

Monday, May 19, 2003

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

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## International Explorationists Dinner Meeting

By **Walter H. Pierce**

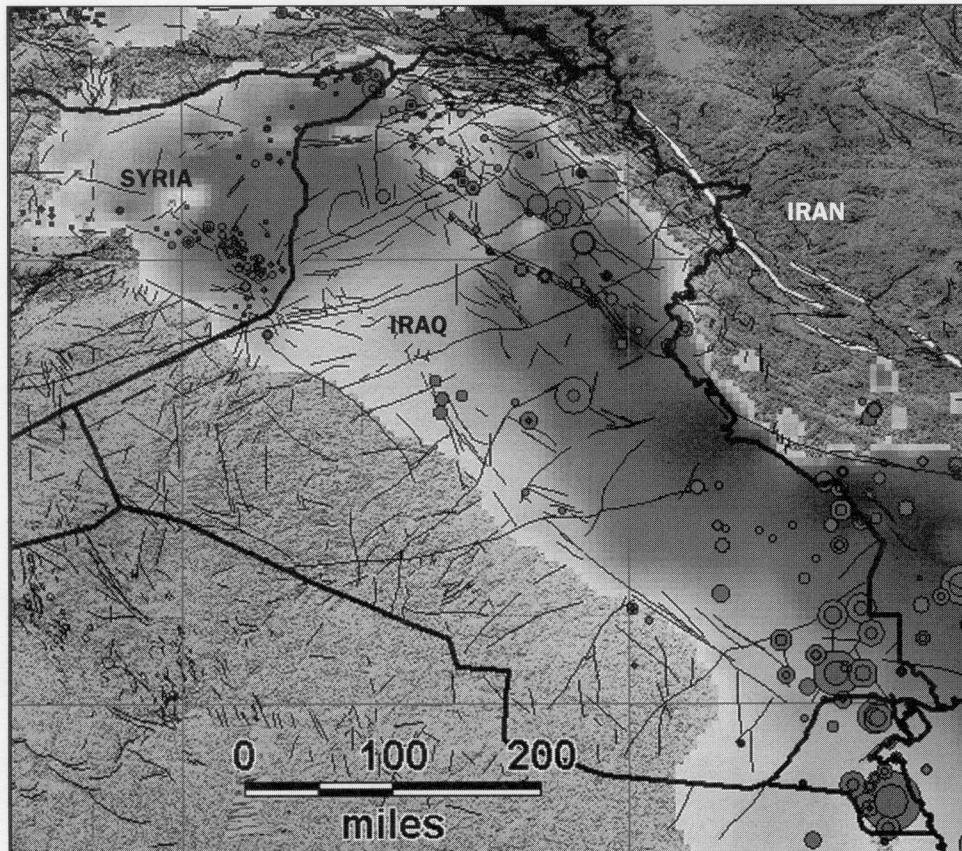
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*Matrix Geoscience, LLC, Knoxville, TN*

# Petroleum Geology of Iraq: A 2003 Review

Iraq remains one of the premier countries for exploration potential. However, along with political, economic, and safety issues that confront future production, exploration problems remain. Dry holes will be drilled along with discoveries. In 2000, the USGS estimated undiscovered reserves at mean of 45 billion barrels of oil in Iraq, and in its 2002 Country Analysis Briefing, the US Energy Information Administration (EIA) reported the oil reserves of Iraq to be 112 billion barrels with “probable and possible reserves” of 220 billion barrels. The total resource base receives an additional boost from an estimated 110 TCF proven and 150 TCF probable gas reserves.

At face value, Iraq has the appearance of a place where any prudent exploration company should aspire to be. But are there other perspectives? In a 2000 United Nations report a grim status was given concerning the northern and southern producing regions. The report pointed out production problems from both Kirkuk and Rumaila that risk irreversible reductions in ultimate recovery. In Rumaila the risk, according to the UN, is having recoveries of 15 to 25 percent instead of 35 to 60 percent, with the latter being normal expectations elsewhere for similar reservoirs. In the current (2002) Country Analysis Brief for Iraq, the EIA points to similar emerging field and production problems.



*Tectonic map of Iraq. The shaded area represents the Neogene. Dots represent by diameter size the ultimate oil and gas reserves of fields.*

In this paper we focus on the future of true exploration in Iraq. Certainly the conditions are right to expect more giant oil accumulations. However, we believe that there is also reason to exercise caution and that exploration success will depend on identifying discrete areas where there is an efficient bottom-to-top petroleum system. In effect, given that not all concession positions will high grade equally, we address the question of whether or not Iraq can live up to the 45 billion undiscovered barrels expected of it.

In addressing exploration potential in Iraq, we have chosen to work on what we perceive to be fundamental geological attributes. The foundation of our work is a set of chronostratigraphic isopach and structural maps for both Iraq proper and surrounding areas. We have further used these maps to construct a series of > *continued on page 17*

derivative products, including regional structural cross-sections extending northeast to southwest from the Zagros of Iran to Syria, Jordan, and Saudi Arabia and petroleum generation scenarios.

The basis and ultimate test of our work, however, is data taken from the study of wells, field information, and hydrocarbon distribution from the region. Several issues, particularly spatial coincidences and discrete geographic areas, deserve discussion. These include:

1. Kirkuk and the probability of finding another "Kirkuk,"
2. the Euphrates Graben and why the productive trend appears to terminate at the Syria/Iraq border,
3. the close relationship between Neogene cover and productive trends,
4. the importance of gathering systems in Burgan, Rumaila, and Majnoon (and the potential for more) and
5. the future of emerging petroleum systems, such as the Paleozoic (Silurian) in Saudi Arabia and the Sinjar Trough (specifically the Triassic) within Iraqi territory.

We feel that Iraq will host additional, and large, discoveries. However, we additionally believe that exploration will be most

successful where solid technical work is applied to the task of deciding where to be and, perhaps more importantly, where not to be. ■

### Biographical Sketch

**WALTER H. PIERCE** is the director of WHPierce Exploration located in Cypress, Texas, USA. His background includes consulting after early retirement subsequent to 17 years of experience with international groups within Amoco. He has 17 years of experience working the Middle East. He has a PhD and MS in geology from the Colorado School of Mines and an BA from DePauw University. Previously he taught geology for eight years at Ball State University, University of Georgia, and the Colorado School of Mines. He also worked for the USGS in the Petroleum and Heavy Metals groups. His recent work has focused on hydrocarbons of the Arabian Plate. Most recently, he teaches physical geology to freshman at Tomball College and consults for GeoMark on the Zagros Basin. He may be contacted at [walterhpierce@yahoo.com](mailto:walterhpierce@yahoo.com) or through his website at [whpierceexploration.com](http://whpierceexploration.com)

