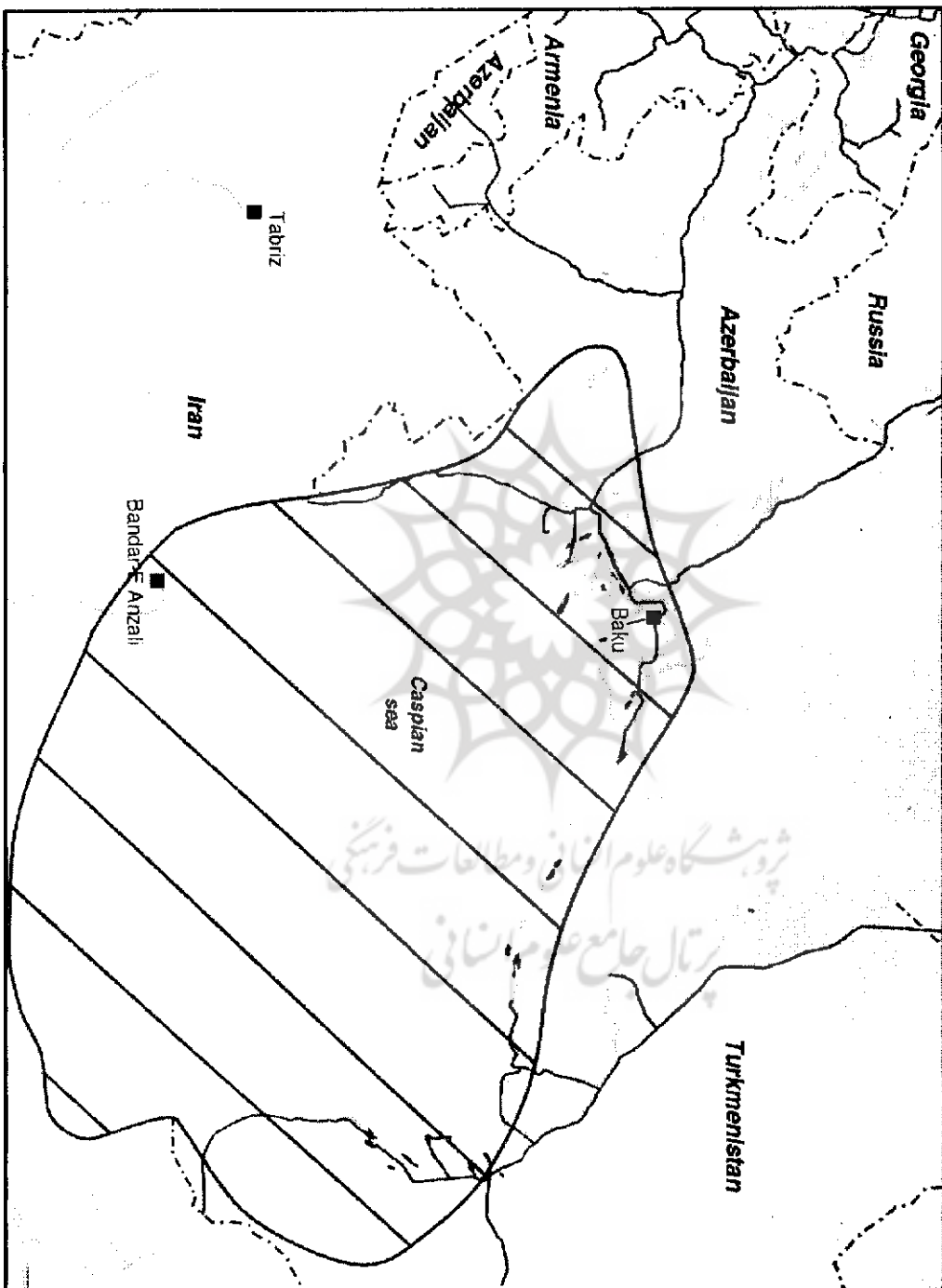
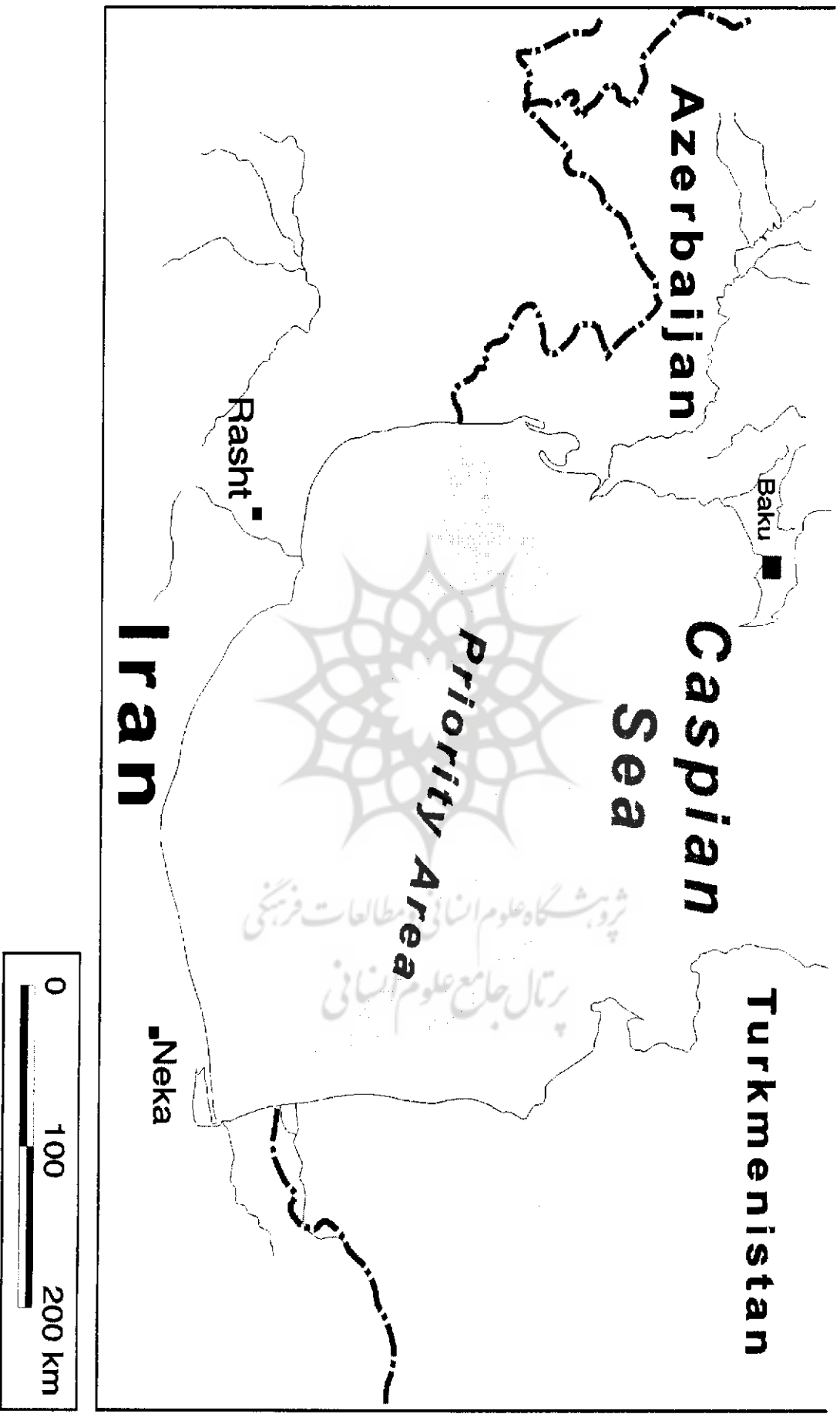


South Caspian Basin: Study Area

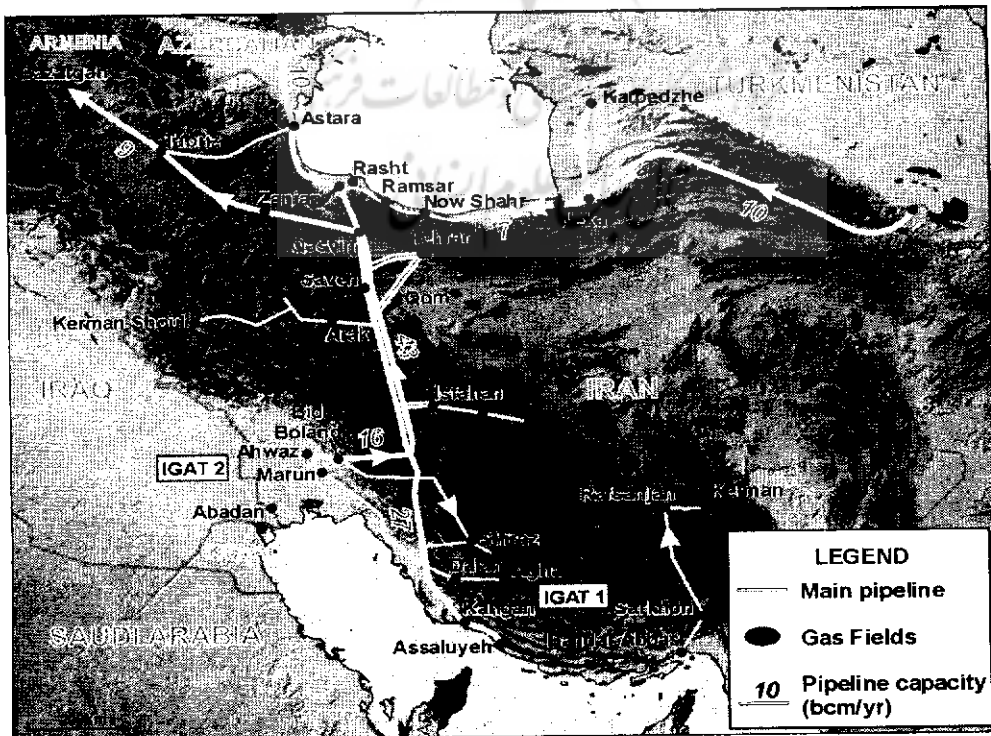
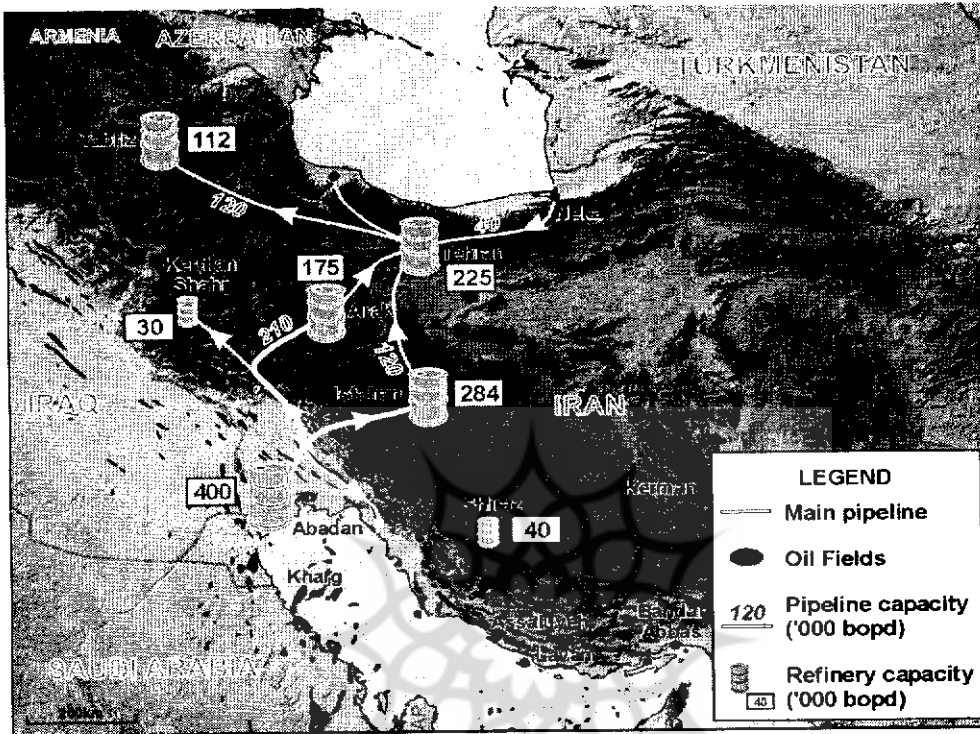


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South Caspian Basin: Study Area



Iranian Oil & Gas Pipelines





operational conditions.

Exploration and development of the oil and gas potential in the South Caspian will not be possible without knowledge of and expertise in the use of these systems.

We, therefore, believe that development of the oil and gas reserves of the Caspian will provide an excellent vehicle for entering the field of deep water technology and gaining first hand know-how and knowledge of the whole range of its aspects from drilling to exploration and operation systems.

4. One of the challenges in offshore exploration is what to do with gas discoveries if there is no long term reliable and readily accessible market for it.

Because of this, some of the offshore gas discoveries already made in the world remain "stranded" until such markets become a reality to make any investment economically viable.

Such challenge will present itself more if more of the offshore exploration prospects in the Caspian turn out to be gas reserves rather than oil.

One of the technologies which can rise up to this challenge, is the new "Gas to liquid" technology, which converts gas to liquid fuels.

The development of any gas discovery in the Caspian will provide NIOC with a timely opening into this technology which is now going through its pilot and semi-industrial stages.

Acquaintance with and operational experience with such technology will provide the necessary know-how for a new specialty in the oil industry in this country and will contribute favorably to the supply and distribution of transport fuels in northern Iran.

5. The fact that the Caspian is a land-locked sea and logistics and supply problems make exploration and development operations costly are usually overstressed.

We think that NIOC should make "virtue out of this necessity" and a strategic plan should be drawn to develop and integrate an indigenous infrastructure capable of supporting oil and gas operations not only of Iran itself but the whole Caspian region. An oil section integrated and interactive with industrial, scientific and technical surrounding institutions will complement each other and bring about a real exchange and transfer of technology.

The capabilities developed in the North East of England or in Norway after the discovery of oil in the North Sea are a good example for this argument.

It is worth mentioning that after the first discoveries in the Norwegian Continental Shelf, a Government team from Norway visited Tehran in 1971 to ask for NIOC help to set up their new oil organization.

Now after only 30 years, the infrastructure and the supporting capabilities built in a previously herring-fishing village is such that it can develop and operate oil and gas fields in very hostile environments of deep seas.

If we succeed in doing this we would have realized a longstanding national goal that the oil industry be an integrated part of the whole Iranian industry, and not just an appendix to its economy.

Now, how can we in Kepco contribute to achieving this national goal? This brings me to the issue of agreements/contracts which may be negotiated and signed with foreign companies for the prospects identified in the South Caspian.

During the conference sessions of yesterday and this morning, you heard some differing views on Production Sharing and Buyback types of agreements.

Though oil agreement are complicated, nevertheless in their basic

forms, they represent a selling-buying deal between two sides who both profess "fair" price.

But we know that the world is a place of conflict of interests; the party who knows more, he will be the winner.

What is important in an agreement is its content not its form or name, although its name has to comply with what the law stipulates.

In an exploration agreement, one party may try to prove maximum risk involved (reserves, development timing, operation, political risks etc). Care should be taken, against duplication of such risks.

Agreement items should be transparent and well-defined and should include no general and vague clauses.

Exploration and appraisal phasing and work commitments should be well defined. Decision-making mechanism should be such that key development parameters such as conceptual/Master Development Plan, production profile, peak (plateau) production etc. are not left under the control of only one party to such agreements; balanced control on the process of decision-making is as important as fiscal provisions agreed between the two sides. With more than 90 years of development and production experience, NIOC experts are well qualified to participate in such decision-making. Different conceptual development plans change the economy of projects upside down.

As for financial/economic parameters such as NPV, NCF, EMV, RROR, interest rate etc. which are advanced to appraise a specific development project as a prelude to establishing basic items of the agreement (such as remuneration, capital cost, bank charges, rate of return etc), we should increase our knowledge of these items in order to better safeguard our national interests and get a really fair deal. ■



**The development of
any gas discovery
in the Caspian
will provide NIOC
with a timely opening into
GTL technology**

develop and make full use of its fair share of the resources in the region.

During the Soviet era, because of the international balance of power then existing, Iran was allowed to exercise the right to use and develop its resources in the Caspian only partially and mainly in fishing. Iran, was not only deprived of its rights to the resources of the Caspian proper, but was not allowed to explore for and develop any petroleum resources in its inland provinces bordering the Caspian.

To safeguard national interests, therefore, NIOC is determined to pursue its exploration for and development of oil and gas resources in the region.

2. The development of petroleum resources in the South Caspian provides an excellent opportunity of a "grass root" or "clean slate" development compatible with social and technical expectations and requirements of the new millenium.

Today's expectation from any development plan is to behave in a responsible and accountable manner toward its human, social, and natural environments.

From human and social points of view, development projects are expected to be the means for bringing employment, prosperity, welfare and increase in the quality of life.

Developments in different parts of the world all point to the fact that inhabitants of regions of oil and gas resources are demanding that they get a fair share from the bounties, which accrue from oil and gas development.

International Oil Companies and Governments are beginning to take notice of such demands. Recent legislation in Iran is an indication that these legitimate expectations are now officially recognized.

As from a natural environment perspective, the Caspian exploration and development project has to set a very

high standard in responsible behavior. This is specially imperative because of the delicate ecological balance existing in the Caspian.

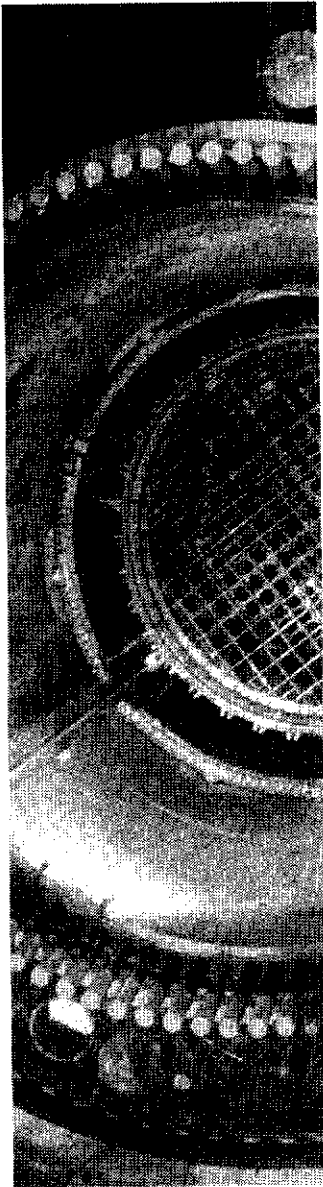
As you undoubtedly know, the Caspian region, both offshore and inshore with its three Province of Gilan, Mazandaran and Golestan, comprise the most picturesque and beautiful parts of Iran, and the dense population inhabiting the region makes their living from agriculture and fishing. Any development of gas and oil resources in the area will affect this and has to be carefully planned beforehand to eliminate or reduce adverse effects of such activities.

The sad experience of the last 90 years of the oil industry in the "mature" fields of Iran provide a strong incentive that environmentally-responsible exploration and development activities should, from the very beginning, be planned on the principle of "preventive" not "corrective" action, e.g. seismic pollution, drilling fluids dumping offshore or onshore, salt water/ dirty oil dumping or flaring onshore or offshore and harmful effluents discharge to the environment should not be allowed.

3. The South Caspian with its deep waters of upto 1000 meters is joining the four main areas of "deep water" exploration and development of the world, namely: North West Europe, West Africa, Gulf of Mexico and Brazil.

In these 4 areas, new records are constantly being set either for deep water drilling depths or new fields coming on stream in record water depths. For example, Brazil's South Marlin Field produces in more than 1700 metres of water, and the deepest water depth record for an exploration well is 2300 metres drilled in the GOM.

To deal with such demands, very complicated and specialized deepwater systems have been developed, each suitable for specific environment and



To safeguard national interests, NIOC is determined to pursue its exploration for and development of oil and gas resources in the Caspian region

Kepeco was also to act as NIOC representative in any exploration and production partnership in the Caspian in which NIOC elects to participate. In such capacity, Kepeco is now supervising the involvement of Iran in Shah-Deniz and Lankaran-Talesh Projects in Azerbaijan.

With the aim of implementing a systematic and purely technical exploration study, we decided that the scope of this study should cover the whole of the South Caspian up to the Apshorn sills. Such a geological entity will include all the probable sedimentary plays for the south Caspian basin, and will give a complete and overall picture of the oil and gas potentials of this region.

On this basis, an agreement was signed with two foreign companies in Dec.'98 to jointly carry out the "South Caspian Exploration Study" in Kepeco's offices in Tehran. Afterwards, in November 1999, a third foreign company joined the group.

In this agreement, all the participating companies undertook specific commitment in area designated as "Priority Area".

The study is now nearing its completion and its final report will be issued within a month or so.

As the speaker before me explained, in some detail, the geological basis of the findings of the study, we believe that the study has been carried out according to the highest standard of exploration work and can stand up to any scrutiny.

Some 46 or so structures containing a fair number of very promising exploration prospects have been identified in the South Caspian, both in shallow and in deep water.

NIOC can now with great confidence base its future exploration and development activities in the Caspian on the results of this Study.

NIOC should no longer feel behind

others in assessing the prospectivity of its offshore, with the advantage that this assessment is based on solid geological work, and is unlikely to be falsified by exploration activity.

The deep reserves identified are in between 400-900 metres of water.

The shallow reserves can be developed earlier using available Iranian "jack-up" drilling rig. This factor and also their proximity to shore considerably reduce the initial capital investment required for their development.

In any case, for both deep and relatively shallow reservoirs, Iran has the advantage in that the development costs are offset by the much lower

transport costs; as the oil or gas produced will find a natural and already existing market in northern Iran.

Whether independently or jointly with interested parties, NIOC is intent on a first phase exploration and development of the South Caspian.

During this conference divergent views have been expressed on the probability of the different pipeline, tanker, and refinery projects proposed for the Caspian in the last few years.

We believe that instead of basing its related projects on receiving oil and gas produced by others, Iran should expedite its own development and production of the prospects identified in the South Caspian to feed its northern refineries. Productivity improvement and savings resulting from such new scheme would improve the economics of Caspian development projects.

From NIOC point of view, the development of oil and gas resources of the south Caspian is of particular importance for the following reasons:

1. To exercise its rights and sovereignty, the Islamic Republic of Iran has to have an effective and purposeful presence in the region. An important part of these rights is the right to



Some 46 or so structures containing a fair number of very promising exploration prospects have been identified in the South Caspian, both in shallow and in deep water

53,000 km seismic operation along the Iranian borders of the Caspian were carried out in the period between 1967 to 1969 with contracted vessels from the (then) Soviet Union, who apart from the financial rewards for doing the job, benefited from the access they had to the results of these seismic surveys; and used them in their exploration studies of the Caspian region.

On the basis of the results of this seismic campaign, 2 more on-shore wells were drilled.

Of the 16 wells drilled altogether, five wells showed indications of H/C but these were considered uneconomical measured by the yardstick of the day; yardsticks used when Iran's production from the Southern Fields exceeded 5 million barrels per day of cheap oil. Therefore exploration activities around the Caspian were abandoned.

The Islamic Revolution in 1979 and then the collapse of the Soviet Union in 1991 opened a completely new chapter in the history of the Oil Industry in the Caspian region.

You undoubtedly have heard & read much during the last few years about the Caspian and the scenarios seen for it. These have been developed, directly or indirectly, on the basis of the extensive and valuable geological studies about the Caspian done by Soviet Geologists with updates using modern geoscience tools.

Except for the specific reserves with long exploration and production history, most regional forecasts for oil and gas in the Caspian should be considered rather "subjective".

A measure of the reliability of such forecasts is their ability to be categorized in terms of accepted definitions of proven, probable and possible reserves. And, of course, it is the drilling operation which is the final arbiter in determining the H/C potential of an exploration

area; a fact which has recently been learnt by some of the players in the Caspian region, and resulted in their review of previous bold plans.

With this fact in mind, NIOC decided in 1989 to drill the first offshore well in the shallow water north of Anzali to test the results of the seismic campaign of 1968.

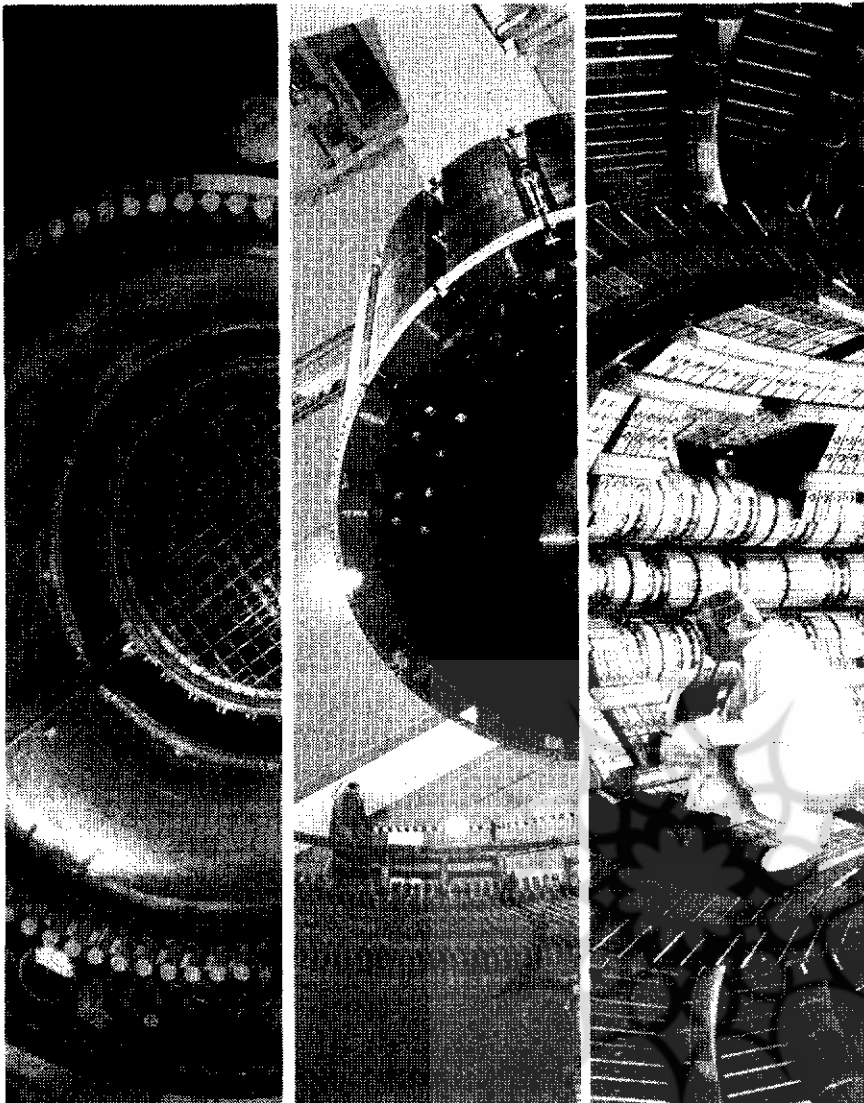
As the test results from this well were not conclusive, it was decided that next well sites should be selected after a new seismic survey. This was carried out over two blocks in the eastern and western sides of the southern Caspian (i.e. Neka and Anzali) in 1993. On the basis of these seismic surveys, 2 more wells were drilled, the last one (Mayzam) by the newly-built Iranian jack-up rig Khazar-1, which penetrated the target structure @ 5750 metre ss.

These exploration activities provided valuable information such as pressure profile of the Caspian structures for future drilling.

With the benefit of its experience during the period 1994-1997, NIOC set about in 1998 to implement a thorough and systematic exploration study of whole southern Caspian, region bordering its land and offshore waters.

For this purpose, NIOC decided to upgrade the organization which till then was handling the Caspian Project to the status of one of the 5 Exploration & Production Companies, within NIOC. Hence the birth of Kepco, which stands for Khazar Exploration & Production Company (Khazar being the Farsi equivalent to Caspian).

Kepco was given the duties and functions of exploration, development and production operations of the gas and oil resources in the 3 inland Provinces of Gilan, Mazandaran and Golestan on the southern shore of the Caspian, as well as in the offshore waters of the Caspian.



NIOC's Exploration Activities in the Caspian

Presented at
International Conference
of The Impact of the
Middle East/Caspian Oil
on Global Energy
Markets,
4th/5th November 2000
Tehran

by:
M. R. Shammasi
Managing Director
Khazar Exploration & Production
Company (KEPCO)

I thank the organizers of this conference for their invitation to give this distinguished gathering a miniature picture of the National Iranian Oil Company's Exploration Activities in the Caspian Sea.

The speaker before me, representing our foreign partners in the South Caspian Exploration Study, gave us their viewpoint about the prospectivity of the South Caspian as the Study has shown, and with all their conservatism, they admit that there are some 10-20 billion BOE waiting to be extracted in the South Caspian.

In order to put NIOC viewpoint on the Caspian in the proper perspective, I should give a historical back ground of the subject and the lessons to be

learnt.

Historically, the focus of oil exploration and production in Iran were the very prolific South West Oil Fields operated then by British Petroleum, under the name of the Anglo-Iranian Oil Company.

These fields, because of their abundance and proximity to the export outlets on the Persian Gulf, made exploring for oil in any other part of Iran unnecessary. Moreover, political considerations at the time were unfavorable to any exploration activities around the Caspian, on-shore or off-shore.

Though the Iranian Nationalization of the oil Industry in 1951, drastically changed the political situation,

exploration around the Caspian had to wait till 1957 when an Exploration Department was created within N.I.O.C. which had taken the responsibility for Exploration & Production outside the Agreement Area after the downfall of the national Government of the late Dr. Mousadegh and the return of the Major Companies to Iran in 1953.

The new Exploration Department started a new Study on which some 12 new on-shore wells were drilled on the foothills of the northern Alborz Mountains, extending from Moghan in the northwest to Ghezal Tapeh on eastern side of the Caspian.

It was then decided that any more drilling should be done only after seismic campaign. Therefore some