

# International Explorationists Dinner Meeting

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Zagros Foldbelt

## Exploration Potential

The potential for finding new hydrocarbon reserves in Iran is immense. Many large surface anticlines in the Zagros foldbelt and elsewhere in Iran have yet to be tested. Announcements of discoveries in Iran during recent years are essentially redrills of known prospects or discoveries not economical prior to the 1979 revolution. The prospect inventories present in Iran in 1979 have not been tapped in over 20 years. Many structures tested and plugged before the revolution would be economical today utilizing modern technology. These abandoned structures and missed pay opportunities offer a large inventory of low-risk exploitation projects. Complex structures and difficult data areas offer potential for undiscovered reserves using modern 3D seismic acquisition techniques. The existing fields in Iran are structural traps that have often been tested by shallow stratigraphic wells (Tertiary Asmari), providing significant deeper pool exploration prospects. There are no stratigraphic traps currently defined in Iran. Modern analytical structural and stratigraphic techniques (sequence stratigraphy and balanced structural sections) are not widely used in Iran. There is significant potential in footwall subthrust-style traps (onshore) and salt flank traps (offshore).

## Petroleum Systems

The petroleum systems in Iran have been known since before the revolution. The potential for giant fields in Iran resulted in state-of-the-art geological and geophysical work by most companies in the search for discoveries before 1979. Recent discoveries of multibillion barrel fields in Iran by the NIOC (National Iranian Oil Company) have reinforced the future

## Future Hydrocarbon Potential of Iran

potential for giant discoveries. Petroleum systems composed of multiple reservoirs (clastic and carbonate), sources and seals are present in the Tertiary, Cretaceous, Jurassic and Paleozoic. Many of these petroleum systems are the same as in the Gulf States and neighboring countries, yet the Lower Cretaceous, Jurassic and Paleozoic systems have yet to be exploited.

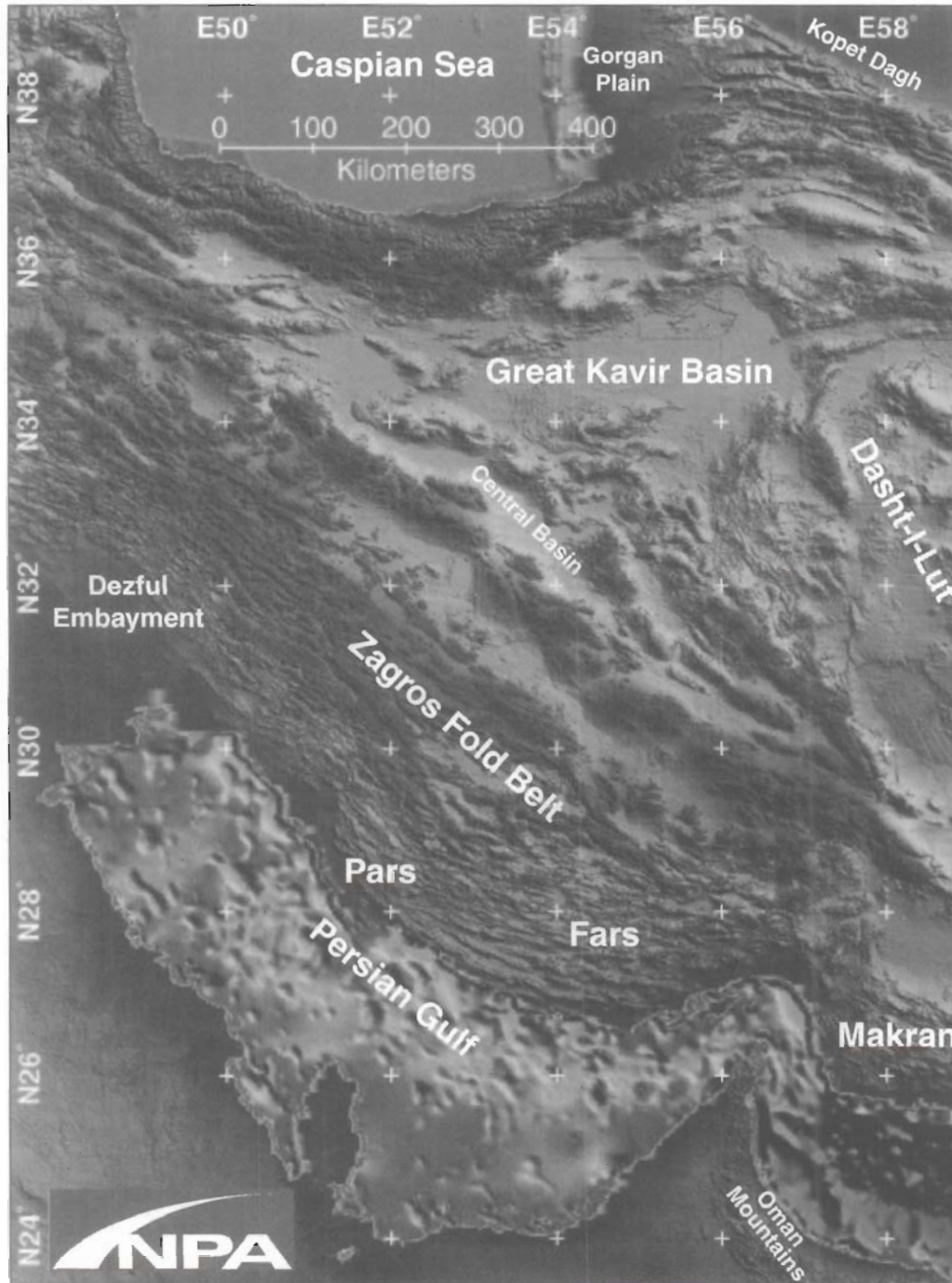
## Sanctions

U.S. based companies have been prohibited from doing business with Iran by the same U.S. government that has recently sought a means to increase world hydrocarbon production. The result is the utilization of our U.S. strategic oil reserves to temporarily control world oil prices. Meanwhile non-U.S. companies have continued to pursue projects and ventures in Iran despite the presence of sanctions. In the 2nd Buy Back round offered by Iran, 21 of 37 projects offered, contained significant equity previously held by American companies. American companies are not only prohibited from making attempts to pursue these equities, but they are also losing their competitive edge given by proprietary databases acquired before the 1979 revolution. The sanctions limit many business opportunities, but travel to Iran, exchange of public information, and the exchange and purchase of some types of data are permitted. Providing detailed proposals or interpretation of data is prohibited.

## Economics

The current economic terms in Iran provide a major hurdle for American companies accustomed to production-sharing contracts. Many companies understand the effects of booked

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Social 5:30 p.m., Dinner 6:30 p.m.



Topographic image of Iran

reserves upon their stock price, but they are not accustomed to the impact that a project awarded in Iran will have upon their stock value. The Buy Back terms in Iran are essentially that of a service agreement based upon a fixed rate of return and time period, regardless of oil price and OPEC quotas. Development projects in Iran offer low technical risk projects that have high rates of return. Offshore projects may offer higher rates of return due to higher development costs. While onshore fields in Iran may contain the greatest reserve potential, they may not result in the best rates of returns under the Buy Back terms. Reserve potential does not affect economics under the Buy Back

terms, as no reserves are booked by the foreign companies. Economics in Iran are driven entirely by capital expenditure and the rate of return of the development costs of the project.

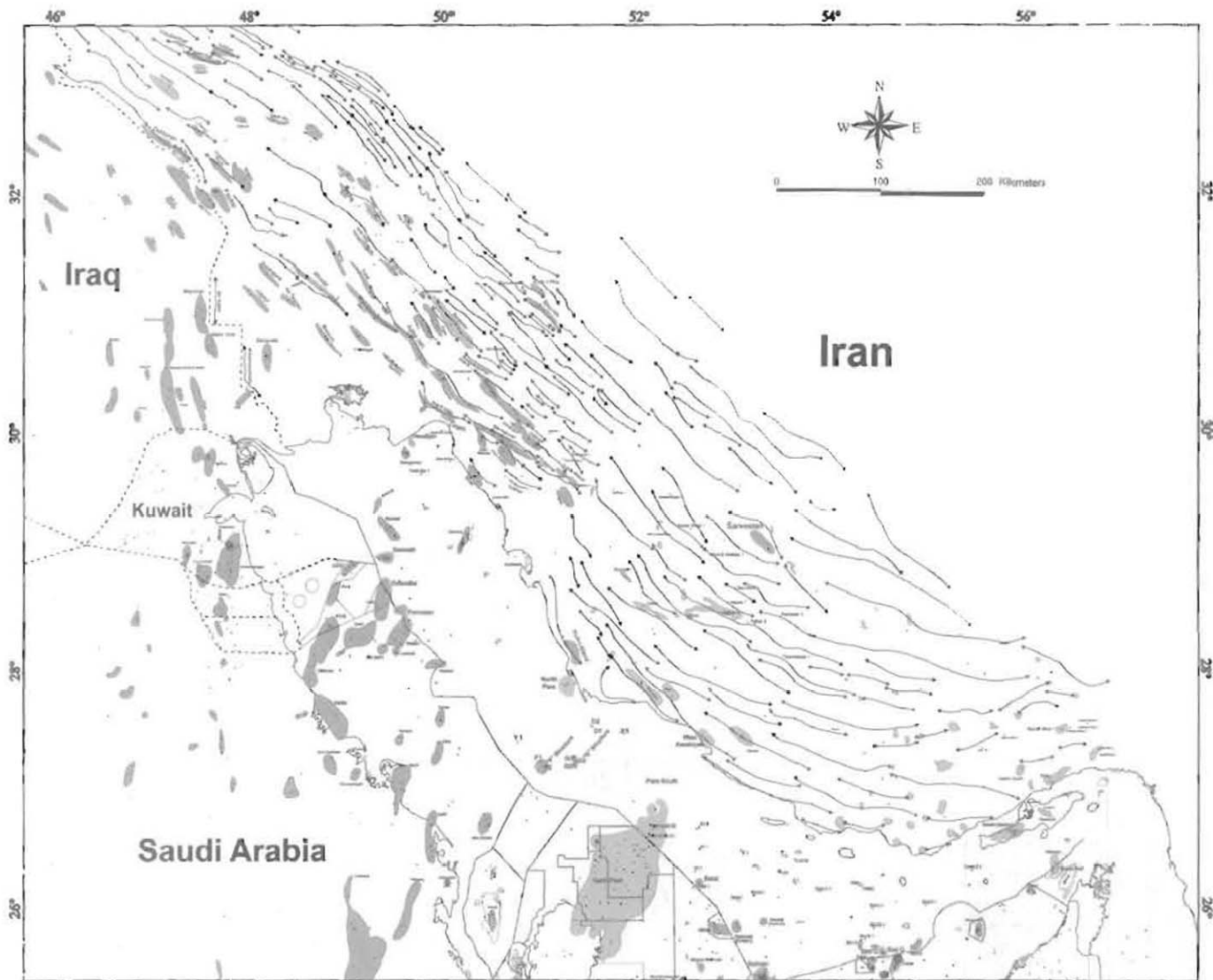
**Biographical Sketch**

WELDON BEAUCHAMP is a geophysicist and consultant (Atlas Exploration and Production Company, Dallas, Texas). He began his career with Sun Exploration and Production Company in Oklahoma City as a production geologist after the completion of his MS from Oklahoma State University in 1983. In 1985 he

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was transferred to exploration in Dallas, Texas, while working the Mid Continent district for Sun. Later he worked for Sun International in Dallas and London as a new venture exploration geologist for Sun in the North Sea, Africa and Middle East regions. Weldon began working on his doctorate in geophysics at Cornell University in 1992. Upon the completion of his

doctorate he began working for ARCO in Plano as a senior geophysicist in the Middle East and Latin America groups. While with ARCO he made several trips to Iran and made presentations to the NIOC. Current interests are in the Middle East, North Africa (Morocco and the Atlas Mountains), West Africa and Oklahoma. □



*Structural trends and oil and gas fields*