the transfer of knowledge are central to our activities in Iran. As part of the Shell worldwide family the Soroosh/Nowrooz company will tap into the Groups experience and expertise, such as the latest simulation techniques.

We are also keen to marry local experience with Shell technical expertise. For example in Ahwaz we want to combine our latest simulation techniques with the considerable knowledge of reservoir engineers from the local NIOC company, many of whom have worked on the reservoirs for 20-30 years.

As we operate in over 130 countries there will be opportunities for Iranian reservoir engineers and geologists who work with our company for a couple of years to transfer to other Shell operating companies elsewhere in the world. This process is very well established in Shell and its aim is to increase technical and management skills together with our international workforce.

● All in all do you benefit more from higher prices of oil or lower?

Generally, Shell benefits from higher oil prices. Under a "buy-back" deal as in operation on S/N (and the likely structure for other developments in Iran), remuneration (paid in installments) is defined in monetary terms. This means an equivalent amount of oil is lifted to compensate the Contractor (Shell) for the value of these installments, up to a maximum of 60% of monthly production levels. Therefore in periods of high oil prices, the Contractor will need to lift smaller amounts of crude volumes.

● Going to the gas sector

We have been looking at the gas sector for a long time in iran. When Shell started its co-operation with the NIOC six years ago and opened the Office in Tehran, the first project we looked at was the development of the North Pars for injection in onshore fields. But at the time the buy-back model had not yet been developed. Subsequently, we were asked by NIOC to look at the development of South Pars gas field and the means of export to South Asia. For this purpose four IOCs formed an alliance, namely Shell, British Gas, Gaz de France and Petronas. This consortium remains committed to participate with NIOC in export projects.

Shell is the only energy company involved in fossil fuel, forestry and also solar, biomass and wind energy development

● You have good experience with LNG.

Shell has been involved in the LNG business since the late 50s and has gained from experience consecutive generations of LNG projects world-wide. We would point to implementation of evolving leading LNG technology which has given us the benefit of cost effective project implementation.

● About associated gas?

Gas is associated with oil in most oil fields in Iran and is produced together with oil. It is then used as a source for pipeline gas, for re-injection into the oil fields to maintain pressure or to serve as an enhanced oil recovery mechanism. The utilisation of associated gas in the Bangestan project forms an integral part of the integrated project where the produced gas from one field is injected into for example the Ahwaz field.

● About the environment and Shell programmes?

The management of health safety and environmental protection to the highest standard is a fundamental Group Value. Shell is deeply committed to its responsibilities to people and society. At the start of any project, including Soroosh/Nowrooz and the South Caspian Study, an Environmental Impact Assessment is conducted and Health, Safety and Environment management system. A few years ago the Shell Group set out targets for CFCs emissions, flaring, oil to water disposal. These are published targets and we measure our achievements against these targets. Our performance is documented in reports which are available to the public and can be accessed on our web site (WWW.Shell.com). ■

these fields through gas injections and other enhanced oil recovery mechanisms. Many of the onshore fields are aging and due to the reservoir characteristics the ultimate oil recovery needs to be optimised through the implementation of enhanced recovery techniques involving modern computer reservoir modelling and flow simulations allowing additional oil to be recovered.

● What are Shell efforts in developing other forms of energy, especially biomass, because you have recently stressed environmental protection?

Shell Renewables is the Shell Group's fifth core business unit established in October 1997. It is part of the Group's evolution into an energy company and joins the core businesses of Exploration & Products, Chemicals and Gas & Coal, The Shell Renewables banner reflects the fact that activities cover a range of renewable business areas. Shell is the only energy company involved in fossil fuel, forestry and also solar, biomass and wind energy development.

● What about GTL?

In Malaysia Shell has built a gas-to-liquid facility which is producing approximately 20,000 bpd of distillates mainly of gasoline. This is the largest facility in the world. GTL technology is available, but the key issue is one of price. At the moment the process still needs at least 15 dollars per barrel of oil to run such facilities cost-effectively.

● Are you going to use high-tech such as horizontal drilling in Nowrooz and Soroosh fields? Because from what I know the thickness of the layers of onshore fields of Iran and the Persian Gulf fields are particularly suitable for horizontal drilling.

The director of Shell office in Tehran
Dr. Edi Cartier

Shell together with NIOC have decided to use horizontal wells in both fields in order to increase flow rates. The same method has been proposed by the reservoir engineers in the Ahwaz, Mansuri and Ab Teymur fields to boostproduction rates and ultimate recovery.

● About 4-D technique?

The 4-D (four dimensional seismic method) is applied ever increasingly in producing fields in order to monitor the flow of hydrocarbons in heterogenous or compartmentalised reservoirs. It is a time lap method where seismic surveys are repeated after a certain time to evaluate where production has been most effective and where additional infill drilling might be useful to drain untouched reservoir sections.

● You have different kinds of contracts in the world. How many types?

The most widely used upstream contract models in the world can be described as follows: The most common one is the Production Sharing Agreement which is used in many OPEC and non-OPEC countries in the Middle East region for example in Oman, Qatar, Syria and in many other parts of the world. Joint Venture and Technical Service Contracts are other forms of agreements used in more specific cases and countries.

● Do you prefer them?

Although the buy-back has its value in well defined development or re-development projects such as Soroosh and Nowrooz, an agreement which includes long term relationship and risk sharing between the International Oil Company and the NIOC would be a formula allowing more effective transfer of technology and national staff training.

● As you mentioned, the well defined reservoirs are low risk. What are the biggest risks in buy-back?

Meeting the tight schedule and keeping expenditure below the agreed level of development costs are the main challenges.

● On the subject of transfer of technology, do you have an agreement to employ at least 30% of local subcontractors?

In this project we see great opportunities to engage Iranian industry and Iranian people wherever possible. The agreement calls for a minimum of 30% Iranian content in the development, however we intend to do much better than that.

We are currently actively researching the Iranian market place for suitable contractors and service providers. Clearly there will be challenges- and it will be a learning process for all involved- as some of the contractors are in the first phase of working with foreign companies. As of this moment, we have a large number of personnel inspecting a jack-up drilling rig belonging to NIDC which we hope can be made available to drill for us in the second half of this year.

The application of technology and

● on the mergers, Shell has kept aloof from that kind of merging and what is Shell's status? Any plans for merging? If not, why? If not, then how would you compete with the already major mergers?

There are many different opinions on the merits or possible downsides of mega-mergers voiced by experts in the energy industry. While we never rule anything out, Shell is concentrating for the time being on its internal restructuring to improve performance with some success during 1999 and efforts will be sustained.

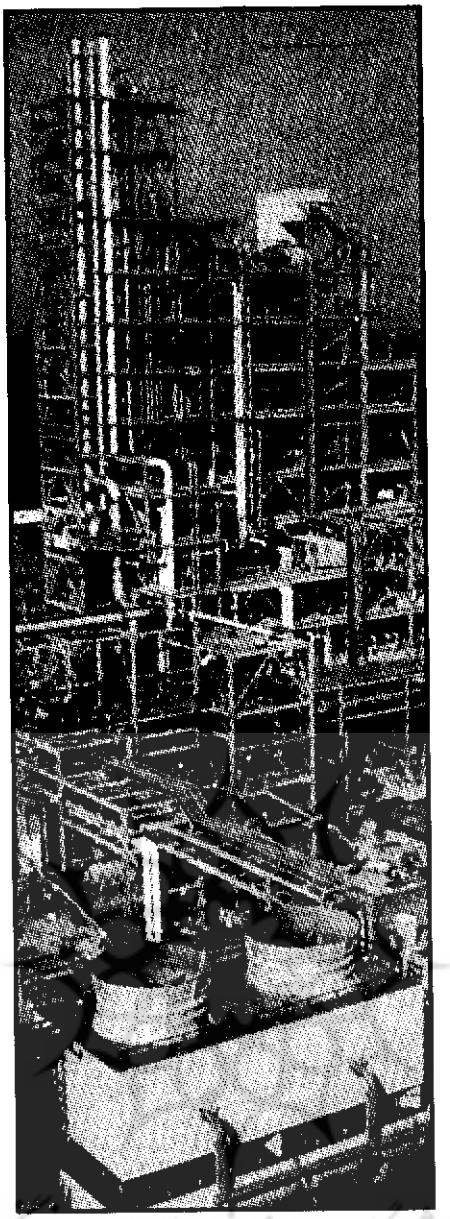
In any case, Shell is currently amongst the very largest companies in the world. We are quite happy to be in the big league along with other companies such as Exxon Mobil and BP-Amoco.

● It is said that one of the most important incentives of these mergers was the low price of oil and another factor was optimizing the work trend.

I believe that Shell has not only the right size but also a well balanced portfolio of the different energy businesses which all are dedicated to operate efficiently. We are now focusing on being more competitive, more cost-effective.

In the recent contract that you signed with Iran, there is a definite share for Shell, what is the share, the percentage of oil that you get from the overall reserves? Would you book this share and add it to your assets in the international markets?

The agreement signed with the NIOC for the re-development of the Soroosh and Nowrooz fields is a buy-back under which the foreign contractor has no access to reserves. It is quite common in the Middle East that foreign companies are, under contractual terms, not able to book reserves. It is a misconception that companies only aim for contracts which allow to book equity share of oil and gas reserves, despite the fact that equity is an important performance factor in the eyes of financial analysts.



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● We were also told that you have submitted proposals about certain onshore fields, such as Bangestan, and that negotiations are still ongoing.

When we had low oil price conditions, our focus on low-cost oil opportunities became more accentuated and high-cost oil opportunities were put on hold. Major resource holding countries largely concentrated in the Middle East provide such opportunities. Since Iran is offering a large variety of exploration and development projects in the offshore and onshore, Shell has focussed its interest on the Islamic Republic of Iran's hydrocarbon sector both in the up and downstream.

The Ahwas Area Major Bangestan project which involves the Ahwaz, Mansuri and Ab-Teymour field provides a significant opportunity in terms of modern technology implementation and is therefore of great interest to Shell. We have submitted proposals for all three fields and it would be a great privilege to assist NIOC in the development of this important natural resources.

Also, in the newly discovered Azadegan field, Shell is keen to cooperate with NIOC in the appraisal, early production and full field development phases.

We are also evaluating the possibility of joint technical co-operation with NIOC to study aging fields with declining production. Together with NIOC we plan to study how to revitalize

An Interview with Dr.Edi Cartier,the Director of Shell office in Tehran

SOROUSH , NOWROUZ & SHELL

Iran's oil ministry and Shell company two months signed an 800 million dollar agreement for development of Soroush andNowrouz oil fields in the Persian Gulf.
These two fields have an overall capacity of over one billion barrels of recoverable heavy crude oil. Soroush and Nowrouz fields are estimated to produce 100000 and 90000 barrels per day respectively at the final operational phase slated for 2003.
The director of Shell office in Tehran Dr. Edi Cartier in the following interview explains about the company's activities in Iran.