stability and security because the main obstacle, namely Saddam, has been eliminated. Now we pursue security and implementation of security projects. Furthermore, we must think of joint projects on border rivers to boost border trade between Iran and Iraq. Finally, we must think about joint oil projects, production from joint fields and oil swaps with Iraq because Iraq has little marine border and limited access to free waters. We can purchase Iraqi oil and give Iraq equivalent amount in the Persian Gulf. We can buy oil in the north, use it in

Tabriz Refinery and give them an equivalent amount in the south. These are big security measures that we can take by using oil and connecting the destinies of Middle East countries through oil. In this way, security and stability in the Middle East would ensure interests of all countries and West Asia would be relieved of its 20-year backwardness. The main factors for backwardness of this region were Saddam and Israel and now, after elimination of Saddam, security can be partly achieved.

As you know, gas consumption is on the rise in the world and countries with more access to gas are more inclined to use it. Do you think that gas could replace oil in the future? What are your plans for developing Iran's gas reserves as a country that has the world's second gas resources?

Gas accounts for 25 percent of the global energy and the figure is expected to reach 28 percent in the near future. Meanwhile, share of oil in supplying global energy demand is 40 percent and will remain unchanged. Therefore, share of gas in supplying global energy demand will increase. However, with regard to gas exports, we give priority to using gas for ensuring a national level of prosperity with exports being our last concern. That is, if we couldn't use gas for our own developmental projects, then we would export it. Of course, economic development plans have paid heed to gas exports and we are planning exports to Kuwait, the United Arab Emirates, Pakistan and Turkey through a pipeline. We are also considering gas exports to farther destinations in the form of liquefied natural gas (LNG). I personally believe that we must use gas for domestic purposes and get on with oil exports.

It was recently announced that Iran's producible oil reserves amounted to 130 billion barrels. Does it mean that Iran has the world's second biggest oil reserves after Saudi Arabia? If so, the country would rank second in terms of both oil and gas reserves. Would you explain?

We have certain terminologies in this regard. 'Oil in place' which amounts to over 500 billion barrels. Another term is

'recoverable oil', the volume of which is estimated in view of recovery factor of our reserves. The factor for Iran was previously low, but due to technological advances, it has reached 25-26 percent, which means 130 billion barrels of crude. The figure can further be increased and we are trying to increase it to 28 percent and then 30 percent during the next five-year economic development plan.

On the sidelines of conference on maximizing oil revenues you told reporters that Iran has so far consumed one-third of its oil revenues and two-thirds have remained. Would you elaborate?

The volume of oil produced during 100 years of Iran's oil activities has amounted to about 50 billion barrels and 130 billion barrels remain. I neither like pessimism

We still lack specialized academic courses in our universities

nor do I like to exaggerate things. We must tell the truth only. The truth is that we have used one-third of our reserves and two-thirds have remained. Of course, as you know, our gas reserves are two times our oil reserves.

The fourth economic development plan has projected a method for using oil revenues according to which 50 percent of price of every barrel of oil at the export rate would be paid to the government by NIOC. Can this policy help develop oil industry? On the other hand, would tax revenues be capable of replacing oil revenues and contribute to overall development of the country?

In the course of the fourth economic development plan (2005-2010) a new relationship will be defined between the government and the NIOC. The government will own oil reserves and the ministry will represent the government in this regard. The Oil Ministry is the producer and takes oil from the reservoirs and, in return, will pay a royalty to the government. On the whole, the NIOC must pay

the government in three ways: royalty, special tax and stock dividend. Moreover, it must pay a kind of tax that all companies pay. Royalty is the indigenous value of oil that should be paid for production of every barrel of crude. Based on our estimate, the indigenous value of oil is 25 percent in sea and 35 percent on land, averaging 33 percent. It is share of the reservoir, which should be paid to the government and the government settles the sum to a fund, which was previously known as Forex Reserve Fund and is currently called Investment and Development Fund. This money should exclusively be used for investment in the country's development ... and nobody would be allowed to use it for other purposes. The second sum taken from the NIOC by the government is a special tax, which changes in proportion to increase or decrease in oil price. Since special tax is a tax after all, it can be used as part of the general budget. The third part is the revenues earned through stock dividend and the NIOC's ordinary taxes, which will be paid to the government. Therefore, according to the fourth economic development plan (2005-2010), the NIOC will be a tenant who pays the government a royalty. However, the government will be forced to pay a large part of the special tax it takes from the NIOC as fuel subsidy. The government has come to the conclusion that it should phase out fuel subsidies and spend them on infrastructural projects.

As the last question, would you explain about employment of specialized and experienced manpower in the oil industry?

Although Iran has had a university system for some 70 years now, we still lack specialized academic courses in our universities. Specialties related to oil industry are taught in Oil Industry University, which is affiliated to Oil Ministry. This indicates a great oblivion on the part of our higher education modus operandi. We are trying to recruit elite university graduates and use them for technological development of the oil industry.

Brief Details Of a Renovation And Construction Project

Seyyed Mohammad Reza Mortazavi

B.Sc., M.E., Ph.D. in Civil Eng.

Mostafa Booraghi

M.Sc. in Mechanical Eng.



Seyyed M. R. Mortazavi was born in Tehran in 1957. He received his BSc in Civil Engineering from Sharif University of Technology in 1985. He then continued his studies towards M.E. (Master of Engineering) at the University of Canterbury in New Zealand. He finished the M.E. degree program in 1988. For a while, Mortazavi worked in Tehran as a consulting engineer then he went to Australia for pursuing a PhD program at the University of Wollongong. He earned his PhD in Civil Engineering (Structural Engineering) in 1994. He came back to Iran in 1994 and started teaching in Tehran. He joined I.O.E.C. in 1999 as a senior civil engineer.

Introduction

Abouzar Field is located in the Persian Gulf, some 75 km to the west of Kharq Island in the water depth of approximately 40 meters.

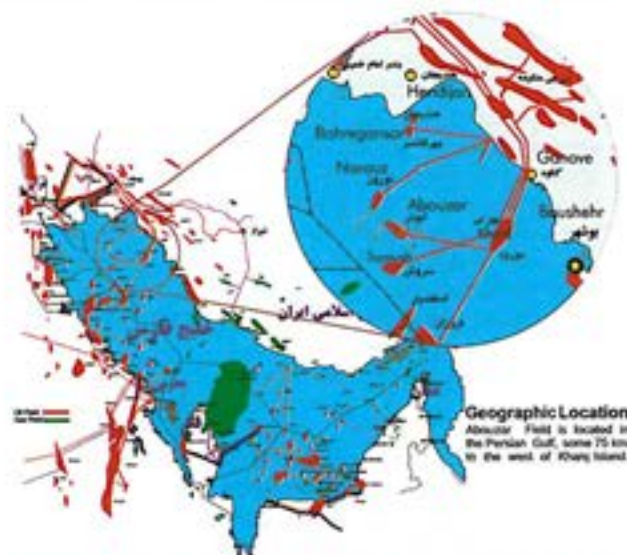
The field was initially developed and put on production in 1976 by Iran-Pan American Oil Company.

Initial Facilities:

- Three production platforms
- Five multi-wellhead platforms
- Three flare structures with associated supporting platforms
- One living quarter platform

The initial production complex throughput capacity was 150000 barrels per day. Abouzar offshore production complex was badly damaged during the Iraqi imposed war (1980-88). Iranian Offshore & Oil Company (IOOC) awarded Abouzar Project to the Iranian Offshore Engineering and Construction Company (IOEC) in 1992.

Abouzar Oilfield location is shown below:



Geographic Location
Abouzar Field is located in the Persian Gulf, some 75 km to the west of Kharq Island.

Scope of Work: Reproduction Complex Throughput Capacity of 150,000 BPD

- Basic engineering endorsement
- Detail engineering
- Procurement
- The damaged sections renovation
- The badly damaged sections removal
- New facilities fabrication
- Transportation and installation
- Pre-commissioning and commissioning

Project start date was Dec. 1992 and offshore renovation start date was June 1993. Abouzar Project was completed in April 2001.

Three New Production Platforms (AA, AC, AB)

The IOEC has fabricated three production platform decks (AA, AC, AB) at SADRA Yard in Bushehr. The decks have been installed about 77 km from Kharq Island in the Persian Gulf, owned and operated by IOOC.

Three six legged structures were installed to form production platforms for the purpose of gathering, separation and transmission of crude oil to Kharq Island. These platforms have equal producing capacities and the production facilities installed on each platform are similar.

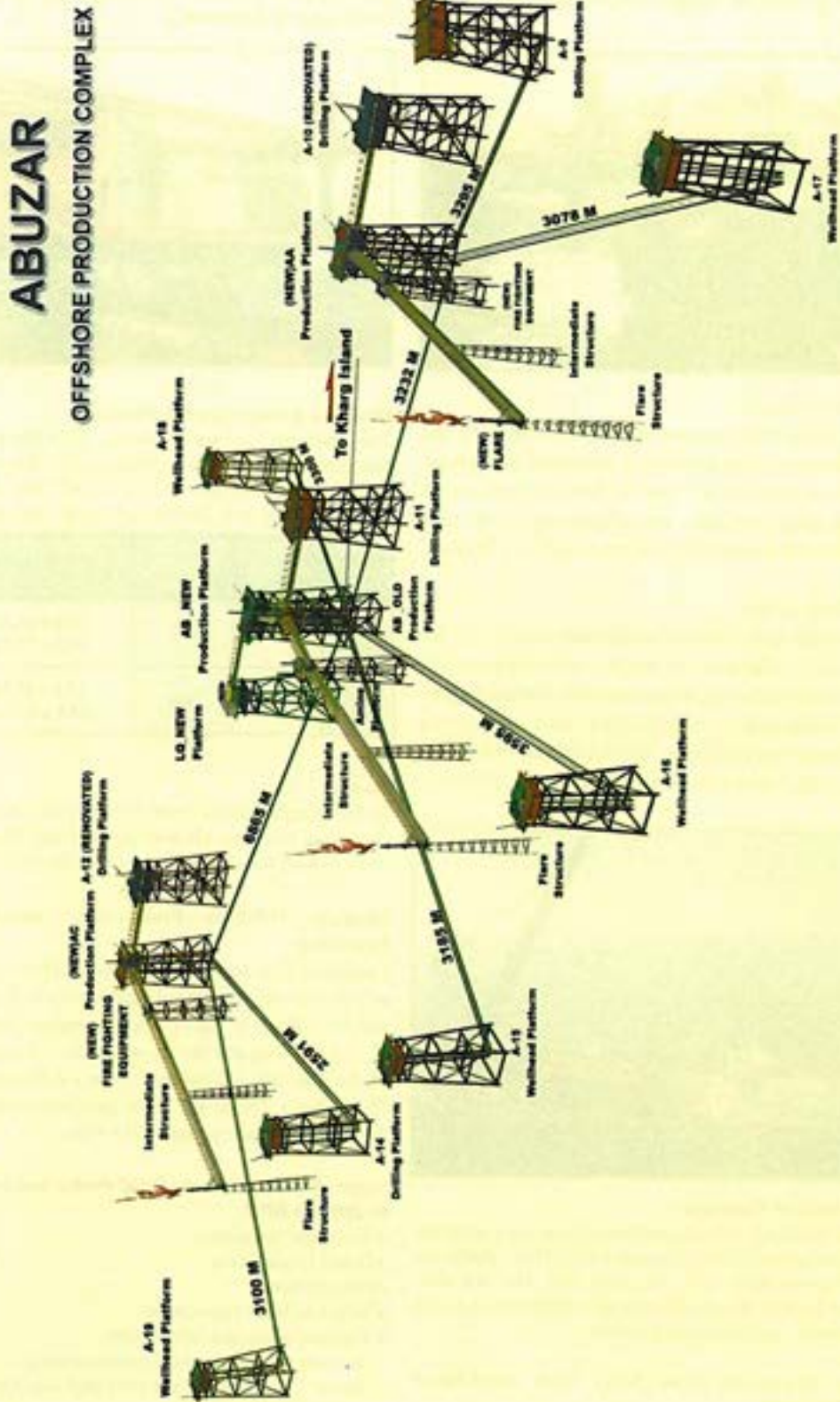
• Production Platform AA

The produced fluids from multi-wellhead platforms A9 and A10 enter platform AA.

Production platform AA is connected by interconnecting bridges to platform A10 and flare structure via its associated



Fig.1 Abuazar Offshore Production Complex



supporting platforms. The dimensions of AA platform are 40.5 m x 25.5 m and the total dry weight is 1,750 tons.



• Production Platform AC

The produced fluids from multi-wellhead platforms A12 and A14 enter platform AC. This platform is connected by interconnecting bridges to platform A12 and to flare structure via its associated supporting platforms. The dimensions of AC platform are 40.5 m x 25.5 m and the total dry weight is 1750 tons.

• Production Platform AB

The produced fluids from multi-wellhead platform A11 and fluids transmitted from platforms AA and AC enter platform AB. This platform is connected by interconnecting bridges to platform A11, LQ living quarter platform and to flare structure via its associated supporting platforms. The dimensions of AB platform are 42 m x 26.5 m and the total dry weight is 2,100 tons.



Five Multi-Wellhead Platforms

The five multi-wellhead drilling platforms have been installed in a satellite configuration over Abouzar Field. These platforms were A9, A10 (renovated), A11, A12 and A14. The first four platforms were 28-well slant conductor well platforms and A14 is a 9-well vertical conductor well platform.

Three Flare Structures (One New) With Associated Supporting Platforms

Each production platform has an independent flare system,

which comprises a flare structure, a gas line to the flare structure and three pieces of interconnecting bridges passing over three supporting platforms.



One New Living Quarter Platform

This platform has been fabricated at SADRA Yard in Bushehr. The module has been installed about 77 km from Kharq Island and is owned and operated by IOOC. The dimensions of the platform are 32 m x 28.5 m and the dry weight is 1,400 tons.

Jacket	Number of Legs	Total Dry Weight (tons)	Dimensions (m)	Height (m)
AB Jacket	6	480	28.8 x 15.3 (top) 37.2 x 27.5 (bot.)	46.5
LQ Jacket	4	360	15.3 x 15.3 (top) 27.5 x 27.5 (bot.)	46.5

Jackets

In Abouzar Project, two new jackets were fabricated for the production of platform AB and LQ platform. The specifications of these jackets are shown in the following table:

Abouzar Offshore Production Complex Renovation Extension

Facilities: Five New Multi-Wellhead Platforms Plus Jackets

• Five new multi-wellhead platforms are A15, A16, A17, A18 and A19 (Refer to Fig. 1). The dimensions of each platform are 11.7 m x 10.7 m and the dry weight is 179 tons. The dimensions of the platform jackets are 6.5 m x 6.5 m (top) and 13.7m x 16.9m (bot.). The height of the jackets is about 47.40 m and the dry weight of each jacket is 215 tons.

Scope of Work: Increase in Oil Production From 150,000 BPD to 200,000 BPD

- Technical Inspection
- Detail Engineering
- Procurement
- New Facilities Fabrication
- Transportation and Installation
- Pre-commissioning and Commissioning

Abouzar Extension Project start date was Oct. 1996 and it was completed in Dec. 2001.



A15-A19 Platforms



Jackets Load Out ansporn



A16 Jacket Transportation



Abouzar 1200

Load Out and Installation

The main concern of load out and installation of Abouzar Project was the heavy LQ & PP decks. Load out of PP and LQ decks were carried out by skidding and using two skid shoes for each leg point with a capacity of 500 tons each. Each skid shoe was equipped with a 500 tons hydraulic jack. The skid shoes were arranged in three lines for PP decks and two lines for LQ deck. Push pull system was installed and utilized for horizontal movement.

For lifting activities of heavy PP and LQ decks (480 tons & 360 tons, respectively) Stanislav Yudin crane barge was used and

for the rest of the decks Abouzar 1200 Crane Barge.

Abouzar Project execution was the first experience of IOEC. The main advantages of this project were as follows:

- Localizing offshore technology of Engineering, Fabrication and Installation.
- Transmission of technical knowledge and utilizing all available local capacity.
- Provision and compilation of offshore industrial hardware and software requirements.

Painstaking Efforts Produce Results

Report on Completion of Phases 6, 7 & 8 of South Pars EPIC-1-Jackets



Nematollah Nematollahi
Phases 6,7,8 EPIC-1(Jackets)
ISOICO
project manager

On July 1, 2002 a contract was awarded to Iran Ship Building and Offshore Industries Complex Company (ISOICO) for engineering, procurement, construction and installation of three jackets weighing a total of 9000 tons, worth about 32,000,000 USD.

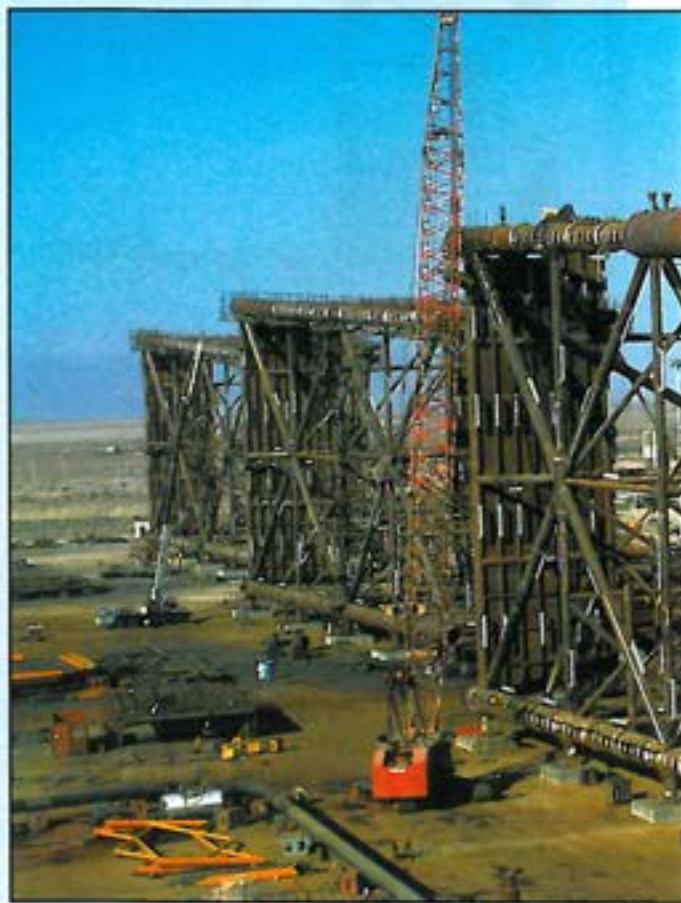
The client was Petropars of Iran and the Norwegian company Statoil was named as the operator. This company also took over the management side of the project.

It was the first EPIC contract for the offshore division of ISOICO after completing the construction of phases 2-3 with Total as client and NPCC as contractor. This undertaking began in 1998 and finished in 2001. The job consisted of one wellhead platform with related ancillaries such as jackets, bridges and flares.

This Division has also completed the construction of the largest jacket in Iran, a 3500-ton jacket called SPP1 for South Pars Phase 1 with Petropars as client and IOEC as contractor. All construction work was carried out in Bandar Abbas Site, which has a capacity of almost 35,000 tons per year and has a spacious workshop and construction halls with 2 computerized Muller machines, heavy cranes and the equipment needed for completing offshore projects. This site is newly mobilized with Q-Wall and Skidway with capacities of 4,000 and 8,000 tons respectively. The third offshore contract as mentioned above was phases 6, 7 and 8 of EPIC jackets. After concluding the contract, a British company based in London called SLP started the detail engineering work. The basic design was performed by Foster-Wheeler and SLP incorporated some new concepts into it, as it was originally proven to be insufficient. The total jacket weight had to be increased considerably by almost 20% per jackets. As a result the diameters of legs and piles increased from 60" to 68" and 54" to 60" respectively. To order the material, MTO from the Engineering Department was needed for the main steel structure as early as possible. Therefore, some six weeks after the start of the engineering

phase of the undertaking, this MTO was prepared and orders were placed with some European and Japanese companies like Thyssen and Mitsubishi for the construction of the major steel structure. The engineering work finished within the first six months of the contract and concurrent with this most of the primary and secondary materials were also ordered. In the meantime, several national and international subcontractors active in construction, third party, marine warranty surveyor, load-out transportation and installation subcontractors were evaluated and selected in wake of pertinent studies. The policy of Offshore Division of ISOICO was to subcontract most of the work to pre-approved subcontractors and also build one of the three jackets itself. In tandem with this policy, the first and third jackets were constructed by Iranian subcontractors and the second jacket was handled by internally established groups for welding, fit-up, etc. within the Division itself.

Since it was a fast track project with a duration period of 14 months (before the installation phase), the work began for all



three jackets in a concurrent manner at our new Bandar Abbas Yard. It is worth mentioning that 70% of leg main 68" tubes were rolled and constructed at ISOICO Yard for the first time in all South Pars projects. By April 2003, all primary and most of the secondary structures were at site except for minor items such as anodes, fenders, grout packer, etc.

In May 2003, a contract was signed for load-out of all three jackets by trailers through ALE Company (Abnormal Load Engineering). This was based on four point load-out. Considering the weight of each jacket (1550 tons extra weight compared to basic design), the riser materials were handed over to us by the client some 3 months later than expected. The first jacket was loaded out to a barge (Abouzar-110) on Dec. 27, 2003 and transported to South Pars Field. Installation was completed on Jan. 19, 2004 by SHL Company.

The installation subcontractor came on board about middle of Oct. 2003. However, our Engineering Department was officially in contact with them well before the contract was signed to rectify and clarify some technical issues. The installation plan considered two options; one option was to install all three jackets in one campaign and the second option implied that the job should be completed in two campaigns.

Everything was progressing in a desirable manner and it seemed that it was possible to install the three jackets in one

campaign until problems occurred during installation of the second jacket. (SPD8).

In early Feb. 2004, the second jacket was loaded out successfully and moved to the area. The jacket was lifted and upended according to the plan. Two lead sections of piles were installed and the two first add-ons were in the middle of welding process (to the load section) when unexpected heavy storms (6.5 meter waves) ruined all the work and caused the jacket to sink in mud from two legs (the jacket was 4 legged) for about 3 meters.

The crane barge had to be moved away from the jacket and we had to wait for more favorable climatic conditions in order to assess the extent of damage. After a few days when the sea was calm, the assessment showed that the jacket had gone down into mud from legs A4 and B4 by 2.5 m and from legs A2 and B2 by 1.5 m, putting almost a weight of 1000 tons of mud on the Mudmat. The Installation subcontractor proposed different remedial measures for bringing back the jacket to its leveled position. Finally, it was decided to lift the jacket from legs A4 and B4 by a 2500-ton crane. The engineering calculations revealed that a max force of 1000 tons could be applied to the mentioned legs. However, the operation was unsuccessful and the jacket could not be lifted sufficiently. Hence, the remedial work was called off. Despite all ISOICO efforts to continue with the work, our installation subcontractor left the field for another commitment in India. After completing its job in India, SHL returned to the SPD8 position and remedial work was resumed on the basis of the pre-planned alternatives. The mud was removed from the Mudmat by means of suction and the jacket was lifted without any piles or B/Tank installed and moved away from its current position to allow another contractor to fill out the holes created in the seabed created by drilling rig spud can or pits, which were filled with mud and needed to be replaced by sand.

After the seabed improvement phase, the jacket was moved to its original position and installed on the appraisal well and subsequently the pile installation phase started. The jacket installation operation was finally completed on May 12, 2004. After installing this jacket, POGC decided to install the SPD5-SPD6 decks prior to ISOICO work.

The SPD9 Jacket was loaded to ISOICO Barge (TONDGOY-AN 105) on April 21, 2004 and was transported to the field on May 31, 2004.

Despite all the difficulties, we completed the project successfully and naturally learned many lessons in the process.

I would like to extend my appreciation to the project team, ISOICO management, all subcontractors, Petropars and especially Statoil, which has done an excellent job as the operator and has proven to be very cooperative all angles considered.

Source: Iran Offshore Engineering Desk



Iran, Persian Gulf And Global Energy Markets

By Morteza Behrouzifar

Expert Member of Institute for International Energy Studies (IIES)

(All figures referred to in this article are presented in the map annexed to the magazine)



Morteza Behrouzifar was born in 1972. He holds an MSc in Energy Economics from Institute for International Energy Studies (IIES). He joined IIES as an energy expert in 1999. He is currently conducting research on OPEC and major producers and consumers of oil and gas with IIES - an affiliation of the NIOC. Behrouzifar has published various papers on OPEC, Caspian region, drive for globalization and the US Sanctions imposed

against Iran.

Today, energy is considered as one of the main fundamentals of economy. It is known as a key element to the national security of different countries and also plays an important role in international politics. Undoubtedly, energy is the main factor for achieving sustainable economic development in every country. Iran's leverage in the global oil markets was enhanced when the Middle East became an energy hub of the global markets. Iran became increasingly important, after the collapse of the former Soviet Union and commencement of developments in the Commonwealth of Independent States (CIS), because it is located between the two strategic regions that hold the main portion of the world oil and gas resources; namely the Persian Gulf and the Caspian Sea.

This article intends to illustrate the importance of the Persian Gulf in the energy markets. It also investigates Iran's role as the fifth biggest oil-rich country that possesses the second largest natural gas reserves in the world.

(This article was written before the confirmation of the recent discovery of new oil reserves in Khuzestan province which improved Iran's ranking in terms of oil reserves to second in the world)

The Persian Gulf

The Persian Gulf is a 600-mile-long body of water, which separates Iran from the Arabian Peninsula and one of the most strategic waterways in the world due to its importance in the global oil transportation; namely the Hormuz Strait. At the narrowest point of the Hormuz Strait, the Persian Gulf narrows to a width of only 34 miles.

There have been and there continue to be significant territorial disputes among the Persian Gulf countries. In addition to the Iraqi invasion of Kuwait in August 1990 and the Iran-Iraq War (1980-88), another important regional dispute is between the UAE and Iran over ownership of the three Iranian islands of Greater and Lesser Tunbs and Abu Mousa, which are strategically located in the Hormuz Strait.

In 2002, the vast majority (around 88%) of oil exported from the Persian Gulf was transited by tanker through the Hormuz Strait (Fig 1). By far the world's most important oil "chokepoint," accounting for transit of around two-fifths of all globally traded oil, the strait consists of 2-mile wide channels for inbound and outbound tanker traffic as well as a 2-mile wide buffer zone. Closure of the Hormuz Strait would require use of longer alternate routes (if available) at increased transportation costs. Such routes include the East-West Pipeline (capacity of 4.8 million bpd) across Saudi Arabia to the port of Yanbu and the Abqaiq-Yanbu natural gas liquids line across Saudi Arabia to the Red Sea. Some 13.6 million bpd of oil goes all over the world, eastwards to Asia (especially Japan, China, and India) and westwards (via the Suez Canal, the Sumed Pipeline or around the Cape of Good Hope in South Africa) to Western Europe and the United States. Another route for Saudi oil exports, which reportedly has been under consideration, is through Yemen to the Gulf of Aden.

Oil And Gas Reserves, Production Capacity

The Persian Gulf countries, with 679 billion barrels of proven oil reserves, are blessed with some 65% of global oil reserves (global oil reserves, in 2002, was estimated at 1047 billion barrels). It must be noted that apart from the huge oil reserves owned by the seven oil-rich countries in the Persian Gulf, Bahrain is not considered of much importance in terms of oil reserves.

Also, at the end of 2002, the Persian Gulf countries maintained about 22.3 million bpd of oil production capacity, or 32% of the

world total. Perhaps, even more significantly, the Persian Gulf countries normally maintain an overwhelming share (around 90%) of the world's excess oil production capacity (Note: As of April 2003, following the war in Iraq, excess world oil production capacity was only around 0.7-1.2 million bpd, all of which located in the Persian Gulf region). Excess production capacity is important because, in the event of an oil supply disruption, this oil can be brought online to compensate (Fig 2).

In 2002, the Persian Gulf countries exported some 15.5 million bpd of oil (see Fig 3). Saudi Arabia exported the highest volume of oil compared to any other Persian Gulf country in 2002, with an estimated 7.0 million bpd of exports (45% of the total). During the same year, Iran exported around 2.3 million bpd of oil (15%), followed by the United Arab Emirates (2.1 million bpd -- 13%), Kuwait (1.7 million bpd -- 11%), Iraq (1.6 million bpd -- 10%), Qatar (0.8 million bpd -- 5%) and Bahrain (0.01 million bpd -- 0.1%).

According to the Energy Information Administration's International Energy Outlook 2002, the Persian Gulf oil production is expected to reach some 30.7 million bpd by 2010 and 42.9 million bpd by 2020, compared to about 21.7 million bpd in 2000. This implies that the Persian Gulf oil production capacity would increase to 35% of the world total by 2020, up from 28% in 2000.

Iran holds 89.7 billion barrels of oil reserves, 13.2% of the Persian Gulf oil reserves and 8.5% of the global oil reserves. It ranks as the fifth biggest oil-rich country after Saudi Arabia, Iraq, the UAE and Kuwait. It must be mentioned here that the new findings in Iran, if confirmed officially, will increase its oil reserves to 130 billion barrels and thus improving its ranking to the second biggest oil-rich country in the world.

In 1974, the Persian Gulf oil producing countries accounted for 37% of the global oil production while their share of production fell to the minimum level of 18 percent in 1985. Considering the Persian Gulf oil-rich countries share of global oil reserves (65%), it is evident that the production capacity of these countries is by no means proportionate to their oil reserves. Iran's oil production has similarly faced dramatic fluctuations in the same time span. For example, its production declined from 6.06 million bpd in 1971 to the minimum level of 1.3 million bpd in 1980.

In 1971, Iran accounted for 28.28% of oil production in the Persian Gulf region; however, this figure reached the lowest level of 7.9% in 1980. Iran's share of global oil production fluctuated from the maximum level of 10.34% in 1974 to the minimum level of 2.2% in 1981 (see figures 6 & 7).



In addition to huge oil reserves, the Persian Gulf region is blessed with enormous natural gas reserves. For example, the gigantic natural gas field, South Pars or North Dome Field, which is possessed jointly by Iran and Qatar, is known as the biggest non-associate gas field holding about 20% of the global natural gas proven reserves.

Eight oil-rich countries in the Persian Gulf region hold over 55 Tcm of natural gas reserves. This accounts for some 35% of global natural gas reserves (global natural gas reserves was estimated at 155.7 Tcm in 2002). Iran, with 23 Tcm of natural gas reserves, accounts for 41% and 15 % of the regional and global natural gas reserves respectively.

In spite of such huge amounts of proven natural gas reserves in the region, the total gas production by the Persian Gulf countries is some 229 Bcm per annum or 9% of the global gas production. Iran, with 64.5 Bcm of natural gas production in 2002, accounted for 28% and 2.5% of the regional and global gas production respectively (see figures 7 to 11).

Offshore Persian Gulf Oil Development

Major offshore Persian Gulf oil fields include Khafji and Hout, both of which are connected to Saudi Arabia's Safaniyah, the world's largest offshore oilfield (with estimated reserves of 19 billion barrels). The Saudi offshore Persian Gulf production

includes Arab Medium crude from the Zuluf (over 500,000 bpd capacity) and Marjan (270,000 bpd capacity) fields and Arab Heavy crude from the Safaniya Field. The Doroud 1&2, Salman, Abouzar, Foroozan, and Sirri fields comprise the bulk of Iran's offshore output, which is totally exported. Iran plans extensive development of the existing offshore fields and hopes to raise its offshore production capacity sharply. Iran's national oil company, NIOC, has expressed interest in developing five oil and gas fields in the Hormuz region (Henjam A -- HA, HB, HC, HD, and HE), which, according to NIOC, hold an estimated 400 million barrels of liquids (oil, natural gas condensates, etc.) and have production potential of 80,000 bpd.

Offshore Persian Gulf Natural Gas Development

In addition to being blessed with huge oil reserves, the Persian Gulf region is important because it contains huge reserves (1,923 Tcf) of natural gas, with Iran and Qatar holding the world's second and third-largest reserves (behind Russia), respectively. This is likely to become an increasingly important consideration in the coming years, as both domestic gas con-

sumption and gas exports (by pipeline and also by liquefied natural gas – LNG – tanker) increase. In late 2000, Saudi Arabia resolved a long-standing offshore Persian Gulf border dispute with Kuwait, opening the door to development of the huge (13-Tcf) Dorra Gas Field, which lies in waters straddling Iranian, Saudi and Kuwaiti territories. Most of Qatar's gas is located in the North Dome Field, which contains 380 Tcf of in-place and 239 Tcf of recoverable reserves, making it the largest known non-associated gas field in the world. The Qatari government believes that the country's economic future lies in developing this vast gas potential. Currently, Qatar has two LNG exporters: Qatar LNG Company (Qatargas) and Ras Laffan LNG Company (Rasgas). The \$10 billion Dolphin Project is expected to supply gas, beginning in 2005, from Qatar's North Dome to the United Arab Emirates and Oman. Pakistan also could be

supplied by Dolphin at some point in the future, although at present this seems quite unlikely.

Another major Persian Gulf offshore gas project is Iran's huge South Pars Field. Current estimates reveal that this field contains 280 Tcf of gas (some estimates run as high as 500 Tcf), of which a large fraction will be recoverable and also over 17 billion barrels of liquids. Development of South Pars is Iran's largest energy project and has already attracted around \$20 billion in investment. Natural gas from South Pars largely is slated to be shipped north via the planned 56-inch, \$500 million, IGAT-3 pipeline (a section of which is now being built by Russian and local contractors) as well as a possible IGAT-4 line and then re-injected to boost oil output at the mature Aghajari Field (output peaked at 1 million bpd in 1974, but has since fallen to 200,000 bpd) and possibly the Ahwaz and Mansouri fields (which make up

Table 2 - Iran Proven Oil Reserves

Billion Barrels

Year	Iran	Persian Gulf	World	Share of PG	Share of World
1980	57/5	359/80	659/92	15/98	8/71
1981	57	360/46	678/62	15/81	8/40
1982	55/308	367/29	676/70	15/06	8/17
1983	51	368/06	678/47	13/86	7/52
1984	48/5	396/76	707/89	12/22	6/85
1985	47/876	396/23	710/04	12/08	6/74
1986	48/8	399/84	707/84	12/20	6/89
1987	92/85	562/23	897/65	16/51	10/34
1988	92/85	565/28	917/86	16/43	10/12
1989	92/86	654/40	1011/58	14/19	9/18
1990	92/85	656/78	1009/05	14/14	9/20
1991	92/86	655/78	1000/87	14/16	9/28
1992	92/86	656/01	1006/67	14/16	9/22
1993	92/86	657/09	1008/48	14/13	9/21
1994	89/25	653/58	1008/87	13/66	8/85
1995	88/2	652/84	1016/92	13/51	8/67
1996	93	669/64	1037/11	13/89	8/97
1997	93	670/24	1037/79	13/88	8/96
1998	89/7	666/98	1052/09	13/45	8/53
1999	89/7	668/98	1033/98	13/41	8/68
2000	89/7	676/86	1046/19	13/25	8/57
2001	89/7	678/96	1050/31	13/21	8/54
2002	89/7	679/01	1047/70	13/21	8/56
2003	130/7	723/5	1147/7	18/06	11/38

BP Statistical Review of World Energy June 2003

Note: Considering the fact that these tables are mainly based on the information taken from BP Statistical Review of World Energy June 2003, the authors decided to include the data for 2003 provided by BP Statistical Review of World Energy June 2004, while data for previous years are not revised.

part of the huge Bangestan Reservoir in the southwest Khuzestan region). South Pars natural gas also could be exported, both by pipeline and possibly by LNG tanker.

The South Pars development program is already divided into 28 phases. Each phase is to produce 1 Bcf per day of natural gas, 40,000 bpd of condensate and 200 tons of sulfur on a daily basis. In February 2003, Oil Minister Bijan Namdar-Zanganeh officially inaugurated phases 2 and 3 of the South Pars Project, which went on stream in September 2002. Phases 2 and 3 reportedly produce around 2 Bcf per day of natural gas and 85,000 bpd of condensates. On September 29, 1997, Total signed a \$2 billion deal (along with Russia's Gazprom and Malaysia's Petronas) to explore South Pars and to help develop the field during phases 2 and 3. In July 2000, the Italian firm ENI signed a \$3.8 billion deal with Iran to develop the South Pars region for gas. The deal reportedly was the largest between Iran and a foreign company since the 1979 Islamic Revolution. In addition to South Pars, Iran aims to develop the 6.4-Tcf, non-associated Khuff (Dalan) reservoir of the Salman Oilfield, which straddles Iran's maritime border with Abu Dhabi, where it is known as the Abu Koosh Field. NIOC is seeking to develop the Khuff Reservoir, which could lead to the production of 500 Mcf/d of non-associated gas, along with the 120,000 bpd of crude oil, which is currently being produced from a shallower reservoir. Nevertheless, the 47-Tcf North Pars development will be integral to Iran's long-term gas utilization plans. Development plans call for 3.6 Bcf/d of gas production, of which 1.2 Bcf/d would be reinjected into the onshore Gachsaran, Bibi Hakimeh, and Binak oil fields. The remaining 2.4 Bcf/d would be sent to the more mature Aghajari Oilfield.

OECD Oil Imports From the Persian Gulf

The US gross oil imports from the Persian Gulf fell during 2002 to around 2.3 million bpd (almost all of which was crude) from 2.8 million bpd in 2001. The Persian Gulf oil imported by the United States typically comes from Saudi Arabia (69%), with significant amounts also coming from Iraq (20%), Kuwait (10%) and small amounts (less than 1% total) from Qatar and the United Arab Emirates. Iraqi oil exports to the United States fell sharply in 2002 to around 442,000 bpd, compared to 795,000 bpd in 2001. Saudi exports fell from 1.66 million bpd in 2001 to 1.55 million bpd in 2002. On aggregate, the Persian Gulf accounted for about 22% of the US net oil imports and 11% of the US oil demand in 2002.

Western Europe (defined as European countries belonging to the Organization for Economic Cooperation and Development -- OECD) averaged 2.3 million bpd of oil imports from the Persian Gulf during 2002. This marked a decrease of about 0.4 million bpd compared to 2001. The largest share of Persian Gulf oil

exports to Western Europe pertains to Saudi Arabia (51%), with significant amounts also coming from Iran (27%), Iraq (13%) and Kuwait (6%).

Japan averaged 3.9 million bpd of net oil imports from the Persian Gulf during 2002. Japan's oil imports from the Persian Gulf as a percentage of demand were down just slightly relative to 2001, at about 75%. Japan's dependence on the Persian Gulf for its oil supplies has increased sharply since the low point of 58% in 1986. During 2002, around 31% of Japan's Persian Gulf imports came from Saudi Arabia, 30% from the United Arab Emirates, 14% from Iran, 13% from Kuwait, 11% from Qatar and around 1% from Bahrain and Iraq combined.

Persian Gulf Production Forecast

Three scenarios have already been considered for global energy supply and demand by Energy Information Administration (EIA) and American Department of Energy (DOE).

High and low growth cases reflect uncertainty of economic growth. To reflect the uncertainty in forecasts of economic growth, AEO2003 includes high and low economic growth cases in addition to the reference case. The high and low growth cases show the projected effects of alternative growth assumptions on energy markets. The alternative economic variables - including GDP and its components, interest rates, disposable income, population and employment are set up as deviations from the reference case. The three economic growth cases are prepared by EIA and based on Global Insight's macroeconomic model.

The high economic growth case assumes higher projected growth rates for population (1.0 percent per year), labor force (1.2 percent per year) and labor productivity (2.3 percent per year). With higher productivity gains, inflation and interest rates are projected to be lower than in the reference case and economic output is projected to grow by 3.5 percent per year. GDP per capita is expected to grow by 2.5 percent per year, compared to 2.2 percent in the reference case. The low economic growth case assumes lower growth rates for population (0.6 percent per year), labor force (0.7 percent per year) and productivity (1.8 percent per year), thus resulting in higher projections for prices and interest rates and lower projections for industrial output growth. In the low growth case, economic output is projected to increase by 2.5 percent per year from 2001 through 2025 and the growth in GDP per capita is projected to slow down to 1.9 percent per year.

The long-run trend shows an economic growth of about 3 percent per year for the US. Figure 12 shows the trend in the moving 24-year average annual growth rate for GDP, including projections for the three AEO2003 cases. The value for each year is

calculated as the annual growth rate over the preceding 24 years. The 24-year average shows major long-term trends in GDP growth by smoothing more volatile year-to-year changes (although the increase shown for 1998-1999 reflects the negative growth of 1974-1975). Meanwhile, the annual GDP growth has been rather fluctuational. The high and low growth cases capture the potential for different paths of long-term output growth. One reason for the variation of the forecasts is the composition of economic output, reflected by the growth rates of consumption and investment relative to the overall GDP growth. In the reference case, consumption is projected to grow by 3.0 percent per year, while investment grows at a 4.5-percent annual rate. In the high growth case, growth in investment is projected to increase to 5.2 percent per year. Higher investment rates lead to faster capital accumulation and higher productivity gains, which, coupled with higher labor force growth, yield higher aggregate economic growth than projected in the refer-

ence case. In the low growth case, annual growth in investment expenditures is projected to slow to 3.3 percent. With the labor force also growing more slowly, aggregate economic growth is expected to slow down considerably.

History recalls that there have been substantial variations in the global oil prices and there exists similar uncertainty regarding future prices. Three AEO2003 cases with different price paths allow an assessment of alternative views on the course of future oil prices (Figure 13). In the reference case, projected prices rise initially (through 2003), decline briefly (through 2005) and then rise by about 0.7 percent per year to \$26.57 in 2025 (all prices in 2001 dollars unless specified otherwise). In nominal dollars, the reference case price is expected to exceed \$48 in 2025. In the low price case, prices are projected to decline from their high in 2003, reaching \$19.04 by 2010 and to remain at that level up to 2025. The high price case projects a price rise of about 2.9 percent per year from 2001 to 2015, with prices remaining at about \$33 up to 2025. The projected leveling off in the high price case is due to the market penetration of alternative energy supplies that could become economically viable at that price.

Trillion cubic metres

Table 4 – Iran Proven Natural Gas Reserves

Year	Iran	Persian Gulf	WORLD	Share of PG	Share of World
1980	13/73	21/25	74/71	64/64	18/38
1981	13/71	21/48	82/44	63/80	16/62
1982	13/67	21/74	85/90	62/85	15/91
1983	13/59	21/88	90/61	62/12	15/00
1984	13/55	24/58	96/33	55/13	14/07
1985	13/31	24/20	98/66	55/00	13/49
1986	12/74	26/07	102/68	48/89	12/41
1987	13/86	30/61	107/52	45/28	12/89
1988	14/00	32/97	112/00	42/46	12/50
1989	14/16	34/45	112/91	41/10	12/54
1990	17/00	37/13	119/17	45/78	14/27
1991	17/00	36/97	123/97	45/98	13/71
1992	19/80	42/45	138/34	46/64	14/31
1993	20/67	44/14	142/04	46/83	14/55
1994	21/00	44/52	141/02	47/17	14/89
1995	21/00	44/60	139/71	47/09	15/03
1996	21/00	45/07	141/33	46/59	14/86
1997	22/94	48/16	144/76	47/63	15/84
1998	23/00	48/81	146/41	47/12	15/71
1999	23/00	48/81	146/45	47/13	15/71
2000	23/00	51/75	150/19	44/44	15/31
2001	23/00	55/15	155/64	41/71	14/78
2002	23/00	55/29	155/78	41/60	14/77
2003	26/69	70/91	175/78	37/64	15.18

BP Statistical Review of World Energy June 2003

Iran Enters Indian Ocean Oil and Gas Market

IOEC to Deploy a Very Modern Pipelay Barge



Mehrdad Sabbaghi was born in 1960. He has an MSc in Mechanical Engineering. He has been a member of Research Center in New Technology Research Center (NTRC) of Amir Kabir University Of Technology (AUT) from 1995 up to now.

He was Project Manager in Pipelaying Phases 6, 7 & 8 and he is currently RSPPM Project Director.

Sabbaghi was advisor to CEO on R & D from 2000 to 2004. He was the first Installation Project Manager in Abouzar Renovation Project, South Pars Phase I, Abouzar Ext. Project and Bahregansar Project from 1997 to 1999. He is among the founding members of the Installation Department in IOEC Company.

He was Executive Manager & member of scientific committee in International Conference for Promotion of Sustainable New Technologies (ICPSNT), which was Sponsored by ISESCO & AUT in 2001.

Sabbaghi is also a member in Iran-Spain Business Council, Iran-India Business Council and Iran-Netherlands Business Council.

He has published various papers, including "Education Strategy for the Offshore

Industry in Persian Gulf", "Dynamic Response of AB1200 DLB". Section1: "Equations of Motion", "Dynamic Response of AB1200 DLB". Section2: "Simulation & Modeling", "Verifying AB1200 Mooring System to Optimize the Control System of Mooring" and "Analytical Dynamics of Discrete Systems".

Recently a momentous development took place and that being that an Iranian company succeeded in beating American and South Korean firms in the Indian offshore oil and gas market. This Iranian company was awarded the responsibility for implementing one of the most important Indian oil projects.

The name of this project is RSPPM. It is situated in Mumbai oilfield. This undertaking is handled by ONGC, one of the most important companies affiliated to the Indian Oil Ministry. The Iranian company that won the tender bid is the Iranian Offshore Engineering and Construction Company (IOEC).

We have compiled a report on the occasion of this unique accomplishment. We first present an interview with the RSPPM Project Director at IOEC, Mehrdad Sabbaghi and another interview with ONGC's Executive Director Mr. Rayna. Next, some technical information on ONGC's capabilities and a brief account of the technical specifications of the pipelay/offshore construction/accommodation/ barge deployed in the undertaking are presented.

Interview With Sabbaghi

Iran Daily: Tell us more about this contract and your position.

Sabbaghi: I am Mehrdad Sabbaghi, the manager of project RSPPM for Mumbai oilfield, India at IOEC.

IOEC became involved in this undertaking after declaring its qualifications and winning the ONGC's tender bid. I wel-

come this opportunity and congratulate the leader and the nation on this auspicious occasion.

You mentioned that IOEC participated in the tender after it declared its qualifications. Elaborate further.

The Indian Oil Ministry first assessed IOEC. After it was ranked excellent, it participated in ONGC's tender and was awarded project RSPPM.

In order to win this project, we compiled the necessary documentations required by ONGC during a period of two years. This documentation included information on projects already completed by IOEC, such as Abouzar, Behregansar and the 31-inch and 18-inch pipelines for phase one of South Pars Gas Project. RSPPM project is very important for ONGC. IOEC was exactly evaluated as a general contractor. In this period of two years, we gathered a great amount of documentations. After examining them, ONGC verified IOEC as a general contractor and allowed us to participate in Indian tenders.

Tell us about the volume of the project, as well as the period and amount of the contract.

RSPPM project includes 33 pipelines measuring a total length of 154 kilometers and 31 oil platforms, which must be rebuilt, optimized and prepared for pipe laying. This project serves as a link to 12 other undertakings, which are currently underway. Therefore these pipelines and platforms are very important for ONGC. The contract is worth \$163 million, which has the potential to rise up to \$200 million in view of the contingent increases in capacity and the overtime involved. The period of the contract is two years. The operations will be carried out in two phases. The first phase is completed before the beginning of winter in the Indian Ocean and the second phase must be completed before 2006. In view of the

INTERVIEW

vast capabilities of IOEC, we predict that all the engineering phase would be completed in this current Christian year.

Where do the pipes come from and where are they coated?

As mentioned before there is 154 kilometers of pipeline involved in this undertaking. There are various phases at stake, such as design, coating, optimization of platforms and so on. All these phases are carried out inside the country by utilizing the existing capabilities of IOEC. However, in a bid to improve the quality and precision of the project, pipelines will be purchased from abroad.

Will you use your existing means and facilities for offshore pipelaying?

This is a pipelaying project in which we cannot use anchors. We decided to use Jascon-5 pipelay barge, which has been made available to us recently. This vessel is equipped with the latest state-of-the-art technology.

Tell us more about Jascon-5.

This barge is capable of laying pipes in both shallow and deep waters. It has a large hull and can easily be stationed in areas like Mumbai and Salman. It can also remain fixed by virtue of 8 anchors when necessary and carry out the task of pipe laying. A powerful 800-ton crane is installed on the hull. This barge is among the most modern pipelaying vessels of the world.

Give us more information on the issue of increasing the capacity and rebuilding the platforms for this project.

33 pipelines and 33 platforms must be rebuilt and optimized. Oil and gas is transported to the refining platform via a riser.

Did you encounter a tough competition in ONGC's tender?

Some 8 international companies participated in this tender. They were all strong competitors. I must mention here that firms from countries like the US, South Korea, Singapore and Russia as well as strong Indian companies, which typically dominate the Indian contracting scene, participated in this tender. All the companies possessed the means and facilities needed for the implementation of the project. In fact, the good part was that all

participants in the tender, including the US-based Mc Dermot and South Korea's Hyundai, which dominate the Indian offshore market, had some previous experience and the capacity to lay pipes offshore.

IOEC put up a tough competition by using facilities such as Assalouych yard, the coating factory in Khorramshahr, Abuzar barges 110, 114 and 1200 and Jascon-5 pipelay barge. We ultimately broke the monopoly exercised by American and South Korean firms over Indian undertakings.

Which companies dominate the Indian undertakings?

Firstly, I must refer to Mc Dermot, an American firm, which usually participates through two channels, namely the UAE and Australia and which has good pieces of equipment. Next there is South Korea's Hyundai, which has good vessels because South Korea has shipbuilding industry. This company is among the largest offshore engineering companies in east Asia and it has constructed and installed huge oil platforms all over the world, ranging from the Gulf of Mexico to Kuwait. The third company is Larsen & Turbo, which is an Indian general contractor. This company has undertaken various offshore and onshore projects in India. The fourth company is India's EIL, which has the experience of implementing engineering projects worth 200 million dollars. The fifth participant was a Russian company. The sixth company is Singapore's Sembawang Company, another huge offshore engineering company in east Asia. This company has already been a partner of IOEC in Balal project. The seventh company was France's Technip, which is quite reputable at the international level.

We faced a very tough competition from these companies. We beat the runner-up with a little margin. ONGC announced that the offered prices all fell within the project's estimates. ONGC carried out a close examination of the tender documents and naturally IOEC abided by all the necessary standards in presenting the needed documentation.

India's Larsen & Turbo ranked second in the tender. Of course I must mention that Indian companies have an advantage of 10 percent in local undertakings. In other words, in case their offer is 10 percent

higher than the winner of the tender, they can actually win the tender. However, ONGC's project appraisal team declared that IOEC has access to more modern pieces of equipment than Larsen & Turbo and hence the latter cannot benefit from the 10 percent advantage business. The American and South Korean firms were eliminated because they had offered high prices.

Is ONGC considered a state-run Indian company? Who are its managing director and chairman of the board?

ONGC is, in fact, viewed as one of the largest state-run Indian companies. We can compare this company to the National Iranian Oil Company (NIOC). Of course, it is only natural that NIOC is larger and more reputable at the international level. ONGC is quite credible and powerful in India and is vastly supported by the Indian government. In the past couple of years, this company has managed to hold two billion dollars worth of tender in the region.

The managing director of the company is Mr. Rama and its executive director is Mr. Rayna.

IOEC acts as a general contractor in this project. Has the company used any subcontracting?

This is a huge project and it is thus natural that the general contractor shares the work with subcontractors. Our company has also shared the work with subcontractors on the basis of international standards. Some of the subcontractors are Iranian and some are foreign. Our motto is to facilitate the participation of Iranian subcontractors in such undertakings. We are trying to implement this project the best possible way and hence win the trust of India Oil Ministry for future undertakings.

How will IOEC approach the issue of equipping the subcontractors?

Our regional strategy stipulates that we use the services of subcontractors. We intend to form a group of subcontractors, which would operate under the supervision of IOEC. I must also say here that many good Iranian firms are not yet prepared to participate in international undertakings. We tried for 2 years to prove that we are capable of participating in international projects. Naturally, we

will also show the subcontractors what to do to become successful on the international scene.

Did the Iranian Oil Ministry or the Industrial Development and Renovation Organization (IDRO) assist you in winning this tender?

The Oil Ministry and IDRO own IOEC and hence provided us with the necessary advice for becoming involved in the undertaking. However, none of them interfered directly. In fact, their spiritual support led to our success.

Who finances the project?

The Indian tenders are different from other countries. The Indian government itself procures the necessary funds.

This contract is viewed as an undertaking for exports of engineering and technical services. Have the Export Promotion Center of Iran (EPCI) and the banking system supported you?

It is obvious that we need financial support in implementing the project. Thank God Almighty the EPCI and Bank Tejarat have offered us certain facilities, which we hope we can use in due time.

I wish to thank all colleagues who helped us accomplish this great success. I must convey this message that Iranian companies possess the capability to successfully participate in international tenders if they abide by international standards.

Interview With Rayna

Iran Daily: Introduce yourself first and also give us more information about this contract.

Rayna: I am Rayna. I am the executive director of ONGC. I am very happy that this contract has been concluded. This project is very important for expanding the Mumbai oilfield and improving its production capacity. RSPPM project is linked to the undertaking for building 9 new oil platforms and can help increase their overall capacities. We must use a great amount of pipeline in this project to increase the existing capacities for pumping oil and gas. The project that IOEC is handling is very important and connected to 10 other projects, which are being handled by multinational firms. IOEC coop-

erates with all other contractors involved in this project. This is why this undertaking is quite challenging.

Tell us more about the tender.

Many important firms participated in the tender. It was a tough competition. IOEC managed to win the tender by declaring the price range that ONGC had in mind.

How do you see the future in terms of Iranian companies participating in Indian undertakings?

Iranians and Indians are friends for a long period of time. There are many oil and gas fields both in India and Iran. We hope that this cooperation would be two way and that both companies can contribute to the undertakings in the other country. Of course ONGC has carried out a great amount of investments in the commercial sector and has participated in many foreign undertakings. We hope to continue our cooperation with IOEC.

Do you foresee any delays?

One reason we assigned the job to IOEC is that we know this company has the ability to finish the project ahead of schedule.

In view of the fact that an Iranian company has for the first time ever participated in an Indian tender, how do you see the link between the employer and the contractor?

We trusted Iranians and thus awarded them a project. We shall do everything possible to ensure the success of this undertaking. We hope that the project will finish on time so that the Iranian side would maintain its credibility. This way we are also rewarded for the trust we placed in Iranians.

I must say that ONGC is currently active in Vietnam, Sudan and Syria and we hope to become active in the Persian Gulf region.

ONGC's Offshore Capabilities

- 131 well platforms
- 5 well injection platforms
- 28 processing platforms

- 18 jack-up platforms
- 3,200 kilometers of pipeline
- 32 barges
- 4 special vessels

ONGC's Onshore Capabilities

- 225 cases of installation of production systems
- 7,900 kilometers of pipeline
- Water sweetener
- 75 drilling platforms
- 66 control platforms
- 33 seismological units

Technical Specifications

- JASCON-5
- Pipelay/Offshore
- Construction/Accommodation/ Barge

The hull of this vessel is 145 meters in length with a width of 45 meters and a depth of 8.75 meters. The Accommodation Deckhouse, fitted out with every modern comfort possible, is suitable to accommodate up to 350 persons.

Singapore's Sembawang Company constructed the barge. It has a Huisman 800-ton heavy lift crane, a 34-ton pedestal crane and a 33-ton TTS/Norlift pedestal crane.

This barge is a particularly flexible and sophisticated offshore work vessel specifically designed for most sea state conditions and a major variety of work scopes throughout the world.

The pipeline stinger of the barge can lay pipes varying in diameter from 8 inches to 48 inches (maximum coated pipe diameter 60 inches).

The barge is equipped with a Kongsberg Simrad Dynamic Positioning System, which features 8 Azimuth type thrusters type HRP 700, powered by 8 x Caterpillar 3516B diesel engines of 2,100 brake horsepower (BHP) each, controlled by a DP-3 class Kongsberg Simrad dynamic positioning system.

In addition to the DP-system, this vessel is equipped with 8 anchors, which are used for mooring when necessary.

Source: Iran Daily

NOTE: The Map of RSPPM Project is attached to Page No. 82.

Oil And Conflict

A Natural Nexus

The Japanese attack on Pearl Harbor had its origins, at least in part, in a decision by the United States to limit oil exports to Japan in 1941 in response to the Japanese invasion of China. Japan was almost totally reliant on imported oil, mainly from the United States, and it needed oil for its navy.

It concluded that if the American tap was going to be turned off, it would have to get its oil elsewhere. This was a factor in its decision to invade the oil-rich Dutch-held Indonesian islands.

► Coups and Power-Play

Japan still relies on imported oil, but this now comes substantially from the Middle East, another part of the world where oil has long played a vital role. Britain first became interested in the Persian Gulf, because of its maritime interests, long before oil was discovered.

Then, when oil extraction was developed in the 1930s, the strategic value of the region increased significantly. Other powers began to get interested, especially the United States. The West was determined to secure the Persian Gulf as the main source of its energy. Oil played its part in a 1953 coup in Iran - organized by the US and Britain. They managed to overthrow an elected prime minister, Mohammed Mossaddeq and installed Shah Mohammad Reza Pahlavi, whose reign came to an inglorious end upon the victory of the Islamic Revolution in 1979. Mossaddeq's main sin was to have nationalized the British-owned Anglo Iranian oil company.

Just how far the United States was prepared to go for oil was shown by the recent release of documents from the British National Archives.

An intelligence assessment by the British government in January revealed that in 1973 Washington drew up a plan to seize oilfields in Saudi Arabia,

Kuwait and Abu Dhabi to counter an Arab oil embargo against the West.

One recent study paper by an American military analyst even suggests that one day the United States and Europe might be in conflict over dwindling Middle East oil supplies. The analyst, Major Chris Jeffries, assistant professor at the US Air Force Academy, wrote: "Is it unthinkable that the US might enter into an agreement with the Middle East to secure its supply over the interests of the other industrialized nations - including Europe?"

► Persian Gulf Wars

The intervention by the United States and its allies over Kuwait in 1991 was in large part motivated by a need to secure oil and also to prevent Saddam Hussein from expanding his access to it.

And, although the more recent war with Iraq had other motives as well, oil was a factor as the US Vice President Dick Cheney, warning of Iraq's ambitions, said in August 2002: "Saddam Hussein could then be expected to seek domination of the entire Middle East [and] take control of a great proportion of the world's energy supplies..." But, oil does

not just produce outside intervention. It can produce internal abuse of power.

Saddam Hussein himself is a prime example: it was oil that gave him the resources with which to arm himself.

Looking ahead, new areas of interest are opening up, especially the Caspian Sea where a new "Great Game" is developing to mirror the rivalry between Russia and Great Britain in Asia in the 19th century.

One of the countries at the heart of Caspian Sea development is Azerbaijan and it is instructive perhaps to recall that its capital, Baku, was once the capital of the world's oil exports.

That was back in the early 20th Century. Baku became an international city, with grand villas built by locals who had got rich and foreigners who came to get rich. The city even put up an ornate opera house to mark its prestige.

► The New Black Gold

Baku's oil was a target for the German army in World War I and the city was briefly occupied by a British contingent. It was then taken by the Soviets, equally keen on getting at the black gold.

Hitler aimed for it again in World War II and predicted that if Germany did not get oil from the Caucasus Mountains it would lose the war.

Looking even further ahead to when the oil runs out or at least significantly runs down, it may be that the world turns again to nuclear power. In which case those countries with uranium deposits would become among the most attractive. The top ten are: Australia, Kazakhstan, Canada, South Africa, Namibia, Brazil, Russia, USA, Uzbekistan and China.

Source: Petroenergy Information Network



Foreign Investments Revisited

*Director General of Foreign Investments Bureau at the Ministry of Finance and Economic Affairs Seyyed Ahmad Mortazavi, in an interview with *Eqtasad-e Iran* monthly (October issue), discussed the past and present developments in attracting foreign investments, differences among foreign investment approaches adopted in the course of the first, second and third economic development plans as well as the impact of domestic and foreign politico-economic affairs on attraction of foreign investments. Full text follows:*

EQTESAD-E IRAN: Would you explain about the history of foreign investments in Iran before and after the victory of the Islamic Revolution, the differences in the type of contracts as well as the plans made and methods used for attraction of foreign resources.

Mortazavi: The history of foreign investments in the country goes back to the time when the first foreign contracts were signed in Iran. In fact, although the country's Trade Law was approved in 1931, we had no concrete laws on foreign investments till 1955. In this year, the law for attraction of and support for foreign investments was approved. The number of foreign investment projects reached 250 during 1955 to 1978, 90 percent of which were concluded in the production sector. The total value of these 250 projects was \$850 million, about \$300 million of which pertained to petrochemical projects carried out by Iran and Japan. In the early days of the 1979 Islamic Revolution, the dominant revolutionary atmosphere in the society led to nationalization of some foreign assets. In wake of the emergence of the Iran-Iraq War (1980-88) and due to absence of new laws or policies for the attraction of foreign investments, the first and second economic development

plans merely contained cursory referrals to foreign investments. This type of approach in itself led to a 14-year postponement in attracting foreign investments. However, since 1993 and after experts and officials reached an understanding on Article 81 of the constitution, according to which establishment of foreign companies is not regarded as monopoly and hence not unconstitutional, the then High Council of Investment issued a ratification for the elimination of foreign investment obstacles.

How did this ratification change the trend of foreign investments during 1993-2003 (a 10-year period)?

Ever since this ratification came to the fore, foreign investments in the country

took an upward trend. During the second half of 1993, Greece and Italy were the first countries to announce their preparedness for making investments in Iran. In 1994, requests came in from Singapore, Cyprus and South Korea. Requests for foreign investments reached seven cases in 1995, 12 cases in 1996 and 21 cases in 1997, marking a significant increase compared to the preceding years. However, in 1998 the trend of foreign investments slowed down and the number of cases of foreign investments suddenly dropped to five. Then the figure increased to 18 cases in 1999 and 22 cases in 2000. However, the number of cases decreased again in 2001 and reached 11. The highest number of foreign investment cases was registered at 38 in 2002. During the first quarter of the Iranian year 1382 (started March 21, 2003), we had six cases of approved foreign investments in the country.

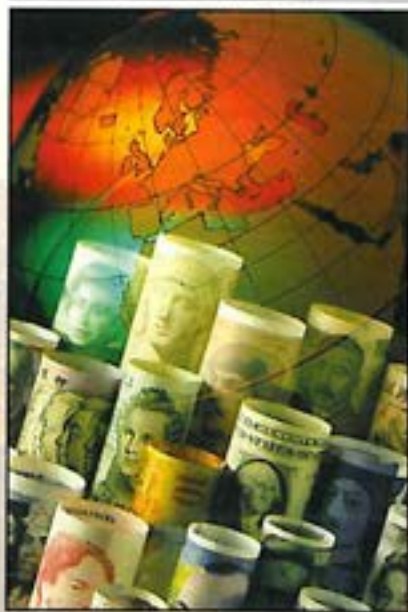
What was the total value of the 38 approved foreign investment plans in 2002?

Following the ratification of the new foreign investment laws, about \$4.5 billion of foreign participation in domestic projects was approved, \$3.3 billion of which has so far been realized. In other words, 80 percent of projects have been completed or are being implemented.

What factors affect the approach taken by foreigners and enhance their incentives for investing in Iranian undertakings?

The issue of multiple foreign exchange rates and the very characteristics of the national economy during the past years led to a situation wherein no potential investor was willing to make an investment through utilizing its own resources and the main concern was to obtain inexpensive foreign exchange from the Ministry of Industries and Mines. For this reason, there prevailed no firm will for attracting foreign investments. On

The highest number of foreign investment cases was registered at 38 in 2002.





the other hand, when there arose a discussion about technology and industrial developments in advanced nations, the dominant viewpoint was that purchasing technology from abroad would essentially curb the need for presence of foreign investors in Iran. Meanwhile, the issue of exports was not considered seriously at the time either. All in all, these factors led to a 14-year postponement in attracting foreign investments. The phenomenon of absence of coordination between our management system and methods and global developments actually started from this time. In fact, neither was the subject of exports heeded nor was any attention paid to the country's share in the global markets.

Do you mean that managerial, technical, political and culture parameters and even the attitudes of policymakers played a considerable role in relation to the presence or absence of foreign investors?

Yes. All these factors played a role. However, from the outset of the Third Economic Development Plan (2000-5), the viewpoint of the officials changed, thus leading to adoption of specific policies for attraction of foreign investments by the government and the Majlis, which were ensued by a sudden influx of foreign investments.

Why did the Second Economic Development Plan (1995-2000) ignore the issue of promotion of foreign investments?

It made some cursory referrals to the issue, but the main stress was on finance and buy-back schemes and the government was under no obligation with regard to adoption of a policy vis-à-vis foreign investments. In fact, the term 'foreign participation' was taken to mean borrowing from other countries rather than accepting

Expatriates no longer view Iran as an unsafe place for investments

the risk of foreign investments. In other words, during the first and second development plans reaching a conclusion on government's revenues and expenses was only a dream and there was no planning or policymaking to provide the suitable ground for the attraction of foreign financial resources. In absence of the suitable ground, the presence of foreign financial resources was not possible. During the First Economic Development Plan (1989-94), outward stress on foreign investments was used as an excuse for borrowing \$30 billion, but no foreign investments were made. However, the third plan took a considerable turn with regard to foreign trade in the form of liberalizing foreign commerce and changing the system's approach from non-tariff obstacles to tariff-based obstacles. Before that, certain laws were approved under the pretext of supporting domestic production that impeded imports or other economic activities. Furthermore, more attention was paid to the topic of privatization during the Third Plan. Unification of the foreign exchange parity rate and improvement of direct taxes were among the most important economic infrastructures that eventually paved the way for the appraisal of feasibility studies on various developmental projects. Reduction in the rate of income tax, on the one hand, and establishment of self-declaration system, on the other, were other basic developments that affected the increase in the number of foreign investments. It should also be



mentioned that the third plan, for the first time, paved the way for foreign investments in such sectors as telecommunications, energy, road and transportation and also facilitated the establishment of private banks and non-bank credit institutes as well as other infrastructural projects. These factors, along with the ratification of the new laws for attraction of foreign investments, eventually prepared the ground for expansion of investments in general and foreign investments in particular. Hence, since the beginning of 2002, 44 cases of foreign investments have been approved, which are equal to one-third of the past 10-year performance of the sector. **It is generally believed that the capital owned by the expatriates stands at \$400 billion. What plans have been made for the attraction of this capital and have the expatriates been enthusiastic about investing in projects in their motherland?**

I am not sure about the authenticity of this information. I have even heard that the figure is as high as \$600 billion. Of course, figures are not an issue here, but the main problem is that Iranians prefer to invest their money in places other than Iran. If we come up with a suitable solution and succeed in redirecting the expatriate capital into the country, investments in Iran would increase considerably. I personally think that due to recent developments, expatriates no longer view Iran as an unsafe place for investments. The conditions at the Tehran Stock Exchange (TSE) are sufficient proof for this claim. When foreigners bring their money here without any fears, then Iranians should have no fears either. Of course, we must strengthen the information system and hence publicly announce that the related governmental policies have changed.

A Shell-Style Crisis

It was Benjamin Disraeli who first coined the famous phrase "There are three kinds of lies: lies, damned lies and statistics". But the mantra did not become part of the popular lexicon until American author Mark Twain got hold of it. He used it to sum up the persuasive power of authoritatively made numeric presentations to a largely innumerate public. If the whole Shell debacle has taught us anything, it could be that the power of the glib over the gullible still holds sway a century later. First off, Shell's lies. There are any number to choose from, but consider one contained in Shell Transport and Trading's 2002 annual report and accounts by former chairman Sir Philip Watts.

"In times of uncertainty, what counts is being trusted to deliver. As the long-standing slogan said, we want people to know they 'can be sure of Shell'. I believe that our performance last year helps us earn and keep that trust."

Now for the damned lies, one handily provided by a Shell press officer following a shattering downgrade of the company's proven oil and gas reserves. "No one is going to lose their jobs and there is no need to panic." And finally the statistics. In its 2002 annual report and accounts, Shell stated it had 19.4 billion barrels of proven oil and gas reserves. In the same year, Sir Philip took home £1.79m, of which £874,000 was 'performance-related'. Following a devastating series of downgrades, reserves now stand at closer to 15 billion barrels; Sir Philip along with Chief Financial Officer Judy Boynton have been kicked out of the company and Shell is facing numerous lawsuits from outraged US investors.

The UK's financial Services Authority got into the act recently Friday.

The watchdog said it is formally investigating oil giant Shell following the shock downgrade of its reserves. Simon Culhane, the new head of the Securities Institute, a leading organization for promoting ethical behavior, has also criticised Shell's cover-up of its oil reserves shortfall and claimed it could be a "watershed" in British corporate ethics.

The company has lost the trust of shareholders and the fallout has sent the oil and gas industry reeling. The price of crude is edging ever higher beyond the symbolic \$30 per barrel mark and the reputation of the UK and Dutch business has taken a kicking.

The executive summary of Shell's internal investigation revealed the full extent of the concerted attempts by senior management to hide the reality of the company's reserves. The most damning aspect of the report is that the cover up has been going on for years. Watts emerges as villain-in-chief, with the then exploration head Walter van de Vijver as his unwilling accomplice, desperate to come clean about the problem but somehow held back - either by fear of Watts himself or by his ambition to one day replace him.

In one e-mail Van de Vijver told his boss: "I am becoming sick and tired about lying about the extent of our reserves issue and the downgrade revisions that need to be done because of far too aggressive/optimistic bookings."

But much of the original report, drawn up by the US law firm Davis Polk and Wardwell with the help of Shell staff, was suppressed at the bequest of the US investigators. The full report will show that the nightmare foisted upon the company by Watts could still have some way to run.

Although the bulk of the blame for Shell's current problems is laid at the door of its old management, the new band of executives do not escape censure. New group chairman, Jeroen van der Veer and the company's new exploration head, Malcolm Brinded, were both aware of the reserves issue for a considerable time. As early as February 2002, Van der Veer was sent a note saying 2.3 billion barrels of the company's reserves might have been booked in breach of the US securities law. But it didn't stop him, as chairman of the Dutch half of Shell, signing off the accounts for that year.

According to the published report, in July of the same year, Brinded, in a meeting with Shell's committee of managing directors, outlined a strategy to manage the problem of over-booked reserves. Despite the obvious failings of the command chain, there still appears to be reluctance at the top to alter the company's management structure. Lord Oxburgh, the chairman of Shell Transport and Trading, told analysts last week it was due to "human failings, not structural deficiencies". Unfortunately for Shell, nobody believes him.

Ratings agencies Moody's, Standard & Poor's and Fitch have all kicked the company down a notch, depriving it of its treasured AAA credentials.

Analysts critical of Shell's bloated management structure highlight comments made by Van de Vijver in the DPW report. He claimed he couldn't blow the whistle because of an "unspoken rule within the company that you are not supposed to go directly to board members or to the group audit committee".

It also transpired that the group's reserves auditors answered to the head of exploration and not Shell's group chief financial officer - the director responsible for the company's regulatory filings. To muddy the waters further, the unnamed individual employed to check the company's reserves was a part-time retired employee who checked each field only once every four years. In the report he claims he would have been sacked if he had raised the importance of complying with US securities guidelines.

The pressure Shell evidently felt to massage its reserve figures stemmed from before Watts was appointed. Peter Nicol, an analyst at ABN Amro in London, said: "They made a hell of a lot of poor decisions in the early 1990s." While BP, Total and others were opening new offshore areas, Shell was focusing more on finding smaller fields near existing ones. It missed out on the mega-mergers of the 2000-2001, meaning it dropped from first to third place among the super-majors.

Analysts point to other ways Shell was also failing to react to a changing global market. For example, it started developing an

alliance with Russian gas giant Gazprom seven years ago. The two are still talking. BP, meanwhile, has done two Russian deals.

Watts was supposed to streamline Shell's decision-making process. The company's directors had gone out on a limb to appoint him in 2001. Watts had made his name in the company ruthlessly driving down costs of the exploration arm while still getting the exploration results.

Jon Rigby, an analyst at Commerzbank, asserted: "He was punchy and I think a lot of people were fairly relaxed about him as the new chairman."

But within months, the holes started to show, both internally and externally. Shell missed a string of targets for oil and gas production and then continued to underperform its peers in the upstream. Soon after Watts took the top job, the new exploration head, Van de Vijver, realized he had been passed a poisoned chalice. By late 2003 he was lambasting Watts for his "far too aggressive/optimistic booking", which made it impossible to match the upstream performance of its peers and forced him to lie to investors about the reasons behind it. Analysts were in the dark. "The truth is disclosure was so poor that we didn't suspect anything," noted JJ Traynor at Deutsche Bank. "We knew something was wrong," argued Fadel Gheit at the Oppenheimer brokerage in New York, "but we didn't think the numbers were exaggerated, embellished or overstated."

Shell's non-executive directors fared little better at unravelling the web of deceit spun by the executive management.

Lord Oxburgh observed: "The audit committee was indeed seeking to probe the question of reserves. I'm sorry to say it seems to have been given incomplete answers by the executives." Investors are unlikely to accept that as a decent excuse.

Even with Shell's new levels of disclosure, the company will have to work hard to win back investors' trust, whether with regard to future performance, governance or its corporate structure.

In terms of performance, Brinded has a long road ahead to bring the exploration and production department up to the standard of its peers. "Disclosing the facts and circumstances behind the disaster and the reserve problem doesn't solve it," recalled Irene Himona, an analyst at Morgan Stanley, adding: "The operational problem is very serious. To stay still they have to replace 100% of production.

Over the past five years their average has been 60%."

It's easy to overestimate the company's problems. As Shell's first quarter results demonstrate, it is still capable of generating cash on a vast scale - somewhere between \$3-\$4bn this quarter, according to analysts. Production levels are set to be flat this year, sinking into a decline in 2005, but Brinded said he was confident the company had set up long-term projects, such as Russia's Sakhalin, that were as good as any in the industry.

Even if performance does start to improve, investors will still try and force through major structural change at Shell. But the company is already implementing change. Van der Veer has rolled out a long list of reforms designed to improve the way it assesses reserves and tighten up its reporting lines to prevent a similar scandal occurring again. Reserves auditors will be independent of the exploration company's management, reporting instead through the group CFO to the audit committee. Internal guidelines for reserves bookings have been brought into line with those of the SEC and staff will be trained in the new rules.

In addition, more resources will be employed for evaluating reserves. Each field will now be assessed every other year, major ones annually and external experts will double-check decisions. But, so far there are few signs that Shell's dual board structure will be reformed and investors will have to wait until the company's AGM on June 28 for further proposals.

Institutions want to abolish the firm's dual listing, the collegiate nature of the CMD, where the chairman is only first among equals and the semi-independence of different divisions within the group. But, the noises coming from the company suggest it is unlikely to follow its Anglo-Dutch peer Unilever and unify its two boards.

If Shell turns down investors' ideas, it won't be the first time. When the management consultancy McKinsey recommended in 1959 that two parent companies should share one chief executive and one chairman, Shell turned it down in favor of keeping the CMD. Whether it can afford to ignore advice this time, is much less certain.

Source: Petroenergy Information Network

Shell to Pay Big Fine for Delays in Iranian Project

Royal/Dutch Shell will pay a big fine to the National Iranian Oil Company (NIOC) for every percent reduction in the capital recovery rate due to delays incurred in exploiting Iran's Soroush and Norouz oilfields.

NIOC's managing director, Mehdi Mir-Moezzi, commenting on the reasons behind delays by Shell in exploiting Soroush and Norouz oilfields, in July noted, "I don't have any information about Shell's latest plans."

He went on to observe, "The definite fine is that Shell's capital recovery rate has gone down in wake of delays. In other words, if at the beginning this rate was expected to hit 16 percent, it has reduced by two or three percents by now. This is a major loss for Shell in the over one-billion-

dollar project for development of Soroush and Norouz oilfields."

Shell undertook the task of developing Soroush and Norouz oilfields in 2000 after it concluded a buy-back contract with the NIOC worth a final value of \$1.4 billion. Based on the contract, Shell should have increased production from Soroush and Norouz oilfields from 60,000 barrels per day to 190,000 bpd by July 2004. This is while Shell has announced that the project will not be operational until the end of the current Iranian year (March 20, 2005).

Source: Iran Offshore News Desk



Iran-US Oil Platform Dispute Still Lingers

On October 17, 1987, the US attacked Iran's Resalat and Reshadat oil platforms in the Persian Gulf. Six months later, the US missiles hit Iran's Salman and Nasr oil platforms also located in the Persian Gulf. In Oct. 1992, the government of Iran filed a complaint with the Hague International Tribunal, which is the sole competent source to attend to Iran-US disputes in accordance with the Iranian-American Governments Friendship Accord signed in 1955. On Nov. 6, 2003, the tribunal issued its final verdict. In view of the technicalities involved in this verdict and also the impact of this issue on the future Iran-US relations, Petroenergy Information Network (PIN) conducted an interview with Dr. Seyyed Mosatafa Zeinoddin, Head of Legal Affairs Bureau of the National Iranian Oil Company. Excerpts follow:

PIN: In its defense at the Hague International Tribunal, the US described its military action against the Iranian platforms as legal on the basis of Article 51 of the UN Charter. America argued that it had legitimately defended its fundamental rights and hence rejected Iran's claims about the attacks being illegitimate and the Iranian-American Governments Friendship Accord. Would you elaborate more on this issue?

Zeinoddin: During the 11 years that have elapsed so far and especially since the last hearing held at the tribunal in March 2003, the US, in its official defense and also informally, has insisted that it legitimately defended its interests against Iran's attacks on ships that carried US flags or were owned by the US in the Persian Gulf.

What is Iran's reaction?

The Islamic system has endeavored to reject this claim and also clarify that tension prevailed in the region at that time because Iraq had invaded Iran and occupied some Iranian territories. In its defense, Iran has specially referred to the advanced equipment that the US made available to the Iraqi regime at that time.

America has argued that based on Article 20 of the Iranian-American Governments Friendship Accord, the attacks on the American ships implied that its interests had been endangered and that the destruction of the Iranian oil platforms was a move to uphold the US brand of interests and hence the US had not breached the accord. Could you explain?

The US claimed that its military action was in line with the concept of upholding its brand of interests and hence could not be interpreted as a breach of the friendship accord, on the basis of which the Hague International Tribunal is qualified to attend to Iran-US disputes.

Did the tribunal accept this line of reasoning?

Based on the verdict issued, the US military action is not viewed as a move for upholding its security interests and hence contradicts the international notion of legitimate defense.

The tribunal did not characterize the US military action as legitimate defense but it also rejected Iran's claim of compensation. Why?

According to the tribunal, Iran's claim of compensation on the basis of the friendship accord is not valid. The US attacks on the oil platforms was not legitimate, but freedom of trade between the two countries was not violated either. Let me explain. In 1987, the US attacked Reshadat Platform, which was under repair and had no oil output at the time. When the US attacked the Salman and Nasr platforms in 1988, the US and Iran did not trade oil

due to the economic sanctions imposed by the US against Iran. Therefore, the US attacks against the Iranian platforms cannot be interpreted as the breach of freedom of trade on the basis of the friendship accord, which in itself stipulates that the tribunal is the only competent source to attend to Iran-US disputes. Therefore, the tribunal rejected Iran's compensation claim in compliance with Article 1 of the friendship accord.

Could you tell us more about Iran's defense at the tribunal in relation to attacking the American ships in the Persian Gulf?

Iran has argued that at that time it was a matter of expedience for Iraq to threaten freedom of shipping in the Persian Gulf waters while Iran solely relied on Persian Gulf for its oil exports. Of course, the US rejected a large bulk of information and pieces of evidence, including the remarks made by senior Iranian officials. At any rate, after three weeks of hearings in 2003, the tribunal declared that the US claim against Iran was insufficient on the basis of satellite pictures and other documentations.

Can Iran claim compensation through means other than the Hague International Tribunal?

Yes. In view of the fact that the US has reported to the UN Security Council that its military action against Iran was an act of legitimate defense, it is possible that Iran officially file a complaint with the council and also stress that the Hague International Tribunal had viewed the US move as contradictory to international laws. Iran should argue that based on international norms and standards it deserves payment of compensation. It is also possible that Iran request that the dispute be handled by another legal source that both the US and Iran agree on. Furthermore, the US courts have in the past years issued many verdicts against the Islamic system and hence we could and should discuss the issue of compensation for our oil platforms in our contingent talks with the US officials.

Translation: Iran Offshore News Desk



A Concise Account Of Iran's 20-Year Development Outlook

Based on Iran's development outlook for 2005-2025, in 2025 Iran will be an advanced country with a superb economic, scientific and technological status in the region, also known for its revolutionary and Islamic nature and will engage in constructive interaction at the international level. Although the general outlines of the outlook have been published as a document, it is important to have a brief glance at its salient features.

To realize the projected goals for the said period, the optimal picture of Iran's oil and gas sector is presented as follows:

- Ranking first in producing petrochemical products in the region in terms of value.
- Ranking second among OPEC crude producers with the capacity to meet 7 percent of global demand.
- Ranking third among gas producers worldwide accounting for 10 percent of global gas deals.

Goals and Policies

Hydrocarbon resources are the major assets of the country. Oil and gas industries are considered the backbone of national development as they create new opportunities for the country's senior managers to diversify national economy and also to bolster national security. Therefore, oil production capacity is the most important factor for upgrading the country's strategic capabilities.

Oil, gas and petrochemical industries must increase their potential and strategic capabilities by relying on revenues earned through value added of oil resources, through pursuing the follow-



ing goals and policies within the framework of the national macro policies:

1 Upgrading oil, gas, petrochemical and refining companies and promoting them to the level of international corporations, which would be capable of withstanding global competition as well as clarification of the financial relationship between the government and oil and gas sector on the basis of trade principles.

2 Maximizing domestic oil and gas industry's value added through synergism of relative advantages by developing investments in oil and gas resources and industries, refining, petrochemical industries, energy-intensive industries as well as maintenance industries and engineering services.

3 Supporting domestic private sector's activities in oil industry, especially in oil trade and downstream industries, maintaining oil industry as well as offering contractor, technical and engineering services with the goal of further presence of the Iranian companies at the regional and international markets.

4 Creating a center for attraction, production, transfer and promotion of new technologies regarding oil, gas, refining and petrochemical industries in the Persian Gulf region through constructive interaction with countries influential in oil and gas technology at the global markets and bolstering research, scientific, technical and development centers and research and development (R&D) departments engaged in oil, gas, refining and petrochemical affairs through utilizing information technology while expanding cooperation between companies and international scientific and research bodies.

5 Protecting foreign investments aimed at developing oil,



gas and petrochemical industries and production of oil products.

6 Supporting joint investments by regional countries or merging companies active in petrochemical or downstream oil industry with the ultimate goal of establishing major companies at the global level.

7 Creating a center for financial services, money, capital, insurance, stock, commodity as well as oil and gas equipment markets and providing the necessary services to regional countries through such markets as well as establishing a center for attracting investments and providing the needed financial resources from global markets through establishing joint financial institutions.

8 Participation in and development of regional and international cooperation in exploration and exploitation of oil and gas reservoirs as well as upstream and downstream investment plans in other countries, especially regional and Asian states, in order to guarantee the market and bolster international interaction.

9 Replacing export of oil, gas and petrochemical products for crude and natural gas exports and supporting downstream production links in oil, gas and petrochemical industries.

10 Active presence in the global oil and gas markets, taking advantage of the country's unique geopolitical situation for transfer of crude oil, its products, natural gas and petrochemical substances and swapping crude oil to be refined by domestic refineries.

11 Concentrating on establishment of the needed infrastructures for development of oil, gas and petrochemical industries and energy-intensive industries in suitable regions of the country prioritizing northern coasts and islands of the Persian Gulf.

12 Optimizing energy consumption along with reducing intensity of consumed energy by all economic sectors of the country.

13 Iranian Investments by Iran in oil, gas and petrochemical sectors of other countries.

First Step

Realization of the following goals by 2015 is the requisite for achieving the long-term objectives of the abovementioned outlook:

1 Increasing crude oil production capacity to 5.5 million barrels per day by the end of the fourth economic development plan (2005-2010) and to 7 million barrels per day by 2015.

2 Daily production of 900 million cu. m. natural gas by 2015.

3 Realizing the annual production of 20 billion dollars of petrochemicals by 2015 through developing petrochemical industries, which consume gas as the main feed.

4 Paying special attention to energy-intensive industries (with projected energy consumption of at least 100 million cu. m. per day) to earn more value added.

5 Attracting foreign investments and financial resources to guarantee the market and bolster international interaction to support them and use them for development of oil industry in line with the realization of 100 billion dollars of investments in oil industry by 2015.

6 Increasing the country's refining capacity to about 1 million barrels a day by prioritizing refining gas liquids and super-heavy oil with the ultimate goal of reaching a total refining capacity of about 2.3 million barrels per day and optimizing existing refineries to produce lighter products and reduce mazut production.

Source: Iran Offshore News Desk

Legal Framework for Foreign Participation In Nat'l Oil, Gas Undertakings

By Reza Pakdaman

It cannot and should not be doubted that the oil and gas sector has been the most appealing category for foreign investments in Iran in the past 50 years.

However, due to different reasons, such as the victory of the Islamic Revolution and the Iraqi-imposed war (1980-88), the flow of foreign investments in this sector has declined significantly during the past 25 years or so.

Despite the growing demand for development of foreign investments in oil-related projects, mainly offshore undertakings, in Iran and the rapidly declining investment opportunities in the global oil industry, foreign investments in the national oil industry have been very much lower than expected.

The main reasons behind this situation from the legal point of view can be categorized into two groups.

Firstly, the US has been imposing economic sanctions on major and vital services and industries in Iran and hence preventing other independent countries from pursuing normal economic relations with Iran, through diplomatic efforts as well as making legislations such as Iran-Libya Sanctions Act (ILSA) of 1996.

This US policy is still in effect despite the fact that the US is the pioneer of the notion of free market economy in the world. Although America claims to promote international business, it has shown on several occasions that, for political reasons, it is ready to ruin the social and economic achievements of others and also force the other countries to unconditionally follow its policies.

This policy of the US to restrict investments in the Iranian oil and gas projects blatantly contradicts the guidelines set by the UN and also its own commitments towards the World Trade Organization (WTO).

The good omen is that except the two conservative countries of Japan and Canada the rest of the industrial world has

essentially ignored the US Iran policy and has increasingly been participating in Iranian oil and gas undertakings.

The second reason for the very slow attraction of foreign investments in the national oil and gas projects is the prevalence of an inadequate legal environment in Iran.

After the 1979 Islamic Revolution, a general conservative attitude was adopted toward natural resources, mainly oil reserves, and even private investments by Iranian companies in this sector were limited to the lowest levels. This tendency has been actually reflected in the Iranian Constitution.

Article 44 of the constitution stipulates that a wide range of major industries and services, such as mines, banks, insurance companies and power plants are nationalized. Interestingly enough, oil, gas and petrochemical industries are not mentioned in this article, but the general attitude is that this sector is somehow subjected to the implications of this article.

Due to the above-mentioned constitutional restriction, up to now the methods utilized for concluding contracts with foreign oil and gas companies have been limited to either buy-back contracts, with their special terms and conditions or normal service contracts, which may take various forms, including EPC, EP, E and EPDC.

The main projects in the oil and gas sector, especially the offshore undertakings, are in the form of buy-back or EPC.

(An outlook of current offshore projects in Iran is annexed to this article).

The plain truth is that the other methods of contracting, which are widely practiced worldwide, are prohibited in Iran. These methods are: concessions, production sharing contracts and profit sharing contracts.

During the last few years, it has been endeavored to further develop the general

framework of doing business with foreigners and a great deal of attention has been paid to industrial projects, especially in the oil, gas and petrochemical sector.



The major breakthrough was the ratification of the 'General Policies of the Islamic Republic of Iran' by the Leader of the Islamic Revolution Ayatollah Seyyed Ali Khamenei in March 2000. This ratification has paved the way for further developments, within a legal framework, for foreign involvements in the national oil industry, more notably in upstream projects. The section on 'General Policy for Oil & Gas Sector' underlines efforts for organizing the framework of plans for absorbing the required domestic and foreign financial resources in the oil and gas sector. Moreover, other clauses of this major policy-making document explicitly give signals for attraction of more foreign involvements. For example, clauses two and three underscore enhancement of oil and gas capacities while Clause 4 specifically highlights upgrading technology in the oil, gas and petrochemical sector as the main policy of the country.

In wake of the compilation of the 'General Policies of the Islamic Republic of Iran', the overall attitude of the decision-making bodies of the country vis-à-vis the issue of foreign involvements in oil & gas projects has changed dramatically.

The good case in point is the replacement of the previous laws on foreign investments, which was in force for around 50 years, with a new set of regulations, which was passed by the parliament in March 2003.

According to Article 3 of this law, the acceptable foreign investments will be provided with the needed facilities and protections. Such foreign investments may be attracted by virtue of two methods:

- ★ Direct foreign investments in sectors in which the activities of the private sector are permitted.

- ★ Foreign investments in all sectors in the forms of 'partnership', 'buy-back' and 'B.O.T' while capital recovery is guaranteed by government, banks or state companies.

The Council of Ministers passed a resolution with regard to modes of investment on July 9, 2003. According to the second item of this resolution, the state-run companies can utilize partnership, buyback and B.O.T methods for procuring the required financial resources.

Based on Article 3 of this resolution, the government has no obligations to provide guarantees for the following cases:

- A) Losses caused by the failure of the foreign investor in fulfilling its contractual obligations.
- B) When the responsibility of the investor in exploitation of the project has been fulfilled.
- C) Force majeure losses incurred by investor.

Meanwhile, according to Article 4 of the resolution, the guar-

antees provided by the government are not viewed as commercial-oriented.

Article 11, which is the last item of this resolution, instructs Iranian companies that "if possible", they should choose Iranian laws and Iranian courts as the governing set of laws and the authority for arbitration of disputes when they arise. The phrase "if possible" essentially considers the alternative of choosing foreign laws and foreign courts in international contracts, which is indeed a major change in the attitude of the Iranian decision-makers toward international contracts.

Another law, which deserves a mention here, is the law passed in 1997 permitting registration of branches and representative offices of foreign companies in Iran. In addition to the general rules and regulations concerning foreign investments, the oil sector is privileged with the benefits of a specific legal framework.

The law on Statute of National Iranian Oil Company (NIOC), as ratified in 1977, consigns special authority to the NIOC's General Assembly, which comprises seven ministers who pass regulations in relation to the oil industry. Therefore, the

general rules & regulations on Iranian state companies do not govern the oil industry, unless expressed otherwise. This has in itself facilitated a more flexible legal environment in the national oil industry.

The latest development within the legal framework of economic activities in Iran is the ratification of the 'General Leadership Policies' on Dec. 2, 2003. This ratification has also been considered in compiling the outlines of the fourth development plan.

It is worth mentioning that the Third Development Plan (2000-5) is currently in its fourth year and next year will be its final year and hence the fourth development plan will commence in 2005 if ultimately ratified.

Article 44 of the 'General Leadership Policies' underlines promotion of economic activities in which the country has a comparative advantage; specifically in the oil, gas and petrochemical industry. Article 24 of this ratification stipulates that promotion and attraction of foreign investments and resources as well as high technology is the other main national policy in the domain of economy.

Overall, the legal framework for participation of foreign companies in Iran's oil and gas projects seem to be suitable enough although some lengthy administrative procedures have caused inefficiencies in the tender stage as well as the execution phase of projects on behalf of various decision making authorities and need to be rectified urgently.



Annexation: An Outlook of Current Offshore Projects in Iran

South Pars Gas Field

South Pars Gas Field is located in the Persian Gulf near the sea border with Qatar. It is the major offshore development project in the country, which so far has been divided into 24 phases. Most phases are under execution and at present phases 15 and 16 are tendered by the NIOC.

Salman Oil & Gas Fields

The remaining oil reserves of Salman Field are estimated to stand between 450 to 570 million barrels. Based on further studies and reservoir modeling, the oil-in-place reserves and the recoverable reserves will be determined. The gas-in-place of Dalan formation is estimated about 7.7 trillion cubic feet. Based on a 56.2% recovery factor, some 4.3 trillion cubic feet of the said amount will be recovered.

By completing the reconstruction of and other works on the existing wells, crude oil production from the fields will increase by 50,000 bpd and the gas output from Dalan Gas Reservoir will increase to 500 million cubic feet per day.

Salman's combined oil and gas reservoirs are adjacent to Iran's marine border with Abu Dhabi at Abul-Bakhoush Field, some 142 km from the Lavan Island.

Petrolran Development Company is the general contractor of this project, which comprises 3 phases. The main contractors of phases 2 and 3 are SADRA and IOEC, both of which are Iranian companies.

Balal Oilfield

Recoverable crude oil from Balal reservoir is estimated at 117 million barrels, which will be accomplished by the injection of 50,000 barrels of water per day. Balal Oilfield is located about 100 km southwest of Lavan Island at the geographical coordinates of 26 degrees 19 minutes north and 52 degrees 32 minutes east in the Persian Gulf in the vicinity of marine border with Qatar.

Elf Petroleum Iran (46.75%), Bow valley Iran Ltd. (15%) and Agip Iran B.V. (38.25%) are the general contractors.

Farzam & Nosrat Oilfields

The oil-in-place volume of Farzam Field, within the boundaries of Iranian waters, is estimated to be around 259 million barrels. With the implementation of the development operation, the total output of Nosrat Field will be augmented by 38.7 million barrels and will reach 58.7 million barrels while its daily output will increase from 5,000 barrels to 16,500 barrels. Moreover, production at Farzam Field is expected to increase to 15,000 barrels per day.

Farzam Field, with an estimated area of 15°12 km, is the

extension of Dubai's Fallah Oilfield covering an area to the southern boundaries of Sirri A Field. Similar to Farzam Field, Nosrat Oilfield is adjacent to the UAE's marine borderline and is located some 22 km south of Sirri Island.

Petrolran Development Company (PEDCO) is the general contractor.

Sorouh & Norooz Oilfields

Sorouh has an estimated oil-in-place of 7.5b barrels, some 6.5% of which will be recovered, upon utilization of enhanced production techniques, Norooz Field has oil-in-place and recoverable reserves of 1.9b and 550 million barrels respectively.

The objective of the development operation is to reach a final combined output of 190,000 bpd from the two fields—100,000 and 90,000 barrels from Sorouh and Norooz respectively. The initial production from Sorouh in the first 24 months following the effective date of the contract will be 60,000 bpd.

Sorouh Oilfield is some 50 km west-southwest of Kharq Island.

Norooz Field is situated in the northwest of the Persian Gulf, some 50 km north of Sorouh Field.

Shell Exploration B.V. is the general contractor of this project.

Doroud Oilfield

The oil-in-place of Doroud reservoir is estimated to be around 7.6 billion barrels. Because of 33 years of continuous production (from 1964 to 1997) without a timely injection of water and gas, only 1.5b barrels of the total reserve may be recovered at the current production rates. With the implementation of the development scheme, the figure will increase to 2.6 billion barrels. By drilling new wells and injection of water and gas, the average daily production will increase to 85,000 barrels.

Doroud Oilfield is located in the vicinity of Kharq Island, northwest of the Persian Gulf.

The project is a joint operation of TFE (55%) and Agip (45%), with Elf Petroleum Iran acting as the contractor.

Forouzan and Esfandiyar Oilfields

Forouzan and Esfandiyar fields, both sharing reserves with Saudi Arabia, are located some 95 km southwest of Kharq Island.

Petro Iran Development Company is the general contractor.

Others

Other important offshore activities in Iran are exploration projects in Hormuz Block, Farsi Block, Qeshm block, Hendijan and Sirri C&D.

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Volume 1, Number 1 Autumn 2004 www.iranoffshore-mag.com

OFFSHORE

International Oil & Gas Magazine

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SPECIAL REPORT

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IN THE NAME OF GOD



HISTORY



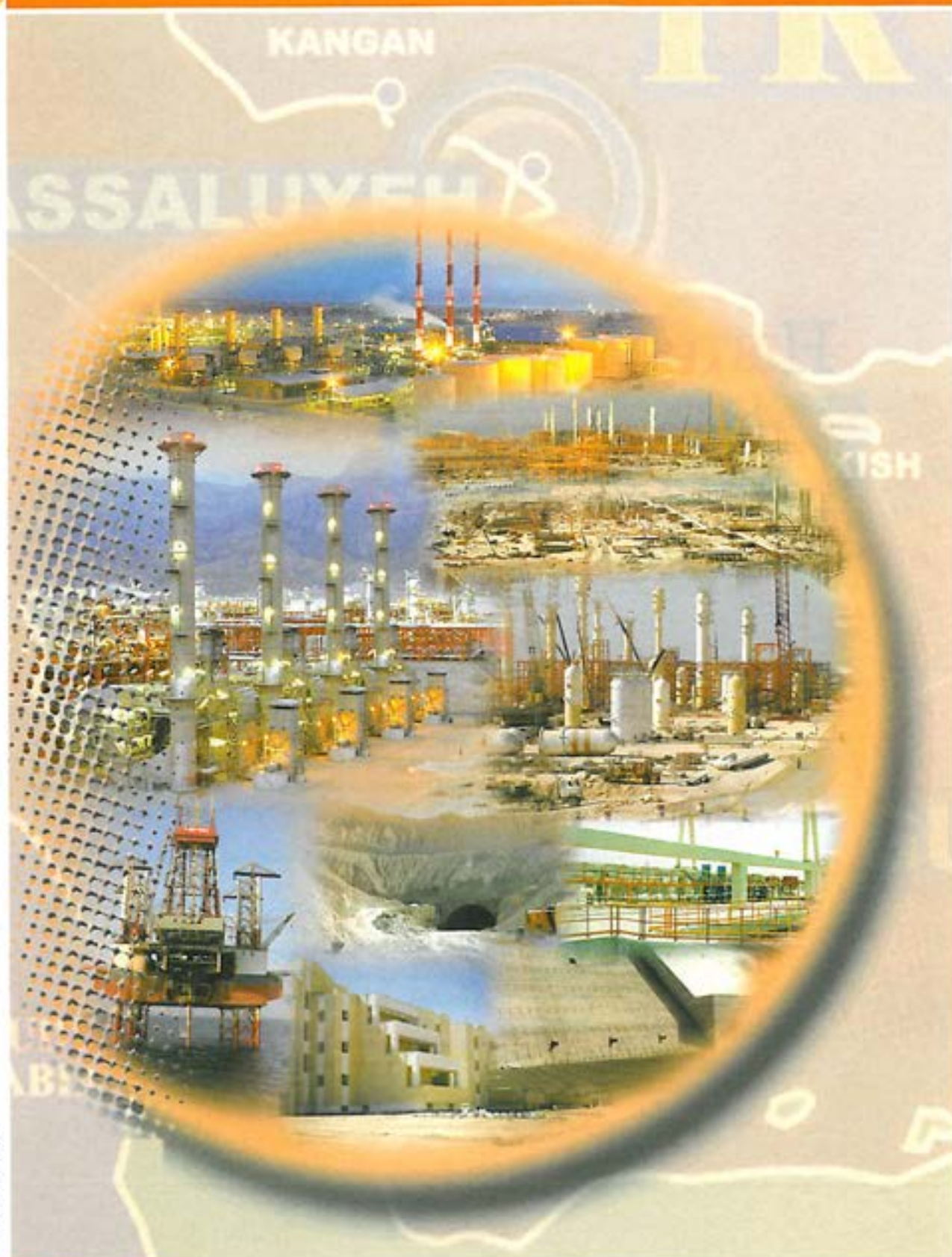
South Pars Gas Field with an area of 3700 square kilometers , contains gas in place (GIP) reserves estimated at 14 TSCM and 18 billion barrels of condensate in multiple strata.

This field which is the extension of Qatar north dome gas field is located at some 105 kilometers southwest of Assaluyeh port in Persian Gulf. Development of South Pars Gas Field in multiple phases with the objectives to secure the increasing internal natural gas consumption demands of country, gas re- injection into the oil fields and also export of gas and associated condensate has been included in the National Iranian Oil Company's (NIOC) policies. The ports of Assaluyeh and Tombak , located some 270 and 220 kilometers southeast of the port city of Bushehr respectively, were selected as the onshore site for construction of land facilities and phased development of this field.

Petroleum Development and Engineering Company was founded in 1994 in order to develop the first phase of the mentioned field. Subsequent to the re-structuring of the Ministry of Petroleum, Pars Oil and Gas Company (POGC) was founded in January 1999 as an affiliate to NIOC and the authority to develop all phases of South Pars Gas Field as well as North Pars Gas Field was bestowed upon this company.

Various phases of South Pars Gas Field development generally include onshore and offshore facilities.

Onshore facilities mainly include refineries, gas transmission pipelines, infrastructure and supporting facilities and offshore facilities include offshore platforms and submarine pipelines .To support the development activities, construction of a gas transmission pipeline, an international airport, residential townships,roads,floodgates,docks,sea water intake and etc. have been implemented.



General Specifications Of The Phases



Phase 1 of South Pars Gas Field Development Plan

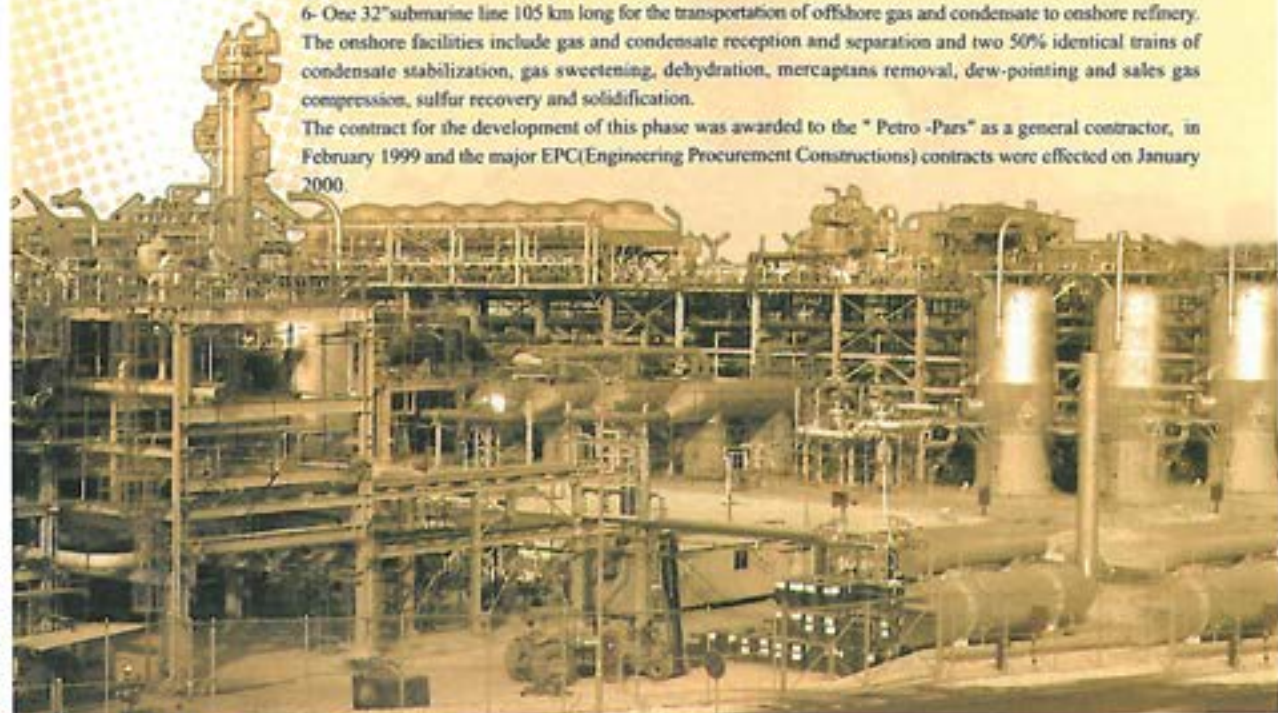
The South Pars Gas Field Development project phase-1, conceived for the exploration of gas and condensate reservoir located in the Persian Gulf, at approximately 105 km from the Iranian coast, is planned for the production of 28.3 MMSCMD of sour gas, 40000 barrels condensate and 200 tons solid sulfur per day. The offshore facilities, which are in the final stages of commissioning, are distributed over a complex of several platforms, each one with a specific duty and characteristics and two sea lines.

These facilities consists of:

- 1- Two wellhead platforms, SPD-1 and SPD-2, collecting the reservoir fluid from 12 gas wells, producing total 1000 MMSCFD sour gas.
- 2- One integrated central production platform, SPP-1, accommodating the equipment required to process the reservoir fluids coming from the wellhead platforms. Main power generation and most of the utility units are located on this platform.
- 3- One living quarter platform, SPQ-1, where personnel accommodation, main control room, and certain supporting facilities for emergency are located on.
- 4- Flare bridge support platforms, SPF-1 and SPF-2, supporting a flare boom dedicated to the combustion of the continuous and emergency gaseous hydrocarbon release, located at a safe distance from the other platforms.
- 5- One 18" submarine line 5km long connecting second wellhead platform, SPD-2, to production platform, SPP1.
- 6- One 32" submarine line 105 km long for the transportation of offshore gas and condensate to onshore refinery.

The onshore facilities include gas and condensate reception and separation and two 50% identical trains of condensate stabilization, gas sweetening, dehydration, mercaptans removal, dew-pointing and sales gas compression, sulfur recovery and solidification.

The contract for the development of this phase was awarded to the "Petro-Pars" as a general contractor, in February 1999 and the major EPC(Engineering Procurement Constructions) contracts were effected on January 2000.



Phases 2&3 Of South Pars Gas Field Development Plan

The execution of phases 2 and 3 development has been planned for production of 56.6 MMSCMD natural gas and associated condensate. The production of 50 MMSCMD treated natural gas for internal consumption, 80,000 Barrels Per Day (BPD) condensate and 400 tons per day sulfur for export is planned at this stage.

The mode of gas and condensate transport from offshore platforms to the onshore refinery is three-phase. The offshore facilities include two wellhead platforms for drilling 20 production wells and two 32-inch submarine lines with 4 ½ inch piggy-back lines for transportation of MEG and MDEA mixture back to the platforms from the shore, 105 kilometers long each.

A gas refinery with four gas treatment trains and 50MMSCMD capacity has been constructed onshore, including gas and condensate reception and separation, condensate stabilization, gas sweetening, dehydration, dew-pointing, mercaptans removal sales gas compression, sulfur, recovery and solidification and mono-ethylene glycol (MEG) regeneration for transportation to platforms using 4 ½ inch piggy-back lines and injection into 32 inch export gas submarine lines.

The treated gas produced at the refinery will be transported to the tie-in point of the third Trans-Iranian Gas Trunk Line (IGAT 3) located in Kangan general area by a 56 inch pipeline.

The development execution of these phases was contracted to a joint venture of French Total, Malaysian Petronas and Russian Gasprom Companies-managed by Total South Pars (TSP) on September 28th 1996. The project was inaugurated in February 2003.





Phases 4&5 Of South Pars Gas Field Development Plan



The development of phases 4 and 5 is planned for extraction of 56.6 MMSCMD natural gas and condensate, which are transported to Assaluyeh in three-phase mode. The plant onshore includes gas fluid separation, condensate stabilization and export, gas sweetening, dehydration, ethane and LPG extraction, sulfur recovery and solidification.

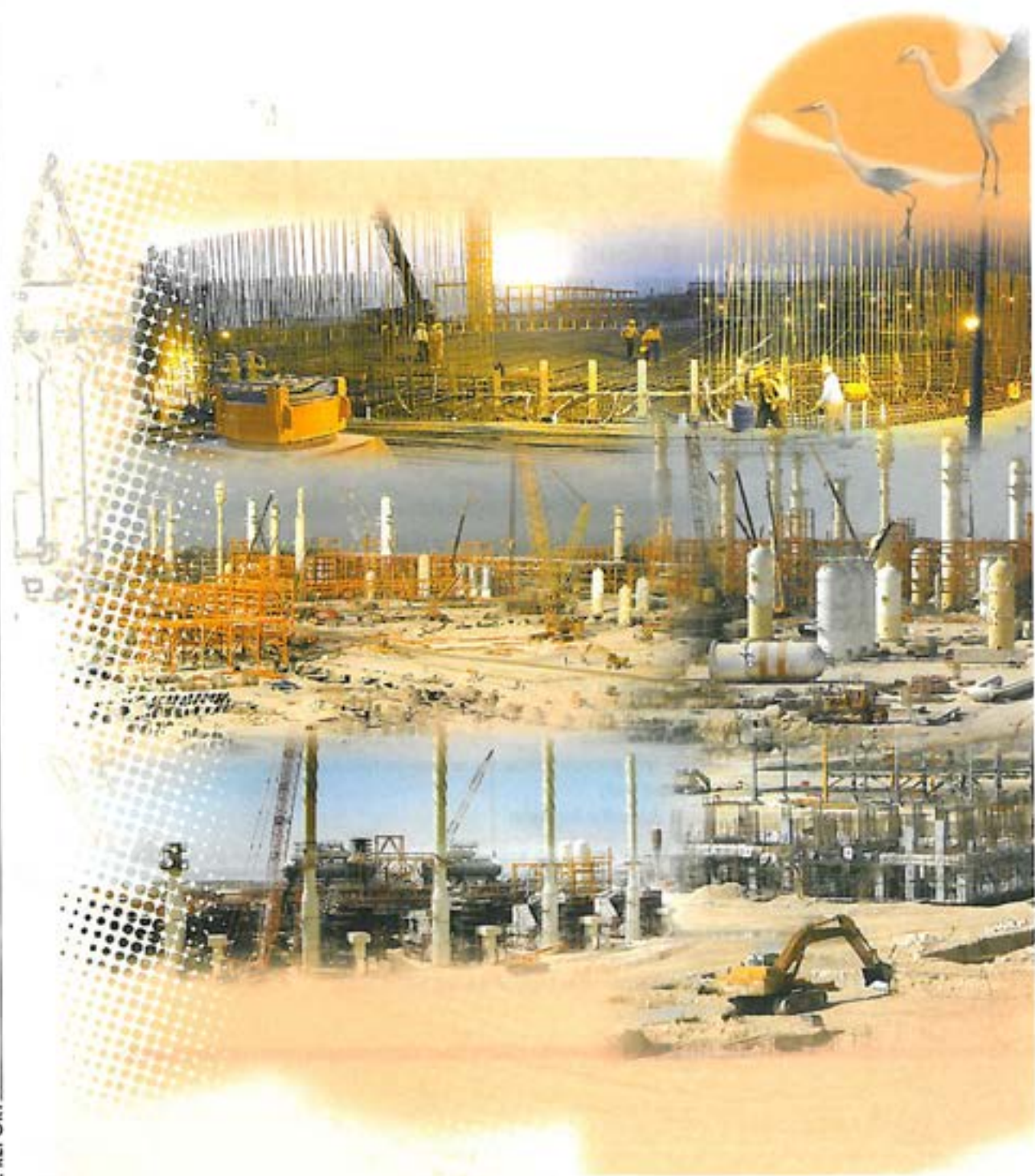
The objectives of phases 4 and 5 are as follows:

- 1-Production of 50 MMSCMD treated natural gas to transport to Trans-Iranian gas distribution network.
- 2-Production of almost 1.05 million tons LPG per year
- 3-Production of 80,000 BPD condensate
- 4-Production of one million tons per year Ethane for delivery to National Petrochemical Industries Company (for feeding Ethylene Unit)
- 5-Production of 400 tons per day sulfur for export.

The offshore facilities consist of 24 production wells, two 32-inch pipelines to transport gas to onshore refinery, two 4 ½ inch piggy -back lines of MEG and MDEA mixture for prevention of corrosion and hydrate formation.

The development of this project was awarded to a joint venture of Agip - Iran and Petro - pars Companies in August 2000.

The first stage of production is predicted to begin in the first half of 2004.



Phases 6,7&8 Of South Pars Gas Field Development Plan

The development of phases 6, 7 and 8 has been planned for extraction of 80 MMSCMD of gas, transportation to Assaluyeh in a three-phase mode, gas fluid separation, condensate stabilization, dehydration, dew-pointing, dry and sour gas transportation to Agha-Jari area for re-injection into the oilfields. It is to be mentioned that the 56-inch gas pipeline project, 512 kilometers long, between Assaluyeh and Agha-Jari is being implemented by N.I.G.C. Downstream gas re-injection facilities are not included in the scope of this development project.

The objectives of these three phases are as follows:

- Production of 80 MMSCMD sour and dry gas for injection
- Production of 1.2 million tons LPG (propane and butane) per year
- 120,000 Bpd condensate

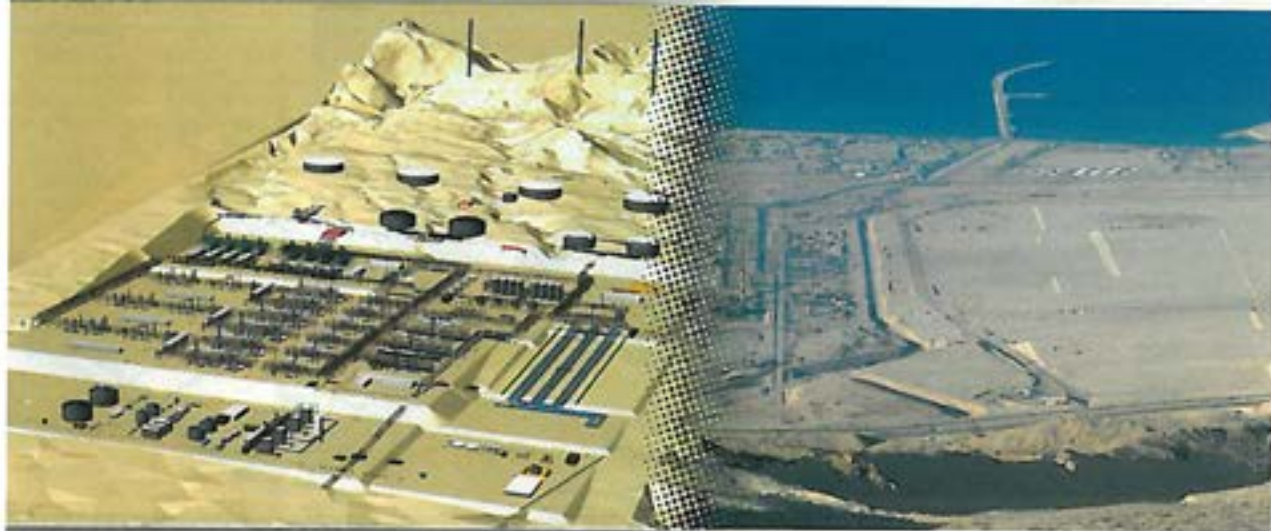
Offshore facilities in these three phases are as follows:

- Three wellhead platforms equipped with ten production wells each, which are controlled from Assaluyeh.
- Three 32-inch submarine pipe lines 105 kilometers long each to transport produced fluid in three-phase mode, and three 4 1/2 inch piggy-back lines to transport chemicals for prevention of corrosion and hydrate formation.

Onshore refinery includes following units:

- Slug catcher
- Dehydration unit
- Liquefied petroleum gas (LPG) and condensate
- Storage tanks and loading facilities.

The development of these phases was contracted to Petro-Pars on July 11th 2000. According to the contract, first production is scheduled in 39 months.



Phases 9&10 Of South Pars Gas Field Development Plan

Phases 9 and 10 of the development are identically similar to phases 4 and 5. Production of 50 MMSCMD treated natural gas for local consumption, 80000 BPD condensate, one million tons per year ethane for consumption in petrochemical complexes and 1.05 million tons of LPG per year, 400 tons of sulfur per day for export are planned.

The development of these phases was contracted to a Consortium of South Korean Company (LG), Oil Industries Engineering and Construction Company (OIEC) and Iranian Offshore Engineering and Construction Company (IOEC) on 15th September 2002. The first stage of production is scheduled to begin in 2006. Produced gas will be transported via Trans- Iranian Gas Trunk Line (IGAT 4) for internal consumption.

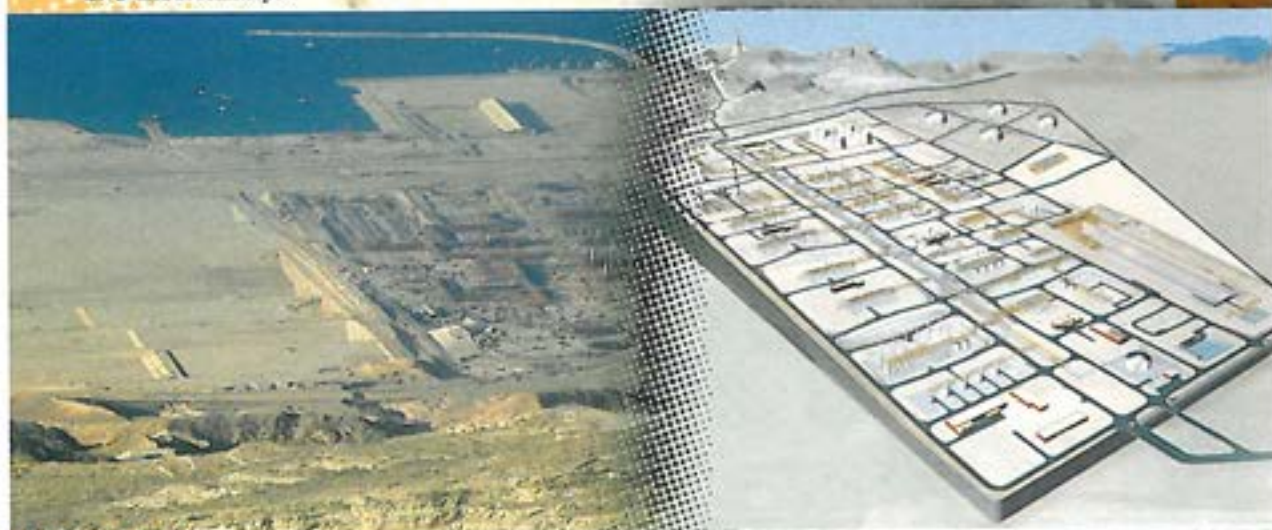
Phases 11,12&13 Of South Pars Gas Field Development Plan

The Development of these phases is planned for production of 27 million tons of Liquefied Natural Gas (LNG) per year in six operational trains (each one with the capacity of 4.5 million tons per year).

Onshore facilities, contrary to other phases, are limited and after separation of condensate up to 160,000 BPD, sour gas will be transferred to the nearby LNG Complex. Gas sweetening and other refining stages will be constructed in the LNG Complex. Onshore facilities will be constructed near LNG units in Tombak port.

Phase 14 Of South Pars Gas Field Development Plan

Development of this phase has been planned to extract 20 MMSCM sour gas to feed the GTL plant under review by Petrochemical Industries Company.



North Pars Gas Field

Discovered in 1967, North Pars gas field is one of the largest independent gas fields in the country. It is located some 120 kilometers southeast of Bushehr, 10 to 15 kilometers offshore Persian Gulf at water depths 10 to 30 meters. The reservoir capacity is estimated at 1.66 Tscm with 1.33 TSCM recoverable gas.

With re-structuring of NIOC, the authority to develop this field has also been vested on Pars Oil and Gas Company. The prime objective for development of this field is the preservation of the oil reservoirs by supplying gas for re-injection into the oil fields to maintain the reservoir pressure and thereby achieving secondary oil recovery.

The original North Pars development project schedule was for production of 100 MMSCMD gas expandable to an overall production of 127 MMSCMD but considering the circumstances, priority has been given to South Pars gas field development. North Pars gas field development includes both offshore and onshore facilities.





South Pars Oil Reserve

In addition to Kangan and Dalan which together constitute the main reservoirs of the shared South Pars field, there are other reservoirs in this field as revealed by appraisal wells drilled by Pars Oil and Gas Company.

Based on conclusive estimates, Dariyan reservoir in the shared South Pars field deserves an important ranking. Pars Oil and Gas Company is currently evaluating and planning for production and export from this field.



Infrastructure And Support Facilities

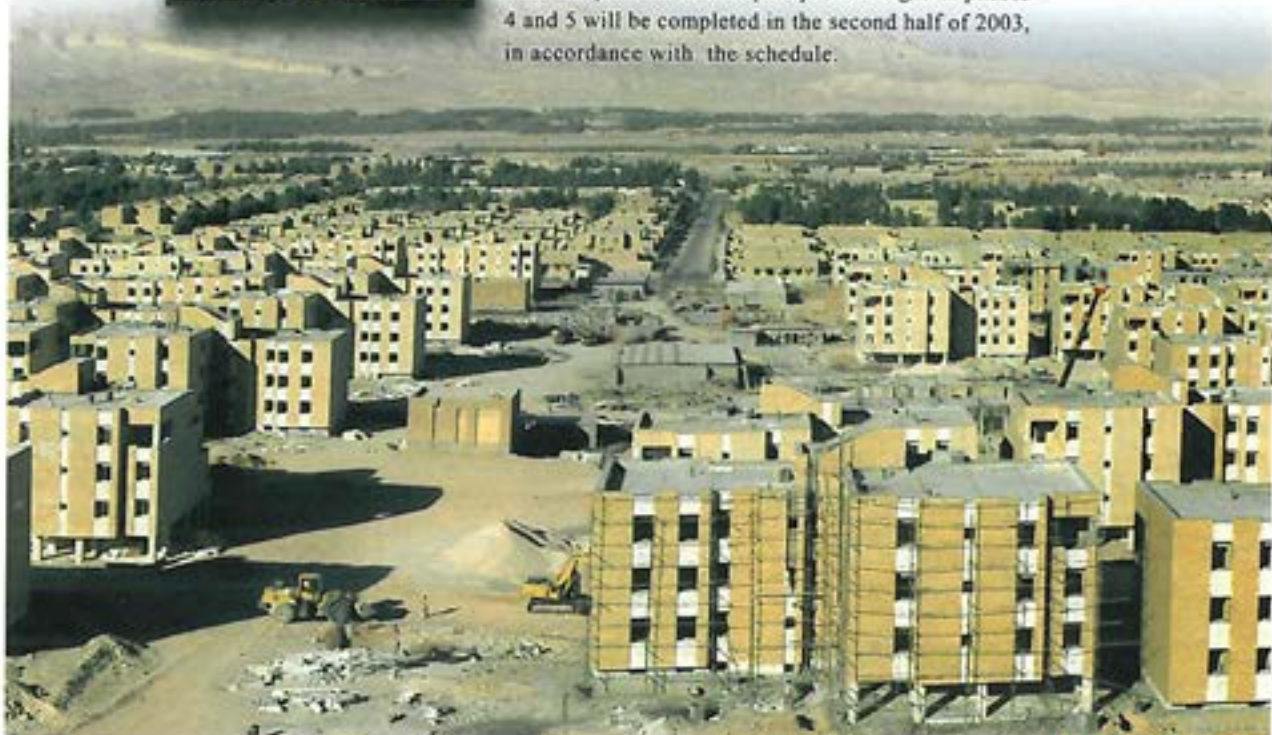


1-56-INCH GAS TRANSMISSION PIPELINE

This 56 inch, polyethylene tape coated, 70 kilometers long pipeline has been contracted to transport natural gas produced in South Pars gas field phases 1,2 and 3 refineries in Assaluyeh to the third Trans -Iranian Gas Trunkline tie -in point in Kangan general area. The right-of-way (ROW), 68 kilometers long and 26 meters wide has been constructed.

Considering the volume of soil displaced, the hardness of land and mountainous route with extremely difficult passes the implementation of this project was a unique task of its kind .

It should be mentioned that the construction of the first pipeline completed in 2001 and it is in service at present time and construction of the second pipeline which is planned to transport produced gas of phases 4 and 5 will be completed in the second half of 2003, in accordance with the schedule.





2-SINGLE BUOY MOORING (SBM)

A SBM has been installed at 3 km distance from Assaluyeh shore line for condensate export. The loading capacity of this SBM is 5000 cubic meters per hour and oil tankers up to 250000 DWT capacity can be accommodated. Condensate is transferred to the SBM by a 30 inch under sea pipe line.



3-ADMINISTRATION AND RECREATION COMPLEX

This complex has been constructed on 20 hectares of land with a total of 6,000 square meters built space including an office building, three rest - houses, dining halls, mosque, clinic, play grounds and recreation facilities including a swimming pool, indoor sports halls and a social meetings hall .

4- RESIDENTIAL TOWNSHIPS

The project includes:

- 1- Construction of 372 residential units in Towhid township in 62 building - blocks and in 13.5 hectares of land.
- 2-Construction of 1028 units of villas and flats in Jam township in 166 hectares of land.
- 3-Construction of 8000 units of villas and flats in Chah -Mubarak township (Siraf new township) 25 kilometers east of refineries in 360 hectares of land.
- 4- Construction of 55 residential blocks in Shirino coastal township to accommodate 1086 newly recruited personnel in 20000 square - meters of built space.



ROADS

A70 – kilometer long **Jam-Taheri - Assaluyeh** highway is under construction. In addition to providing commuters access to Assaluyeh district from Jam, this road interconnects Fars and Bushehr provinces.

6-SEA WATER INTAKE PROJECT

This project has been executed for supplying the needed cooling water and also for water desalination.

The units includes water pool, suction hatches, submarine pipeline to transfer water to pool, water pumps, hypo-chloride unit, water return channel from refinery, power center and control room located at the south side of the phase one refinery.

Water intake capacity is 25000 C.M per hour.

The execution began in May 1999 by the Iranian contractor "Khatam-ol-Anbia Construction Headquarters" and it reached production in January 2002.

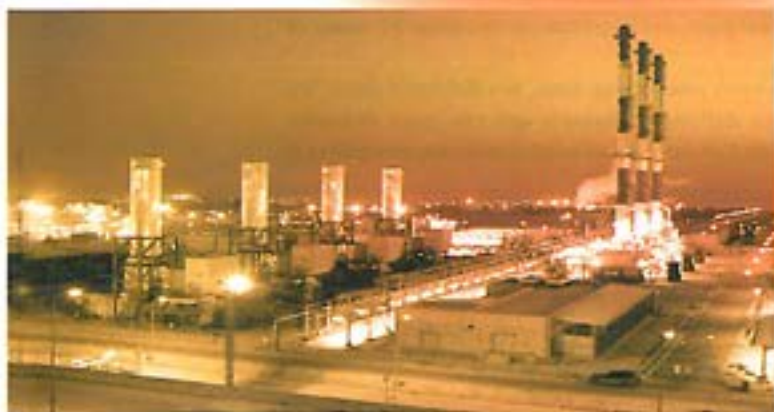
7- PHASES 1,2 & 3 FLOOD CONTROL FACILITIES.

The project of flood control construction for South Pars gas refineries (phases 1, 2&3) is planned to prevent the onrush of flood and to mitigate the water flow rate by means of storage behind the constructed dams. Gradual drain is done by sewer pipes and in critical circumstances by means of spillways.

This project includes two precipitating dams, two deflective dams, two reservoir dams, two deflection channels and two main channels. Hamedan Jahad-e-Nasr Company has accomplished the implementation of this plan.

P.O.G.C
PARS OIL AND GAS COMPANY





Asia's New Thirst

China has overtaken Japan to become the world's second biggest consumer of oil after the US. Indonesia's presidency of the Organization of Petroleum Exporting Countries (OPEC), the exporters' cartel, has been undermined by news that the country became a net oil importer in February and March.

Behind the drama of high prices and the struggle to increase the global supply of crude oil lies a story of inexorably rising demand: Asia's fast-growing economies are increasingly thirsty for energy.

China plans to build as much new electricity-generating capacity in each of the next two years as the UK has today. This will put immense strain on the world's energy infrastructures and on the global environment.

In the two decades to 2020, Asia will more than double its electricity use and nearly double emissions of carbon dioxide, according to the Institute of Energy Economics in Japan. The number of vehicles on China's roads will increase sixfold to 120m. Asian oil consumption will rise to 35 million barrels a day; the 16 million bpd increase in 20 years is three times the current level of consumption in Japan.

These are tempting prospects for makers of cars, nuclear reactors and turbines. Rising Asian demand; however, has risks as well as opportunities.

Southeast Asia in particular is becoming more vulnerable to terrorism. The US is so concerned that it has proposed joint naval patrols in the Strait of Malacca, the narrow waterway between Malaysia and Indonesia that funnels shipments of oil and liquefied natural gas (LNG)



from the Middle East to the import-dependent economies of Asia.

Another worry is that competition for scarce supplies of energy has begun to pit Asian governments against each other.

China and Japan are locked in a diplomatic tussle over rival pipeline projects for the import of Siberian oil and Beijing's hunt for oil and gas has strengthened its resolve to control the atolls of the South China Sea.

A third risk is financial. Oil industry analysts believe that Chinese oil companies, under orders to buy foreign production and exploration assets for the benefit of national security, will inevitably overpay, just as Japan did in the past decades.

Short-term tightness in the energy markets might give an undesired luster to grandiose projects such as the multi-billion dollar pipeline from eastern Siberia to the Russian port of Nakhodka or the "land bridge" to carry oil across Thailand's Kra Isthmus, a route that avoids the Strait of Malacca.

Yet Asia's dependence on energy imported from the Middle East does make it vulnerable to supply disruptions and price shocks. The solution is to spread risk by diversifying into different energy sources, promoting efficient technology and

energy conservation and perhaps cooperating on running oil stockpiles along the lines suggested by Japan. What does not make sense is to sacrifice common sense or cost-benefit calculations on the altar of energy security.

Source: Iran
Offshore News
Desk



OFFSHORE PRODUCTION

Bahram Janghorban was born in 1963. He received a BS in Marine Engineering from Naval Sciences University in 1987. In 1994, he earned his MS in Electrical and Electronics Engineering from Instructors' Training University. He taught PC hardware and maintenance at Tehran Institute of Technology during 1996-2003 and electrical engineering and electronics at the Islamic Azad University (Shahr-e Rey Branch) in 1996-7. Janghorban has also held several positions in the industry, including technical and after-sales manager at Poolad Injection Molding Machine Factory and design engineer at ISOICO. He also taught technical subjects for a special program offered by Eni Iran B.V. (COMERINT CO.) in 2003-4. Currently, he is a senior instrument engineer at IOEC.



General Information

1. Introduction 2. Exploration 3. Drilling
4. Drilling a Well 5. Development Drilling
and Well Completion 6. Production 7.
Transportation

1 Introduction

Oil and gas are hydrocarbons, which are primarily made up of only two elements, hydrogen and carbon.

The simplest hydrocarbon is methane, CH₄, which is the main component of natural gas. Methane is an odorless, colorless gas that is lighter than air.

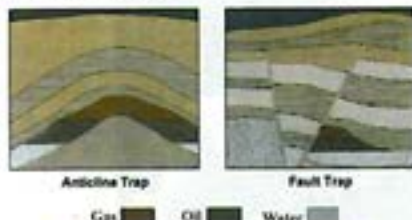
Crude oil is often called petroleum, which means "rock oil." Although crude oil varies widely in appearance, it is usually a liquid with a density that is less than the density of water.

Locating an oil and gas "trap" - as it is known - and extracting the oil and gas is difficult enough on land. But offshore, in deep and often stormy waters, it becomes a very tedious undertaking.

Both oil and gas are found in the pores of buried layers of rock. If the pores of the rock are connected, then the rock is permeable and any oil and gas can flow from the pores into a well. The rocks in which oil and gas may be present are usually sedimentary. Sandstone and limestone are two common types of sedimentary rocks in which hydrocarbons can be found.

Oil and gas were probably formed from the remains of microscopic plants and animals that were buried below the surface of the earth in the distant past. Once formed, the hydrocarbons were forced out of their place of origin and hence moved upward. In some cases, they were trapped in underground formations.

Many different types of traps exist. In general, folding, faulting, unconformities and domes and/or a combination of them can cause permeability changes in traps.



Environmental safeguards

Fig. 1- A combination of folding, faulting and unconformities can cause permeability changes in hydrocarbon traps.

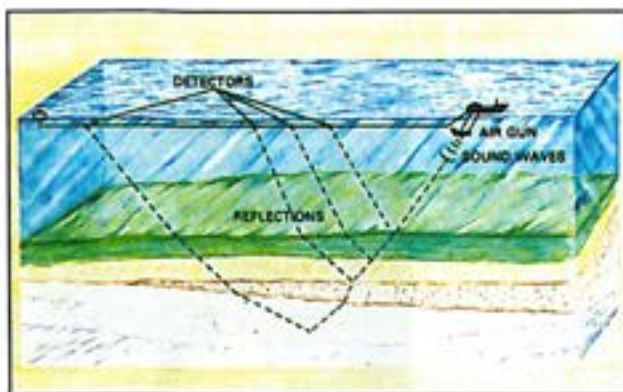
2 Exploration

To find a site on which to drill an exploratory well, surveys of various kinds can be conducted. Magnetic surveys involve the use of a magnetometer that measures the magnetic forces in the rocks situated in the earth's crust. By measuring and recording magnetic anomalies, explorations can result in finding arches and folds that might serve as hydrocarbon traps.

Gravity surveys measure and record the density of underlying rocks. Positive and negative gravity anomalies may indicate the presence of folds and domes that could serve as hydrocarbon traps. Seismic surveys measure and record the time it takes for loud, low frequency sound, which bounces off subsurface rock layers, to reach the surface. Potential traps are identified by analyzing seismic survey data, but whether they contain oil or gas won't be known until a drill bit penetrates the structure. Directing the drill bit to a precise location - perhaps several kilometers away - requires sophisticated computer technology. A navigation device installed above the drill bit feeds back information, which makes possible measuring and monitoring the exact position of the well. A steerable motor within the drill pipe can be remotely controlled to adjust the direction of the drill.

A seismic section is a cross sectional view of the rock layers under investigation. A geological structure in which accumulations of hydrocarbons are present can be found from a seismic section.

Even though surveys help pinpoint the possible existence of hydrocarbon traps, the only sure way to confirm their presence is to drill a well. However, before a well can be drilled, the company must



obtain the rights to do so from the country in whose waters the proposed drill site lies.

Fig. 2- A special air gun produces sound that is reflected from rock layers. Detectors pick up the sound reflections.

Mobile offshore drilling units are either bottom-supported units or

floating units. Submersibles and jack ups are bottom-supported units. Submersibles include posted barges, bottle types, and arctic submersibles. Jack ups may have either columnar legs or truss-type legs, and the rig may be mounted on a cantilever or over a keyway. Furthermore, the legs may either be supported by a mat or supported by spud cans.

3 Drilling

In the early days of offshore drilling, explorers simply fitted a derrick to a barge and towed it to their site. Today, four types of offshore rigs are used to drill wildcat or exploration wells.

Submersibles. These are rarely used. They can be floated to shallow water locations then ballasted to sit on the seabed.

Jack Ups. They are usually towed to a location. Their legs are then lowered to the seabed and the hull is jacked up clear of the sea surface. Jack ups are used in waters to about 160 meters deep.

Drill ship. These look like ordinary ships, but have a derrick on top, which drills through a hole in the hull. Drill ships are either anchored or positioned with computer-controlled propellers along the hull, which continually correct the ships' drift. They are often used to drill "wildcat" wells in deep waters.

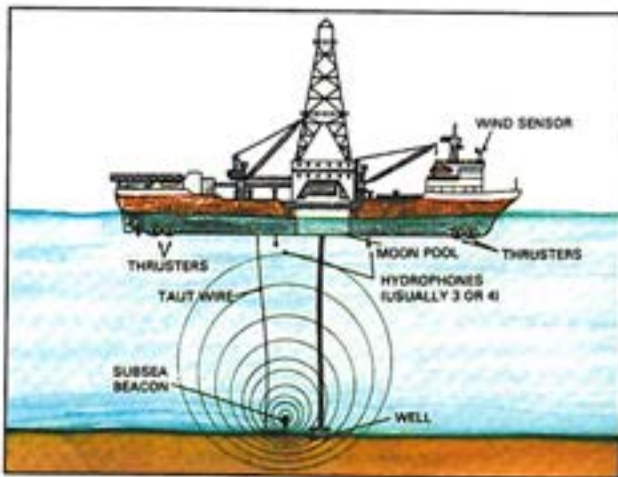


Fig. 3- A column-stabilized semi submersible rests below the waterline when in the drilling mode.

Semi submersible. These are mobile structures, some with their own locomotion. Their superstructures are supported by columns sitting on hulls or pontoons, which are ballasted below the water surface. They provide excellent stability in rough and deep seas.

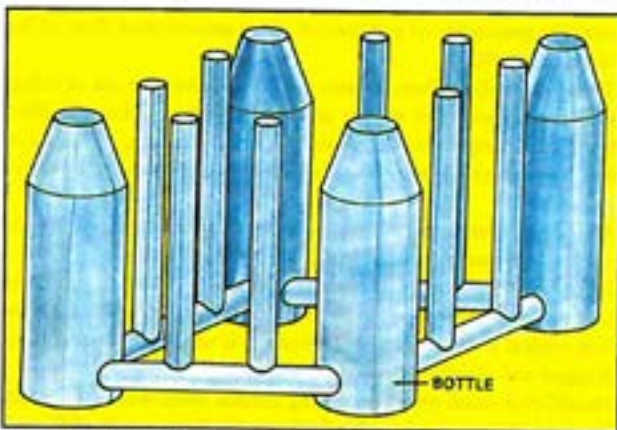
Inland barge rigs, ship-shaped barges, drill ships and semi submersibles are floating units. Swamp barges are designed to work in waters close to shore such as inlets and bays or in large inland bodies of water such as Lake Maracaibo. Ship-shaped barges and drill ships differ only in that a drill ship is self-propelled and barges must be towed from one location to another. Ship shapes are best

suited for drilling in deep and open waters far removed from shore. Semi submersibles are also capable of drilling in deep waters but are able to withstand rough weather such as that which occurs in



the North Sea or in the North Atlantic.

Fig. 4- In this dynamic positioning system, hydrophones on the vessel's hull receive signals from a subsea beacon. The signals, in addition to information from a taut wire and a wind sensor, are transmitted to onboard computers. The computers process all data and activate the thrusters



to maintain the floating unit on station.

Fig. 5- When flooded, the bottles cause a bottle-type submersible to submerge to the seafloor.

4 Drilling a Well

The primary job of any drilling unit is to put a drill bit into the ground and rotate it. To accomplish the task, drilling fluid must be circulated so that the cuttings are cleaned from the bottom of the hole and are carried up the hole for disposal. In addition to a circulating system, a rotating system is needed to turn the drill stem and bit.

Since most of a rig's equipment requires a source of power to operate, several diesel engines are used to provide power. The engines turn generators to generate electric power. Cables from the genera-

TRAINING ITEM

tors carry electricity to motors that are mounted on or near the equipment to be powered.

The hoisting system consists of the draw works, crown block, traveling block and drilling line. The hoisting system suspends the drill stem and bit in the hole and makes it possible to trip the drill stem and bit in and out of the hole.

The operator is an oil company that buys or leases the right to explore for, drill for and produce hydrocarbons. The operator usually hires a drilling contractor; a firm whose specialty is drilling wells and which owns drilling rigs, to drill a well. Many service and supply companies are also hired by the operator to provide additional equipment and services needed to drill a well.

Drilling an exploration well is the only sure way to confirm the presence of hydrocarbons in a suspected reservoir. Drilling is usually accomplished with a mobile offshore drilling unit, either a bottom-supported unit, such as a submersible or jack up, or a floater, such as a drill ship or semi submersible.

Sophisticated and reliable blowout prevention systems (BOP) are used in every production well to minimize the possibility of a blowout - where uncontrolled fluids flow from a well.

The weight of the drilling fluid acts as the first line of well control by keeping underground pressure in check. If an influx of pressurized oil or gas does occur during drilling, well control is maintained through the rig's blowout prevention system (BOP). This is the set of hydraulically operated valves and other closure devices (rams) which seal off the well and route the well bore fluids to specialized pressure controlling equipment.

Trained personnel operating this highly reliable equipment minimize the possibility of a "blowout" or an uncontrolled flow of fluids from a well.

Therefore, drilling from floaters usually involves the use of subset BOPs, a marine riser system and motion compensators. Drilling from bottom-supported units usually does not require a subset system; instead, the BOPs are supported by casing above the water's surface.

And since bottom-supported units are in firm contact with the seafloor, no motion compensation is required.

Formation evaluation is used to determine whether sufficient amounts of hydrocarbons exist in the reservoir. Whether or not the first wildcat well yields hydrocarbons, it is usually, but not always, plugged and abandoned.

Should evaluation reveal promising results, more wells will probably be drilled to confirm the findings. If all goes well, full-scale development drilling will be undertaken in order to produce the hydrocarbons.

5 Development Drilling and Well Completion

In offshore development drilling, several wells are often drilled from a fixed, self-contained platform. These development wells are usually directionally drilled so that each well bore is curved into various parts of the reservoir.

Some rigid platforms consist of steel jackets that are supported on the seafloor by piles; other platforms are made of concrete. Usually, concrete platforms do not require piles, because they are so heavy. In the Arctic, special caisson-type platforms are used to prevent the destruction of the platform by moving pack ice.

When the well has been drilled to its target depth, production casing is set and cemented. Tubing is lowered into the hole together

with "packers", which seal the space between the tubing and the casing. Finally, at the end of the well, the casing is performed at predetermined depths by small explosive charges detonated remotely. The small holes in the casing allow the oil or gas under its natural pressure to flow to the surface.

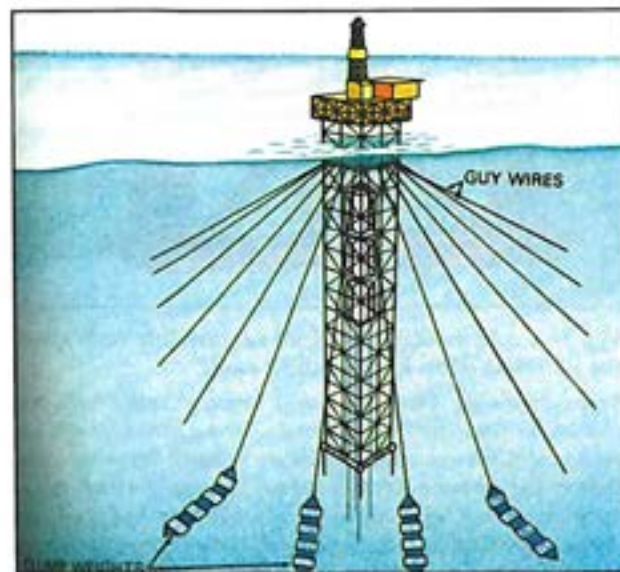
When wells are drilled and completed in deeper waters, compliant platforms that move to a limited extent with wind, waves and currents are employed. One design is a guyed tower, in which several guy wires are attached to a relatively lightweight jacket and to the seafloor. Another is the tension-leg platform; in which tensioned steel tubes are firmly anchored to the seafloor and platform, keeping the floating platform on the site.

Sometimes, a mobile offshore drilling unit (MODU) may be used to drill development wells. In such cases, the MODU is placed next to a small platform jacket and the wells are drilled through it. If necessary, a small additional platform can be erected next to the original platform to house equipment that cannot fit onto the original.

In some instances, satellite wells are drilled to exploit a reservoir. Satellite wells are drilled one at a time with a MODU and are often used to supplement development wells drilled from nearby platforms. Through the use of subset templates and directional drilling, floating rigs can be used to drill several development wells without having to be moved from well site to well site. The template provides a way for the floater to drill, complete and produce several wells in the small area occupied by the template.

Well completion usually involves perforating the well to make perforations or holes in the casing and cement. The perforations provide a way for reservoir fluids to enter the well. Usually, tubing with a packer is placed in the well and reservoir fluids flow up the well through the tubing.

Completions may be either surface or subset. If equipment placed on top of the well to control the flow of fluids from it is placed above the waterline, the completion is a surface completion. If the



equipment is placed on or below the seafloor, the completion is a subset completion.

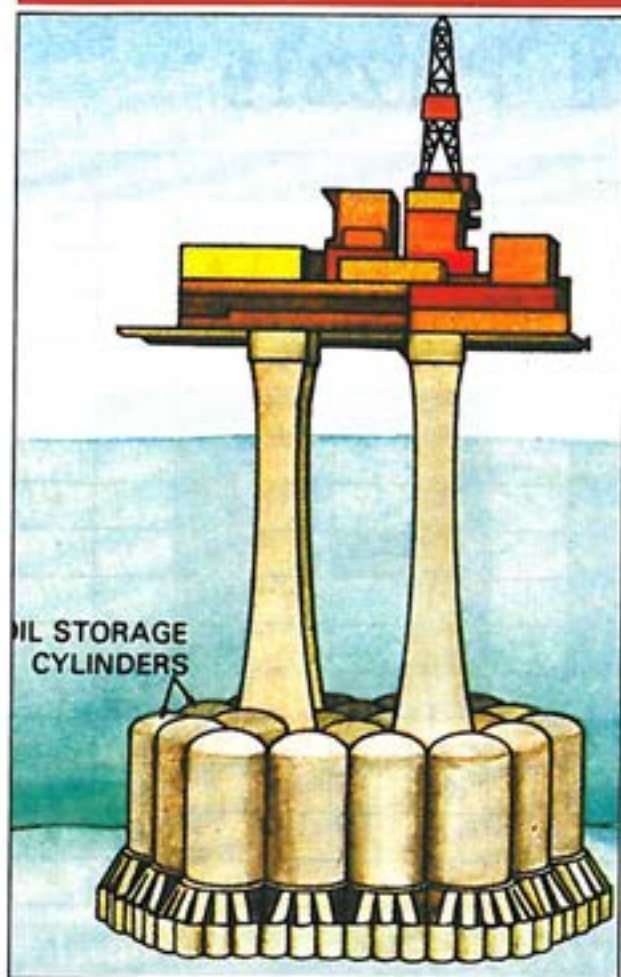


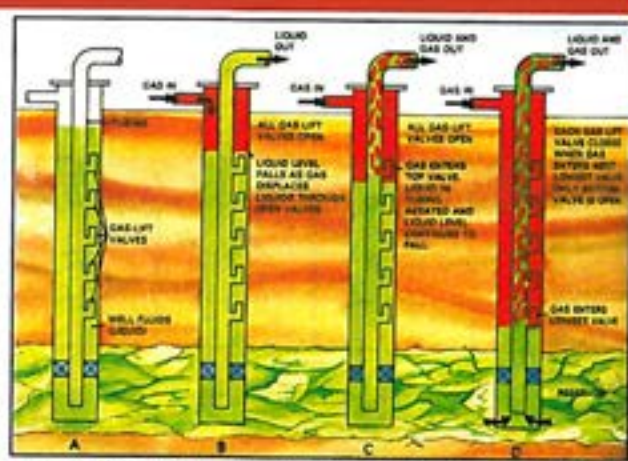
Fig. 6- The relatively lightweight of a guyed-tower platform is supported by several guy wires and clump weights.

Fig. 7- Concrete cylinders arranged around the base of a concrete gravity platform provide storage space for oil.

6 Production

Natural energy is usually present with hydrocarbons in the reservoir. This natural energy is often associated with gas and water that exist with oil. Gas, water or both drive oil into wells that are drilled into the reservoir.

Water and other impurities like sediment must be removed from oil and gas before they can successfully be put into a pipeline or tanker for transportation to refineries and processing plants on land. Several special tanks often located on a production platform are used to separate and remove water from oil and gas. In some cases, especially where subset completions are used, a processing and storage ship is moored to a buoy. Well production flows up a production riser to the buoy. Separation and treating occur on the ship. If free water exists in the fluids produced from the well, a free-water knockout may be used. A free-water knockout is a tank into which well fluids are piped. It serves as an enclosed space in which the free water is given time to settle out of the produced fluids. Emulsified water requires additional treatment for it to be removed



from oil. Chemicals, electricity, heat or all three are applied to the emulsion inside vessels known as heaters, or heater heaters if heat is used.
 Fig. 8- Gas lift involves the injection of gas into a well to lower at the bottom of the well. A) Since the well is not producing, no liquids are flowing; B) Injected gas forces liquid out through tubing; C) Gas enters top valve and lighters liquid in tubing, causing level to fall further; D) well is producing fluids from reservoir.

7 Transportation

Moving oil and gas to shore is an essential step in offshore operations. Often, oil and gas are injected into a pipeline that is laid from a platform or group of platforms to an onshore facility. In cases where laying a pipeline is not feasible, oil can be transported to shore by means of tankers.

Laying a pipeline is usually carried out from a lay barge. A lay barge is a large floating vessel that carries people and equipment needed to construct and lay the pipeline on the seafloor. The pipe joints are welded, inspected, wrapped and placed on bottom from the barge. Several anchors, and sometimes tugboats, keep the barge on station and pull it along the route as the pipe is laid.

Sometimes, the pipeline may be constructed on land, reeled onto a large reel, the reel mounted on a barge or ship and the whole reeled pipeline carried on the reel vessel to the site. The reel vessel simply pays out the pipe onto the ocean bottom. Unreeling pipe shortens considerably the time spent offshore in laying the pipe. This procedure can be an advantage when weather conditions on the route are bad enough to cause delays in conventional construction techniques. The bottom-pull method of laying pipe also shortens the time needed to lay pipe on the route. In this method, the pipe joints are connected at a shore facility and the long section of pipe is towed to the site. If flotation devices are used to allow some of the weight of the pipe to be taken up by the water, then the bottom-pull method can be used in deep as well as in shallow waters.

If necessary, the pipeline can be buried by a bury barge. The bury barge pulls a special jet sled over the already laid pipeline. The jet sled, by means of high-pressure jets of seawater, scours out the soil from underneath the pipeline. As the trench is dug, the pipeline falls naturally into the trench. Burying a pipeline may be necessary to protect it from damage if it lies in an area where various kinds of marine work are conducted.

Where pipelines cannot be laid, crude oil tankers are often used to move oil to shore. Frequently, oil from the wells flows into a single-point buoy mooring (SPBM) system. The tanker ties up to the system, takes on oil and transports it to shore.

TRAINING ITEM

Crossword Puzzle

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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See www.ioec.com first and then try to solve the crossword puzzle.

Vertical

- IOEC's desire that is mutually profitable according to its chairman.
- One of the most important integrated energy companies in the world operating in the arena of oil and gas-The shell of a sea creature-Client name of South Pars Gas Field Phases 4 & 5 Installation Project.
- Abbreviation of Lansing School Education Association-The National Lacrosse League in America.
- Lit without the middle 'Y'-A sudden fear or apprehension arousing to defense or escape-Another way of saying knockout in boxing.
- One of the world's largest providers of products and services to the oil and gas industries founded in 1919-The abbreviation for OLD-AGE PENSIONER.
- A group of the most powerful, richest or most talented people in a society-A small area in a desert where water and plants are found.
- Besides or in addition to-The client of this project is Oil & Natural Gas Corporation LTD (ONGCL).
- The most agricultural-oriented product of the towns of Bam in Iran-A German standard.
- Two shareholders of IOEC.
- Oil Industries Engineering and Construction Company in Iran-Row without the final 'w'.
- A champion from Kenya who won a gold medal in Track and Field's 1500 m category in 1988 Olympics- Not out-Symbol for Neptunium in the Periodic Table.
- Symbol for Indium in the Periodic Table-RSPPM is one of IOEC's ongoing projects in this country-RSPPM Project field location.
- Most Arabs have this! -Before Christ.
- A Sordling or taunting speech-Client name of Salman Project-The largest industrial trade association in the United States.
- Danish form of Peter-A project undertaken by IOEC to finish by June 2005.

Readership's Attention

Iran Offshore encourages the readership to cooperate with it within the framework of compiling news, reports and articles, solving the crossword puzzle, compiling crossword puzzles and the related keys as well as sending caricatures and entertaining items. All people who collaborate will be awarded special prizes.

Horizontal

- It is installed on top of a well-A type of ring.
- One of the departments in IOEC-A type of address in the Internet.
- Article 'V' in Hitler's language read the other way around-The selvege or edge of a woven textile fabric-A prefix for making verbs-Abbreviation of the Association of Business Executives.
- Acronym for Language: Transparent Operation Environment-Something wound into a series of loops.
- Internet Explorer-Metric international system.
- Abbreviation for one of the utility programs in windows-A prefix that means 'far from'-you have to have it before you can enter Local Area Network-Public relations.
- Use it when you are referring back to something that has just been mentioned-Symbol of Lutetium in the Periodic Table-'N' read the other way around.
- A Preposition-A suffix for forming nouns from adjectives meaning having the specified negative quality, without its final 'd'-A prefix meaning apart or away from without the middle 'Y'.
- Abbreviation of 'cent' read the other way around-Letter 'S' stands between them-California is written like this in postal address.
- University of Houston-Symbol for Molybdenum in the Periodic Table-Post Meridian-Oil without the middle 'Y'.
- Not you!-Doctor of Divinity.
- Vesid-Any of a class of organic compounds theoretically derived from ammonia by replacement of one or more hydrogen atoms by organic radicals-The ancient name for the ISLE OF MAN, also known as Mania.
- The houses built by Eskimos from blocks of hard snow-Abbreviation of Northern Ireland-a kind of radio-The article used before a noun that starts with a vowel sound.
- A smooth, thick and sticky substance used as a form of fuel and for lubricating machines-Without it life is impossible-A conjunction used to introduce another possibility-Aero-ballistic missile treaty during the Cold War era.
- Symbol for Neptunium in the Periodic Table-Supplies electricity to computers when the main electric power fails-Relating to or of the nature of an icon.

DESIGNED BY BAHRAM JANQORBAN

Send the solved puzzle to Janqorb@ioec.com maximum by two months after the date of print and claim our special prize.

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- 10- WE WANT YOUR BUSINESS and will work hard to keep it.



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Global Oil Demand Exceeding Forecasts

Will Oil Hit \$180 by 2005?

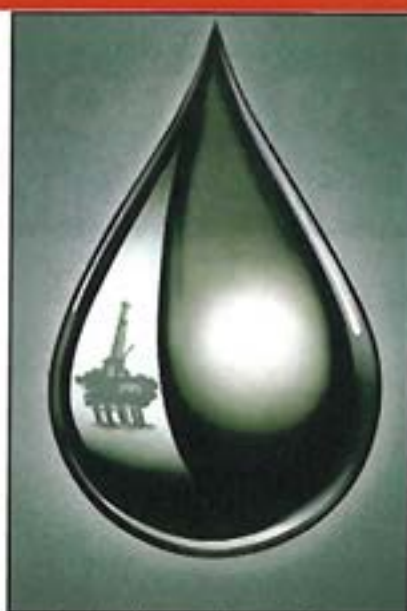
Global oil demand is expected to be higher in 2004 and 2005 than initially forecast, increasing pressure on oil producers to boost their output at a time when rising oil prices may hurt a recovering world economy, according to a report by the Paris-based International Energy Agency. Supply disruptions in Iraq, uncertainty over the fate of Russia's top producer Yukos and the rising demand in China have pushed oil prices to record highs recently. Still, the report published by the agency in August tries to dampen concerns that oil is in short supply by pointing to rising production in Saudi Arabia and Russia. "The market is tight, production and infrastructure capacity is less than desired and uncertainties continue to weight on the market," the report said. "But does this justify \$45 oil? Current oil prices are a concern and are causing economic damage."

The IEA now sees global oil demand at 82.2 million barrels a day in 2004 and 84 million barrels a day in 2005, up about 730,000 barrels a day from previous estimates. The agency's new figures recognize demand that had been previously underestimated.

World oil demand will increase by 1.8 million barrels in 2005, after a record gain of 2.5 million barrels a day this year, the agency reported.

The IEA has finally come around to the realization that global oil demand is strong and rising, fueled by a recovering global economy.

Demand from China, which has been growing at a "sizzling" rate since the second half of 2003, may slow down in the second half of this year as the measures taken by the Chinese government to prevent the economy from overheat-



ing start to have an impact, the report added.

OPEC, which produces a third of the world's oil, is close to full production capacity. The IEA found that "effective" spare capacity within OPEC was down to 500,000 barrels a day. The estimate excludes countries like Iraq, Venezuela, Nigeria and Indonesia, which can't boost their production because of disruptions, strikes or civil unrest. OPEC's total spare capacity stands at 1.2 million barrels a day, according to the agency. OPEC's spare capacity, which usually can be used to boost production when demand grows, has been below 2 million barrels a day since February 2003 while during 2002, OPEC could rely on as much as 7 million barrels a day.

"I basically don't think there is any spare capacity left," said Adam Sieminski, global oil strategist at Deutsche Bank in London. "If you have a hiccup anywhere in the world, you can have prices well above \$50 or more."

Oil traders have had to contend with often-contradictory news coming from major oil producers. Yukos, which produces 2 percent of the world's oil and is under investigation for tax fraud, warned last month that it would shut down production. Hours later, that information was denied by Russian authorities.

In Iraq, exports from the country's northern pipeline through Turkey are at a standstill while the government cut shipments through the Persian Gulf in

August after it was warned of possible attacks.

OPEC has already raised its production ceiling twice after meeting in Beirut in June. Still, OPEC's current output is higher than the organization's largely symbolic target of 26 million barrels a day.

OPEC's 11 members produced 29.1 million barrels a day on average last month. Excluding Iraq, whose production has been disrupted by the armed insurgency, OPEC's production was 27.1 million barrels a day in July, up 145,000 barrels a day from the previous month.

The group is scheduled to meet next on Sept. 15 in Vienna. There's not much it can do to help push prices down, analysts said.

Meanwhile supply rose by 550,000 barrels a day in July to 83.5 million barrels a day, as stocks were filled, the IEA noted. More oil should be coming on the market by the end of the year, including an additional 1.2 million barrels a day from non-OPEC sources, like fields in the North Sea and 400,000 barrels a day from OPEC countries.

The energy agency, an independent body founded 30 years ago by major oil-consuming nations in the aftermath of the Arab oil embargo, pointed out that industrialized nations have vast quantities of oil they keep for emergencies. There are over 1.4 billion barrels of strategic stocks held by agency member countries that "stand at the ready, should they be needed," according to the report.

The strategic stocks haven't been tapped since 1991, after Iraq invaded Kuwait.

In May, the energy agency highlighted the risks of high oil prices on global growth.

In a previous report published with the Organization for Economic Cooperation and Development, the IEA warned that if oil prices remained at \$35 a barrel, or \$10 above their 2001 levels, that would slash at least half a percentage point from world gross domestic product (GDP) the next year.

All in all it seems that the rumor that the price of oil might hit \$180 per barrel may come true very soon. One should wait till 2005 and see what happens then!

Source: Petroenergy Information Network

RSPPM PROJECT

Pre-Engineering Survey for Proposed Topside Modification

MUMBAI HIGH FIELD

RSPPM PROJECT SCOPE OF TOPSIDE MODIFICATION

Phase 1 (BARRE 1) Completion Date: 30/04/05

No.	Platform	Type of Platform	Height (m)	Deck Area (sq m)
1	38	RUP	27.20	1,124.00
2	38	RUP	27.20	1,124.00
3	38	RUP	47.20	1,124.00
4	38	RUP	27.20	1,124.00
5	38	RUP	27.20	1,124.00
6	38	RUP	27.20	1,124.00
7	38	RUP	27.20	1,124.00
8	38	RUP	27.20	1,124.00
9	38	RUP	27.20	1,124.00
10	38	RUP	27.20	1,124.00
11	38	RUP	27.20	1,124.00
12	38	RUP	27.20	1,124.00
13	38	RUP	27.20	1,124.00
14	38	RUP	27.20	1,124.00
15	38	RUP	27.20	1,124.00
16	38	RUP	27.20	1,124.00
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33	38	RUP	27.20	1,124.00
34	38	RUP	27.20	1,124.00
35	38	RUP	27.20	1,124.00
36	38	RUP	27.20	1,124.00
37	38	RUP	27.20	1,124.00
38	38	RUP	27.20	1,124.00
39	38	RUP	27.20	1,124.00
40	38	RUP	27.20	1,124.00

Phase 1 (BARRE 2) Completion Date: 30/04/05

No.	Platform	Type of Platform	Height (m)	Deck Area (sq m)
41	38	RUP	27.20	1,124.00
42	38	RUP	27.20	1,124.00
43	38	RUP	27.20	1,124.00
44	38	RUP	27.20	1,124.00
45	38	RUP	27.20	1,124.00
46	38	RUP	27.20	1,124.00
47	38	RUP	27.20	1,124.00
48	38	RUP	27.20	1,124.00
49	38	RUP	27.20	1,124.00
50	38	RUP	27.20	1,124.00
51	38	RUP	27.20	1,124.00
52	38	RUP	27.20	1,124.00
53	38	RUP	27.20	1,124.00
54	38	RUP	27.20	1,124.00
55	38	RUP	27.20	1,124.00
56	38	RUP	27.20	1,124.00
57	38	RUP	27.20	1,124.00
58	38	RUP	27.20	1,124.00
59	38	RUP	27.20	1,124.00
60	38	RUP	27.20	1,124.00
61	38	RUP	27.20	1,124.00
62	38	RUP	27.20	1,124.00
63	38	RUP	27.20	1,124.00
64	38	RUP	27.20	1,124.00
65	38	RUP	27.20	1,124.00
66	38	RUP	27.20	1,124.00
67	38	RUP	27.20	1,124.00
68	38	RUP	27.20	1,124.00
69	38	RUP	27.20	1,124.00
70	38	RUP	27.20	1,124.00
71	38	RUP	27.20	1,124.00
72	38	RUP	27.20	1,124.00
73	38	RUP	27.20	1,124.00
74	38	RUP	27.20	1,124.00
75	38	RUP	27.20	1,124.00
76	38	RUP	27.20	1,124.00
77	38	RUP	27.20	1,124.00
78	38	RUP	27.20	1,124.00
79	38	RUP	27.20	1,124.00
80	38	RUP	27.20	1,124.00
81	38	RUP	27.20	1,124.00
82	38	RUP	27.20	1,124.00
83	38	RUP	27.20	1,124.00
84	38	RUP	27.20	1,124.00
85	38	RUP	27.20	1,124.00
86	38	RUP	27.20	1,124.00
87	38	RUP	27.20	1,124.00
88	38	RUP	27.20	1,124.00
89	38	RUP	27.20	1,124.00
90	38	RUP	27.20	1,124.00

Phase 2 (BARRE 3) Completion Date: 30/04/05

No.	Platform	Type of Platform	Height (m)	Deck Area (sq m)
91	38	RUP	27.20	1,124.00
92	38	RUP	27.20	1,124.00
93	38	RUP	27.20	1,124.00
94	38	RUP	27.20	1,124.00
95	38	RUP	27.20	1,124.00
96	38	RUP	27.20	1,124.00
97	38	RUP	27.20	1,124.00
98	38	RUP	27.20	1,124.00
99	38	RUP	27.20	1,124.00
100	38	RUP	27.20	1,124.00
101	38	RUP	27.20	1,124.00
102	38	RUP	27.20	1,124.00
103	38	RUP	27.20	1,124.00
104	38	RUP	27.20	1,124.00
105	38	RUP	27.20	1,124.00
106	38	RUP	27.20	1,124.00
107	38	RUP	27.20	1,124.00
108	38	RUP	27.20	1,124.00
109	38	RUP	27.20	1,124.00
110	38	RUP	27.20	1,124.00
111	38	RUP	27.20	1,124.00
112	38	RUP	27.20	1,124.00
113	38	RUP	27.20	1,124.00
114	38	RUP	27.20	1,124.00
115	38	RUP	27.20	1,124.00
116	38	RUP	27.20	1,124.00
117	38	RUP	27.20	1,124.00
118	38	RUP	27.20	1,124.00
119	38	RUP	27.20	1,124.00
120	38	RUP	27.20	1,124.00

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PHASE	PHASE 1	PHASE 2
PHASE 1	[Green Line]	[Red Line]
PHASE 2	[Red Line]	[Red Line]

PLATFORM	PHASE	Bay
[Orange Box]	1	1
[Orange Box]	1	2
[Orange Box]	2	1





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MEINECKESTR. 52A • D-40474 DÜSSELDORF
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- Logistic Concepts



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The main objectives of P.I.N are :

Dissemination of accurate, reliable and up _to_date news as well as reports, analyses and interviews on the energy sector .

P.I.N comprises four desks :

Domestic News Desk covers information about Iran's oil, gas, petrochemicals, refining and distribution of petroleum products .

International Desk has four subdivisions: OPEC and Global Market, Global Energy Developments, English News Desk and monitoring the news media.

Research Department provides basic information and outlook of global petroleum and energy markets.

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In short, P.I.N has successfully carried favor with the Iranian press for its excellent news coverage.