

using modern technology means adding 1 billion barrels of oil or at least \$20 billion to the national treasury.

● **How are the development plans carried out?**

○ Everywhere in the world, no contracting or consultancy company can undertake development plans from the beginning to the end, except oil companies. In the downstream oil sector, including petrochemicals, refining and distribution, gas, and in other industries such as steel, money can be borrowed to activate the industry. In these industries, one can put the plans to international tenders to pay the winning bidders after they accomplish the task.

However, there is no such thing in the upstream oil sector, it is not the case to procure the needed resources and hand them over to oil companies. Indeed, only oil companies can carry out all activities incessantly, starting from studies, simulation of development plans, and the final stages. In other words, the oil companies possess production technology that cannot be sold to others.

● **At what stage is NIOC's structural reform plan?**

○ Amendment of structure is one of the time-consuming works and two or three years are not enough for it to bear results. Even in some advanced countries, it takes 5 to 10 years for an organization to make structural changes, define new relations, train personnel, regulate the new management and operation systems, identify and resolve problems, and make necessary amendments. Since last two years, NIOC is undergoing structural changes and pushing ahead with the program step by step.

As the first step, we determined oil and gas production operations as a center of profit in a specific geographical

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area in the form of an independent company. For instance, we have linked five subsidiary companies to the National Oilfield Company, which is responsible for 80% of oil production. Each of these subsidiary companies is an independent commercial unit that is divided geographically.

Some companies have been founded for Central Iran Oil Company, which covers all Iranian regions, except Khuzestan province due to the large scale of its activities. Accordingly, the management and personnel of these units have paid attention to the amount of gas or oil produced and related expenditures ever since the formation of subsidiary companies.

Expenditure indices and incomes have been defined for all units and personnel know how to raise production and income. Of course, we are taking the first steps, but the promising results have shown up in the first year of the plan. As a result, a greater number of managers and personnel have paid attention to production growth, incomes and expenditures.

● **How does the new structure pay attention to research and development?**

○ For the first time, an independent research and development bureau was formed in the National Iranian Oil Company. Based on a research and development (R&D) system codified and

notified by the Oil Ministry, the NIOC intends to support and develop research and studies in the oil industry. In this connection, 1% of the total budget of affiliated companies has been put aside for research activities.

The management and personnel of affiliated companies will not confine their activities to experience and facilities; they will do their best to make use of all possible research capacities in the country. We have plans to initiate cooperation with universities, scientific and research centers, and manufacturing and trade institutes to implement a large number of plans.

● **What about employing skilled workforce?**

○ We have anticipated large-scale activities in the training sector. One of the distinguishing features of buyback contracts is allotting 1% of project expenditures to the training of Iranian personnel. We have also plans to send some of the qualified personnel overseas for specialized and complex training courses. This plan has already been initiated in the ministry.

Furthermore, we have increased the number of university seats for the upstream oil course by three-fold as compared with 4 to 5 years ago. Likewise, the programs to dispatch students to foreign countries for BSc and Ph.D. degrees are underway with the aim of gaining access to advanced technology.

On the other hand, we are busy developing applied training courses in the Ministry of Oil to expand training centers and equip them with modern software and hardware. The ministry intends to allocate around \$100 million to training programs within the coming five years.

*Source: IRAN INSURANCE
MARKET REPORT, spring 2001*

production at the end of Third Plan to maintain our present OPEC share.

In connection with gas, the majority of our activities has been focused in the South Pars field. We are hopeful of raising the capacity from 310 million cubic meters to almost 585 million cubic meters per day. This means we will have a gas production growth of 80-90% during the next five years. It is a considerable figure that promises sufficient gas for injection in the wells and for household use.

● **What are the functions of Oil Engineering and Development Company?**

○ According to the company's articles of association, the Oil Engineering and Development Company is the National Iranian Oil Company's technical arm that handles oil engineering and development affairs. In other words, in addition to managing and supervising its development plans, the company is responsible for affairs related to oil engineering in the NIOC headquarters. The managing director of this company is a member of the NIOC board of directors.

● **Could you elaborate on the development plans implemented by the Oil Engineering and Development Company?**

○ The majority of oil and gas field development plans, which are unprecedented in all post-revolution years, have been kicked off within the past two years.

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The Oil Engineering and Development Company is a 'matrix' company with specialized divisions such as oil engineering, civil engineering, project control, financial affairs, and contracts. These divisions cooperate to

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create methods, devise regulations and technical standards, and supervise implementation of activities.

Managers and commissioners form another wing of this matrix. Their responsibilities include implementation of plans, keeping timetable, regulating budgets and meeting the targets. The divisions clarify ways of doing the task by devising systems, making plans and training the required manpower. Presently, programs have been completed for implementing the following 19 plans: Soroush and Norouz oilfields, Doroud and Batat oilfields, Salman oil and gas fields, as well as the oilfields of Farzam, Nosrat, Forouzan and Esfanair.

Other gas fields to be developed in the South Pars zone include Tabnak, Shanul, Varavi and Gardan. Other plans include underground storage of natural gas, gas injection in aghajari oilfield, as well as collection, treatment and distillation of gas liquids in Ahvaz known as the Amak Plan.

Furthermore, important plans and contracts are being negotiated such as the development plans for Darkhovein and Cheshmeh Khosh oilfields, and Bangestan layers of the oilfields in Ahvaz, Ab Teimur and Mansoori, Masjed Suleyman oilfield and development plans for 16 other fields located in central Iran.

The company had kicked off 13 out

of the 19 above mentioned plans, and talks are underway to sign contracts for the implementation of the rest.

● **What obstacles and limitations do you foresee in the development of upstream oil projects?**

○ Exploration, development and production of a field, especially an oilfield, always calls for risk-taking, due to unknown factors, underground forces and effectiveness of the method of extraction and production. There is no such risk-or it is trivial if any- in other industries working at the ground level.

This risk has created a close link between investment, on one hand, and technical know-how design and engineering, and project management, on the other. In other words, investment in oil and gas field development plans primarily depends on the capability of companies in studying, evaluation and designing methods of production as well as their ability to manage production plans, according to the specifications of each region and in taking risks.

Lack of modern technology in the oil-producing countries has prompted them to conclude contracts with the international oil majors to implement their development plans and escape high risks. In other words, we will have to work with these companies even if we had enough money, because we lack the required technology. The situation emanates from our need for modern technology and tools of risk evaluation and risk management.

Borrowing money and finance in development plans is only one aspect of the matter. Another aspect concerns technology, management and risk-taking, which is quite different from other industries. Therefore, we will have to seek ways of equipping NIOC with modern technology and techniques. We have 100 billion barrels of ready-to-produce oil. Capitalizing 1% of oil reserves by

○ The contracts (including buybacks and those for development plans concluded by NIOC's domestic resources) are signed and supervised by two companies affiliated to NIOC: Pars Oil and Gas Company, which is responsible for managing various phases of South Pars gasfields development plans, and Oil Engineering and Development Company, which oversees development plans outside the South Pars zone.

In recent years, NIOC has mainly focused on preventing the decline in oil production, mainly because our oilfield's are in the second half of their life-span and production in these fields shows a declining trend. To compensate for the situation, we have many programs underway such as gas injection, exploration of vertical wells, etc. These operations are aimed at increasing the effective age of the wells and consequently boost oil production.

● **How is the Present state of oil production?**

○ In July 1997, we produced 3.8 million barrels of oil per day. Since then, plans were made to push the figure to 4 million bpd. This was achieved by increasing production, raising gas injection operations in oil wells and protecting the present oil wells. The new output is partly indebted to the explorations of the new Sirri oilfield.

The production capacity could naturally fall by 8-10% per year. In recent years, there was no decline in oil production and the industry enjoyed a 5% growth in its capacity.

With regard to gas, I should say the 240 million cubic meters of gas produced in July 1997 has been raised by over 25% to 300 million cubic meters presently. Of course, the newly explored South Pars gasfield will lead to more outstanding gas yield.

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● **What's our stance in the exploration sector?**

○ One of the serious steps in this respect was the ratification of the exploration goals and policies of the Third Five-Year Economic Development Plan (2000-2005) by the NIOC board of directors. During the Third Plan, exploration of new oilfields is a priority. Due to limitations of gas transfer and export, the focus of NIOC programs will be on exploring oilfields.

We gave given special priority to the completion of exploration operations, even in the shared fields. In line with the Third Plan, many exploration programs are underway in sedimentary basins such as Zagross, Dezful, Persian Gulf, Gulf of Oman, Fars and Lorestan.

Other sedimentary basins have also been included in the exploration programs such as Koppe Dagh and Gorgan, Moghan, central Iran, southern Caspian Sea shores and other regions. Studies and operations concerning geology, geophysics, geochemistry, seismography and drilling are underway in these regions. Special emphasis has been placed on applying state-of-the-art technology in this sector, along with technical assistance from major world oil companies, universities, research centers, oil services companies and engineering consultancy firms.

Accordingly, software and hardware equipment have to be updated to boost

technology at work. Among the noteworthy points of executive policies in this sector, I can refer to supporting consulting companies and assigning exploration management to supervise rather than rule on the operations.

● **What special arrangements have been considered for implementing the development plans?**

○ Each exploration or development plan will be sponsored by a certain commissioner of organization. Therefore, a single commissioner will supervise all activities within the domain of exploration of development plan, and this real or legal entity will be responsible for planning, implementing the plan and materializing the goals. As a result, we can expect a clear-cut timetable and list of expenditures.

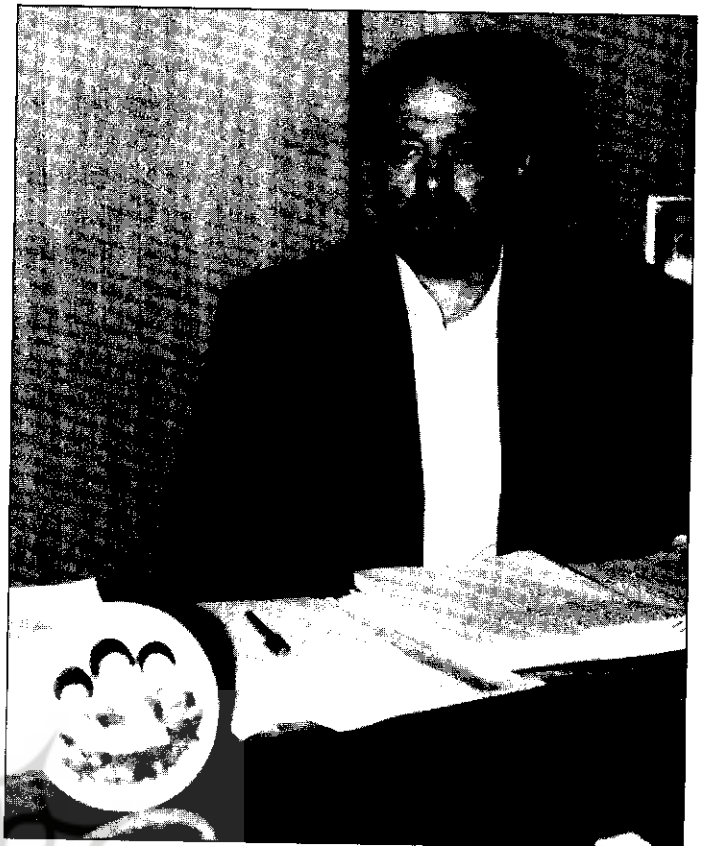
● **According to recent estimates, the current OPEC share of 27 billion barrels will grow to 42 million barrels by 2010. This will certainly require us to raise production. In other words, if we are producing 3.7 million barrels presently, we will have to produce over 5 million barrels, with respect to the programs underway, please declare if we can produce that much oil by the next 10 years?**

○ The Third Five-Year Economic Development Plan has envisioned the increase of oil production to 5 million bpd. As I said earlier, the buyback contracts have enabled us to supply almost 370,000 barrels.

According to our projections, the present downstream contracts will generate some 450,000 to 480,000 barrels more. We have also included 150,000 barrels in the plan that would be added to the capacity, with the implementation of development plans and the help of NIOC's domestic resources. We are hopeful of having 1 million barrels of oil as surplus



Technology Transfer in Upstream Oil Sector



Given the significance of upstream oil sector and related issues, the Farsi periodical Mash'al conducted a comprehensive interview with Deputy Oil Minister and Managing Director of Oil Engineering and Development Company, Mir Moezzi. Excerpts follow:

● **What are the upstream activities of National Iranian Oil Company (NIOC)?**

○ NIOC's upstream operations include exploration, development of oil and gas fields, production of gas and oil from offshore and onshore fields, marketing and sales of crude oil natural gas and its products.

● **How do you evaluate the performance of NIOC in recent years?**

○ As far as exploration is concerned, NIOC's performance has been notable after the victory of Islamic Revolution. During the past two years, some 5 billion barrels of oil and natural gas were explored, adding 680 billion to 700 billion cubic meters to gas deposits. More than three years into the Khatami

administration, the newly explored gas and oil fields have compensated for the decrease in oil and gas reserves by 4 and 6.5 years respectively. This means that our gas and oil explorations during the period exceeded what we extracted during the past four years. The rate of success of oil companies is equal to the ratio of newly explored reserves per barrel of oil extraction. This is why we say NIOC's performance was excellent in recent years.

● **What about the plans to develop oil and gas fields?**

○ Perhaps buyback contracts were the most outstanding indicator of the achievements concerning development of the country's gas and oil fields. According to these contracts, the

production capacity of gas and crude oil will be pushed up to 220 million cubic meters and 385,000 bpd respectively. These contracts can earn the country \$11 billion annually.

Presently, we save 13 cents in oil product consumption by substituting each cubic meter of gas. Therefore, considering the eight phases of the South Pars gas field's development plan, substitution of oil products with gas will annually save almost \$16 billion per year. The implementation of these plans will generate \$11 billion of direct income from oil products and \$16 billion out of substitution programs.

● **Please elaborate on the characteristics of the development plans.**