Target Exploration

**MENA 2004 Oil & Gas Conference**

The 5th Middle East and North Africa Oil & Gas Conference

**MENA & IRAQ**

Oil & Gas Post-wars and Sanctions

20 & 21 September 2004,

The Imperial College

180 Queen’s Gate, London, SW7, UK
Day One

Oral Presentations, Monday 20 September 2004

8.55-Chairmen Opening Remarks

A. IRAQI OIL: PRE- AND POST-WARS AND SANCTIONS


- Introductory Remark on the History of Iraq
  - The History of Oil in Iraq
  - The first concessions
  - The early national Oil policies
  - The National oil company
- The Oil regimes from Concessions to nationalization
  - Traditional Concessions
  - Profit Sharing contracts
  - Service Contracts
  - The National Industry
  - The structure of the Iraqi oil Industry
  - The Ministry
  - Iraq National Oil Company
  - The associated National Companies
- Associated Legislation in the Oil Industry
  - Protection of the Hydrocarbon Law
  - Environmental legislation
  - Other Legislation Affecting the Oil Industry
Mr Sabah Al Mukhtar, Former Iraqi National Oil Company’s Lawyer, President, Arab Lawyers Network, London, UK.

9.30 (A2) Current Iraqi Upstream Tenders.
- Background
- Political Environments
- Security
- Insurance
- Company registration
- Local Services
- Tenders
- Supply Requisitions
- JOA’s/ JV’s
- Training

Dr. T Uqaili, Business Development Manager, Baker Hughes, Baghdad, Iraq.

10.00 (A3) The Future of Iraqi Oil.
- Will Iraq become the world's largest oil producer?
- The Security in the oil sector and the relation with the US policymakers.
- Iraq’s oil production and export: lack of planning, organisation, understanding and poor security.
- What is the most accurate description of the state of the Iraqi oil industry?
- How can Iraq pay off at least a portion of the $420 billion it owes in debt and war reparations?
- Each one of the world's major economic powers has an agenda for Iraqi oil.
- The volume of production in the 'New Iraq' will depend on many variables.
- Operating outside OPEC will not necessarily mean increased profits.
- Will Iraq undermine OPEC market power?
- Is there any role for Israel?
- Summary.

Dr. M. Al Bazergan, Chairman of IRAQ INFOSEARCH (Iraq Information & Research Centre), London, UK.

10.30 (A4) Iraq: Post-30th June and the Issue of Sovereignty.
- The strategic Context.
- The Interim Government
The Pernicious Role of the US in Iraq
The Pretence of Sovereignty
The Iraqi Parallel with Afghanistan.
The Alternatives-Separating Facts from Myths.
The Real Solution for Iraq
References

Dr. A. Robin and Mr T. Mustapha

11.00 Morning Coffee

B. PETROLEUM HABITAT OF IRAQ

11.30 (B1) Undeveloped Oil Fields of Southern Iraq
- History:
- Regional Geology:
- Structure:
- Stratigraphy:
- Reservoirs and Fluid Properties:

Mr. K. Muammar, Consultant Petroleum Geologist, London, UK.

12.00 (B2) Optimal Seismic Processing and Seismic Inversion Of Low-Coverage 2D Seismic Data, West of Amara, Southern Iraq. A Reservoir Characterization study For Mishrif, Rumaila, Zubair and Ratawi Formations.

- Iraq’s main tectonic provinces and the location of the study area.
- Location map of the reprocessed seismic lines.
- INOC’s stacked and migrated original seismic line (current status of Iraqi data).
- Iraqi data acquisition parameters, West of Amara province.
- Pre-processing operations flow.

- Seismic amplitude reprocessing of target data.
- Spherical divergence processing impact and results.
- Seismic pre-stack deconvolution.
- Wavelet estimation operations.
- Rawstack section results, west of Amara.
- 3 deconvolution operator, applications & results.
- Velocity scanning and analysis.
- West Amara velocity trend analysis.
- Horizon velocity trends.
- Post-stack deconvolution operations
- Wavelet estimations.
- Deconvolved sections & seismic results.
- Lithofacies time-calibrated Composite well logs.
- Final colour-coded seismic sections (optimally processed).
- Newly defined seismic anomalies.
- Seismic attribute analysis.
- Seismic Inversion results & reservoir characters.

Dr. K Al Atroshi, Consultant geophysicist, Lecturer of applied geophysics at McGill University- Montreal- Canada, and Visiting lecturer in seismic stratigraphy at Carleton University, Ottawa, Canada.

12.30 (B3) Highstand and lowstand platform systems in the Late Cretaceous of NW Iraq and adjacent countries, and their implications for play fairways.

- Late Cretaceous of Northern Arabia
- Shelf carbonate reservoir on palaeohighs during highstands
- Shelf carbonate reservoir in or bordering basin axes during lowstands
- Only basin axes get inverted during Neogene
- Best structurally-trapped reservoir potential in lowstand carbonates
- Possible stratigraphic traps in highstand carbonates.


13.00 Lunch
C. IRAQ: CULTURAL AND ARCHAEOLOGICAL BRIEFING

14.00 (C1) Archaeology: Iraq’s other great underground asset.
- Iraq
- Birthplace of civilisation
- Centre of medieval Islamic world
- A uniquely important place in world culture and heritage
- Key Events in Iraq’s long history
- How material objects help to illuminate our understanding of those events
- Damage done to Iraq’s archaeology in recent years
- How the oil industry can help to protect and preserve it for future generations
- Iraq’s past
- Palaeolithic cave dwellers
- First cities, writing, law
- Great empires of Assyria and Babylonia
- Babylon: Alexander the Great’s capital
- Baghdad: capital of the Abbasid empire
- The archaeology of Iraq’s past
- Stratigraphic excavation
- Careful documentation
- Non-invasive techniques
- Painstaking conservation of objects
- Long-term analysis and interpretation
- From animal bones to architecture
- Museums, schools, TV…..
- A role for the Oil Industry
- Sponsorship
- Responsible approach to archaeology
- A future for Iraq’s past
- Cultural benefits
- Economic benefits
- The looting of Iraq’s past
- Museums after 1991 Gulf War
Archaeological sites during Sanctions
Museums, archives, and libraries during the 2003 Iraq war
Archaeological sites since then

Dr E Robson, Lecturer, British School of Archaeology in Iraq and Department of History and Philosophy of Science, University of Cambridge, Cambridge, UK

14.30 (C2) Geo-archaeology of Bahrain.
- Brief geological history of Bahrain to the discovery of oil in 1934.
- Archaeological sites & geological features in Bahrain.
- Locations of Neolithic Age sites close to Jabal Dukhan in Central Bahrain.
- Locations of Delmon Kingdoms sites of the Bronze & Iron Ages close to water springs and coastline.
- The connections of Delmon Kingdoms cultures of Bahrain with Mesopotamian cultures of Iraq.
- The importance of petroleum deposits in the development of human cultures in Ancient Mesopotamia and Modern Gulf States.

Dr. M. Al Rawi, Director, Carta Design Ltd, Co. Kildare, Ireland

15.00 Afternoon Tea

D. PROSPECTIVITY OF NEW PLAYS AND E&P ROUNDS IN MENA

15.30 (D1) Interior Sudan: Exploration Assessment (2004).
- Introduction
- Pipeline
- Diplomacy
- Past Players
- Current Players: CNPC, Petronas, OVL
- Oil Fields
- New Fields
- Basins: Muglad, Merlut
- Regional Geology
- CAFZ
16.00 (D2) Fundamental Controls of Hydrocarbon Distribution in Western Turkmenistan.

Introduction

* Technical and Business criteria
* Fields, Structures, and Leads within Basin
* Landsat TM Interpretation
* SRTM: structures and surface morphology
* Bouguer gravity: western Turkmenistan
* Relationship Between Bouguer Gravity and Known Geologic Features
* Relationship Between Bouguer Gravity and Fields and Structures
* Residual Gravity Map
* Relationship Between Residual Gravity and Geologic Features
* Relationship Between Residual Gravity Fields and Structures
* Relationship Between Topography and Bathymetry and Geologic Features
* Oil Reserves By Field
* Gas Reserves By Field
* West Turkmenistan Field Size Distributions.
* Likelihood of future large discoveries, Western Turkmenistan.
* Composite field size distribution diagrams for Western Turkmenistan
* Northern Basin likelihood of new field discoveries.
* Location of Possible Source Basins Based on Bouguer Gravity Data
* Oil Richness and Possible Source Basins
* Oil Richness With Migration Pathways
• Gas Richness and Possible Source Basins
• Gas Richness With Migration Pathways
• Kitchens and migration pathways
• Synthesis map on residual gravity
• Field distribution and potential charge directions
• Progressive Destruction of Kitchens and Structures
• The Southern Basin review
• Summary and Conclusions
• Hydrocarbon Exploration Potential of Turkmenistan

Dr. Everett Rutherford, Jr. (Consultant in Petroleum Exploration and Digital Mapping, Matrix Geoscience, Texas, USA) and Dr. Walter H. Pierce (Director, WHPierce Exploration, Cypress, Texas, USA).

16.30 (D3) A Review of the Plays/Leads in The Iranian Sector of The Persian Gulf.
• Regional plate tectonic setting.
• Brief geological history and tectonic setting.
• Regional stratigraphic distribution of source, reservoir and cap rocks.
• Main periods of trap formation.
• Stratigraphic megasequences.
• Brief review of the play types in each block.

Dr. M Ala, Director of M.Sc. Courses, Petroleum Geology Section, Geology Department, Royal School of Mines, Imperial College, London, UK.

17.00 –17.30 Discussions and Chairmen Closing Remarks.
Participants and Spouses are Cordially Invited to the 5th MENA O&G Conference Dinner

The Time: (20.00-22.30 Hrs)
The Date: Monday 20th of September 2004.
The Place: TBA
Day Two
Oral Presentations, Tuesday 21 September 2004

8.55 Chairmen Opening Remarks

E. INTEGRATED GEOSCIENCES IN FIELDS DEVELOPMENT

9.00 (E1) Expert systems in interpretation geoscience.
   • Seismic interpretation by expert system
   • Testing suggests 400% better productivity, 4000 km p.m. per team
   • Output of a detailed and coherent geological model
   • Conversion of the geomodel to detail on rock properties.
   • Potential for overworked MENA national oil companies, to quadruple their knowledge generation, thus reducing need to foreign expertise.

K. Armitage, Chief Technical Officer, GeoDetect, Devon, UK.

9.30 (E2) Integration of Micro-Electrical and Sonic Reflection Imaging Around the Borehole - Offshore UAE
   • Introduction
   • Micro-electrical Imaging
   • Sonic Reflection Imaging
* Integrated Micro-electrical and Acoustic Imaging
  * Interpretation
  * Conclusions


10.00 (E3) Integrated Geosciences Technology applied to onshore complex structures.
* Integrate data from different origin and nature.
* Integrate data from two different dimensions.
* Interactive complex structure interpretation.
* Model validation.
* During interpretation process.
* Strativarius.
* 2D geometric restoration of seismic image.
* The completed geological model.
* Conclusions.

Martin SPECHT (Total E&P, Structural Geology Group, Geosciences Technologies) and Stéphane RAILLARD (Total E&P, Structural Geology Group, Geosciences Technologies).

10.30 (E4) Heterogeneity Quantification And Fine Scale Layering From Image Logs And Core: Implications In Carbonate Reservoir, Offshore Oil Field, Abu Dhabi.
  * Summary
* Parasequence Cyclicity
* Image Logs Methodology
* Image Scaling
* Reservoir Heterogeneity
* Conclusions

Hamad Bu Al-Rougha, ((ZADCO, Abu Dhabi, UAE), Hesham Shebl (ZADCO), and Muatasam H. Al-Raisi (Schlumberger Wireline, Abu Dhabi, U. A. E.).

11.00 Morning Coffee

F. THE PRICE OF OIL: NEW LIBYAN HYDROCARBON LAWS AND CONTRACTS

11.30 (F1) Evolution of Libyan Petroleum Exploration and Production Legislation
* Introduction
* National Oil Corporation
* Petroleum Law No 25 of 1955
* Legal, Fiscal and Contractual Terms
* Reconnaissance Permits
* Concession contract terms
* Joint Venture Contract Terms
* EPSA I Contract Terms
* EPSA II Contract Terms
* EPSA III Terms
Dimitri Massaras, I.H.S. Energy, Geneva, Switzerland.

**12.00 (F2) Risks and Uncertainties in Libyan Upstream Oil and Gas Agreements.**

- Introduction
- Libyan New Exploration Production – Sharing Agreements (EPSA)
- Sharing Costs and Expenses
- Sharing of Petroleum Production
- Cost Recovery Limits
- Oil Prices Risk Under the New EPSA Terms
- Profit Oil Split
- Environmental Issues
- What Went Wrong with the Libyan New Open Blocks
- Technical Aspects of the New Open Blocks
- Prospectivity
- Exploration Record
- Development Costs
- Distance to Infrastructures
- Operating Costs
• Recommendations
• References

Mr. W. A. Otman, PhD. candidate in Petroleum Economics, Univ. of Aberdeen, Aberdeen, Scotland.

12.30 (F3) Libya coming from the cold: a threat to Algeria’s attractiveness?
• Political obstacles have vanished.
• Libya’s major oil potential (exploration, development, redevelopment).
• The tender process: a turning point?
• Concerns about politics and bureaucracy.
• Is the potential likely to meet expectations?
• Algeria is moving forward.
• The gas trump card

Dr. Francis Perrin, Editorial Manager, Arab Oil and Gas, Arab Petroleum Research Center, Paris, France.

13.00 Lunch

G. POST-WARS & SANCTIONS: UPSTREAM PLANS AND TENDERS

14.00 (G1) OPEC’s Policies: A Critical View.
• Oil Pricing Policy
• OIL And Gas Utilization Policy
• Vertical Integration
• OPEC And The Environment
• Oil Producers - Oil Consumers Dialogue
Summary and Conclusions

Dr Ali Hussain, Former OPEC Officer, Oil Consultant, Abu Dhabi, UAE.

14.30 (G2) Does Libyan Petroleum Law Explain the Stagnation in Libyan Oil & Gas Industry?

- Introduction
- Libyan Petroleum Law No 25 (1955)
- Decree No 10 of 1979
- New Draft Petroleum Law
- Conclusions.
- References

Mr. W. A. Otman, PhD candidate in Petroleum Economics, University of Aberdeen, Aberdeen, Scotland.

15.00 Afternoon Tea

H. NEW EXPLORATION PLAYS IN THE MIDDLE EAST

15.30 (H1) Hydrocarbon prospects of salt structures in the southern Arabian Gulf region

- Types of salt structures in the southern Gulf region.
- Structural setting of salt structures within the southern Gulf Hormuz salt basin.
- Geology of emergent salt plugs.
Mechanism of salt intrusion; a possible solution to old problems.
Hydrocarbon prospects of salt structures of the southern Gulf region.
Future exploration strategy for locating undiscovered salt-related traps.

**Dr. M Warrak**, (Consultant Geologist, Research Associate in Structural Geology, Imperial College, London, and Associate Lecturer, the Open University, Milton Keynes, UK), and **Kamal Muammar**, (Consultant Petroleum Geologist, London UK).

**16.00 (H2) North Iraq: remaining oil potential and future activities.**
- Background
- The Attractiveness of the Iraqi Oil
- Tectonic Setting and Hydrocarbon System of North Iraq
- Technological Problems and Limitations
- Proposed Future Activities in North Iraq
- Conclusions

**Dr. K. Aqrawi**, Senior Review Geologist, ADCO, Abu Dhabi, UAE.

**16.30 (H3) Hydrocarbon Potential of the Paleozoic Glacial Deposits of the Arabian Peninsula.**
- Paleozoic Glaciations
- Nature of Glacial Deposits
- Distribution of Glacial Deposits
- Lithological characteristic of the Glacial Deposits
- Hydrocarbon bearing units
- Exploration Play Fairways
- Exploration Potential
Dr. A. Al Laboun, Consultant Petroleum Geologist, Riyadh, Saudi Arabia.

17.00-17.30 Panel Discussions Chairmen Closing Remarks

Poster Presentations, Monday & Tuesday 20-21 Sept. 04

(PP1) Diagenesis, diagenetic history and reservoir potential of the Montian Beda Formation, Zelten Platform, Sirt Basin, Libya
* 

Ibrahim Elkanoni, and Adel Aboktef, Petroleum Research Centre, Tripoli, Libya.

(PP2) Expert systems in interpretation geoscience.
• Seismic interpretation by expert system
• Testing suggests 400% better productivity, 4000 km p.m. per team
• Output of a detailed and coherent geological model
• Conversion of the geomodel to detail on rock properties.
• Potential for overworked MENA national oil companies, to quadruple their knowledge generation, thus reducing need to foreign expertise.

K. Armitage, Chief Technical Officer, GeoDetect, Devon, UK.

(PP3) CHARACTERISATION OF MIDDLE EAST AND NORTH AFRICAN CARBONATE RESERVOIRS
* Introduction
* Middle East (Arabian Platform) Carbonate Reservoirs
* Shu’aiba Formation
* North African Carbonate Reservoirs
* Zelten Formation
* References

Gary Aillud, Steve Hill, Leona Adair, Florian Conradi, Natalie James-Rutledge, Andrew Canham and Glyn Carter, IReS (Integrated Reservoir Solutions Ltd), Ellesmere Port, U.K.

Standby Oral Presentations, Monday & Tuesday 20-21 Sept. 04

(SB1) Diagenesis, diagenetic history and reservoir potential of the Montian Beda Formation, Zelten Platform, Sirt Basin, Libya

* Ibrahim Elkanoni, and Adel Aboktef, Petroleum Research Centre, Tripoli, Libya.

(SB2) Petroleum Play Fairways of Iraq.
  * Tectonic Elements.
  * Stratigraphic Column.
  * Petroleum Provinces.
  * Major Source Rocks
  * Petroleum Systems
  * Tertiary Plays: Ghar, Kirkuk (N), and Kirkuk (S).
• Lower Cretaceous Plays: Nahr Umr, Shu’aiba, Zubair and Yamama.
• Jurassic Plays: Najmah-Sargelu, and Butmah-Mus.
• Triassic Plays: Kurra Chine and Geli Khana.
• Paleozoic Plays: Permo-Carboniferous, Devonian, Silurian and Ordovician.
• Maturity of the Plays
• Conclusions.

Dr. M. W. Ibrahim, Geologist, Target Exploration, London, UK.


Dr. Ali Al Mashadani, Director General, Nahrain Oil Services Company Ltd., Baghdad, Iraq

(SB4) A Review of Short-, Medium- and Long-Term Iraqi Petroleum Industry Plans
• The Iraqi Oil Industry
  • Past Development Plans.
  • Oil for Food and Other Frozen Iraqi Funds
• Early and Short Term Restoration Plans
  • No Council, Council, and Interim Government.
  • The Status of Iraqi Funds in and Outside Iraq.
  • The High Costs of US Service Companies.
• Political Uncertainty.
• The Giant Reconstruction Miniaturised.
• The Current Status of the Iraqi Oil Industry.
• The Haifa Pipeline.
• Short Term Targets
* Election and Deadlines of Interim Government, and Occupation.
* Legal Considerations.
* Security Considerations.
* Restoration and Rehabilitation of Producing Fields.
* Multi-National Participation.
* National Participation: In Planning, Management, E&P Operations, Budgeting and QC.

**Medium Term Targets**
* Election and Constitution, Sovereign Government and Deadline of Occupation.
* Authority and Regulations.
* Regulatory Authority.
* Organization.
* Partial-, No-, or Full-Privatization
* Multi-National Participation.
* National Participation: In Planning, Management, E&P Operations, Budgeting and QC.

**Legal Framework:**
* The Occupation.
* Petroleum Law.
* Petroleum Regulation.
* Depletion Policy.
* Oil Price Policy.
* Model Agreements.

**Long Term Targets**
* Licensing or Subcontracting:
* Government and Administration.
* Petroleum Policy and Legislation.
* Regulation of Operations, Production, Shutdown and Abandonment.
The New-ventures Authority.

Development of Infrastructures.

The Licensing/Subcontracting Process:

Pre-Licensing/Subcontracting Phase.

New Approach to Licensing/Subcontracting.

Competitive E&P Licensing/Subcontracting.

Regulating, and QC of Exploration, Production, Shutdown and Abandonment Operations.

National Participation: In Management, In Planning, E&P Operations, Budgeting and QC.

Summary and Conclusions

References

M.W. Ibrahim, Geologist, Target Exploration, London, UK.

(SB5) SEDIMENTOLOGY AND PETROGRAPHY OF THE NUBIAN SANDSTONE IN WELL A62-100, BU ATTIFEL FIELD, SIRT BASIN, LIBYA.

Juma Mayouf, PRC, Tripoli, Libya

(SB6) Ranks and E&P Potential of the Remaining Syrian Blocks.

Introduction

Remaining Blocks

Exploration Histories

Source, Reservoir and Seal Rocks of the Syria.

Drilled and Remaining Surface and Subsurface Anomalies.

Ranking Methodology

Conclusions: Relative E&P Potential and Ranks of the Remaining Blocks

Dr. M W. Ibrahim, Geologist, Target Exploration, London, UK.
(SB7) Integrating Seismic Inversion and Water Flood Pattern Management Planning, Upper Cretaceous Mauddud Formation Reservoir, Raudhatain Field, North Kuwait.

- Mauddud Carbonate Reservoir
- Depositional Environments
- Diagenesis
- Porosity Map from Well Data
- Water Flooding Phase 1 Underway
- Can Seismic Inversion and Porosity Prediction Improve Water Flood Phase 2
- Final Predicted Porosity Looks Great!
- Porosity Prediction Workflow.
- Problem and Solution
- Cross Validation of Predicted Vs Well Porosity.
- Predicted Porosity in Revised Phase2 Water flood Strategy.
- Drilling Confirms Predicted Porosity
- Conclusions

**Mr. Hussain Al Ajmi** (Senior reservoir engineer Kuwait Oil Company, Kuwait) and **Mr Yousif Al Zuabi** (Specialist Petrophysicist Kuwait oil company).
**MENA 2004 Oil & Gas Conference** will be held on the 20 & 21 September 2004, at and around the Clore Theatre, *(Building No 8, click for location map of the Imperial College)*, Imperial College, Queen’s Gate, London SW7. The Building is within 10-15 minutes walking distance from South Kensington or High Street Kensington Underground Stations, and 5 minutes from stops of Bus routes 9, 10, 49 and 52.

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[www.imperialcollege-conferencelink.com](http://www.imperialcollege-conferencelink.com)

**CHAIRMEN AND AUTHORS**

**CHAIRMEN**

Dr. Mike Ala  
Director of M.Sc. Courses, Petroleum Geology Section, Geology Department, Royal School of Mines, Imperial College, London, UK.  
Mike has BSc, MSc & PhD in Petroleum Geology, Imperial College, and University of London. Authored more than 50 research and review articles. Member of the editorial board of international technical journals, and chief editor of one book. Acknowledged expert on the petroleum geology of Iran. Worked in the oil industry for 8 years in global petroleum
exploration - identification and evaluation of oil and gas prospects. Currently Senior Academic and Director of the internationally recognised MSc programme in Petroleum Geosciences at the Imperial College, responsible for up to 45 postgraduate students per year. Author of numerous proprietary and non-proprietary reports on petroliferous regions in northern Europe, eastern Mediterranean countries, Africa, eastern South America and the Middle East. Co-founder in 1988 and Director of Hydrocarbons Venture Limited,

Dr Ali Hussain
Consultant and Marketing Manager, Al Mazroui Engineering Co, Abu Dhabi, UAE.
Dr Hussain has a PhD in Economics, University of Exeter, England, UK, MA in Economics, University of Exeter, England, UK, BA in Economics, Distinction Award, University of Baghdad, Baghdad, Iraq.

Dr. Walter Pierce
Director, WHPierce Exploration, Cypress, Texas, USA.
Walter has a Ph.D. and MSc degrees in Geology from The Colorado School of Mines and an A. B. from DePauw University. Explored the Africa and Middle East as an Amoco geologist for seventeen years. Taught Geology for eight years at Ball State University, University of Georgia, and The Colorado School of Mines. Worked for the USGS in the Petroleum Group and in the Heavy Metals group. His recent work has included New Ventures, hydrocarbon system analysis of the Arabian plate, undiscovered reserve assessment, multi-basin assessment of Central Asia and the Middle East.

Dr. Thamir Uqaili
BDM, Baker Hughes, Baghdad, Iraq.
Director, Petroconsult Canada, Mississauga, Canada, Reservoir Engineer (BPC), Field Manager (NOC), General Manager (CPO) General Manager Planning Department (MOO), Iraq; Area Reservoir Co-ordinator (North Africa) Repsol, Spain.

**Dr. M. Warrak**
Consultant Geologist, Research Associate in Structural Geology, Imperial College, London, and Associate Lecturer, the Open University, UK.
Mohammed has a B.Sc. Honours in Geology, University of Liverpool, M.Sc. and D.I.C. in Petroleum Geology, Imperial College, University of London, Ph.D. in Structural Geology, Imperial College studying an area of great structural complexity in the Western Alps of France. Well-established researcher and teacher of Earth Sciences with detailed knowledge of the Geology of the Northern Oman Mountains. The results of his research include scientific papers and six geological map sheets of some of the most important and geologically critical regions of the Northern Oman Mountains. He also carried out consultations to the Government of the U.A.E. and many contracting companies including Abu Dhabi National Oil Company (ADNOC) / OMV Aktiengesellschaft (Austria) and Calvalley Petroleum (International) Inc., Canada.

**AUTHORS**

**Mr. Adel Abuktef**
Petroleum Geologist, Petroleum Research Centre, Tripoli, Libya.
Adel has a B.Sc. in Geology, Al-Fateh University, Tripoli, M.Sc. in “Earth and Environmental Sciences, Application & Management”, The University of Manchester. Current research projects include studying the burial history, diagenesis, reservoir quality and heterogeneity of the Nubian Sandstone in Abutifel Oil Field, Sirt Basin, Libya.

**Leona Adair**
Geologist, Integrated Reservoir Solutions Ltd. Ellesmere Port, U.K.
Academic qualifications: MSc. Petroleum Sedimentology. Awarded by The University of Reading. 2001, and BSc Geology (Hons), Awarded by Queens University of Belfast, 1999

Gary Aillud
Senior Carbonate Geologist, Integrated Reservoir Solutions Ltd. Ellesmere Port, U.K.
Background: Gary worked for Fugro Robertson as Carbonate sedimentologist/Biostratigrapher, Department of Palaeontology Natural History Museum, London UK. Academic qualifications: PhD Palaeoecology, Palaeoenvironmental Analysis and their application to Sequence Stratigraphy, awarded by University of Plymouth, 2001, BSc (Honours) in Geology awarded by University of Portsmouth, 1995

Dr. Mike Ala
Director of M.Sc. Courses, Petroleum Geology Section, Geology Department,

Mr H. Al Ajmi
Senior reservoir engineer Kuwait Oil Company, Kuwait

Dr. K. Al Atroshi
Consultant geophysicist, Lecturer of applied geophysics at McGill University- Montreal- Canada, and Visiting lecturer in seismic stratigraphy at Carleton University, Ottawa. Canada.
Kamal has an M.Sc and Ph.D in exploration& field development geophysics, Bordeaux University- Francem worked for 8 years as Geophysicist at Iraq National Oil Company INOC- Baghdad, Iraq. Worked for 3 years as a post-Doctorate researcher at the French Petroleum Institute (IFP) Paris and worked on several projects, including an atlas of stratigraphic traps, seismic signature of carbonates and seismic modelling of recent clastic deltaic lobs in the Gulf of Mexico. Then joined Elf-Aquitaine for 5 years as Senior Geophysicist in ELF Aquitaine- Paris, departments of prospect generation & basin evaluation and new ventures.
Dr. M. Al Bazergan  
Chairman of IRAQ INFOSEARCH (Iraq Information & Research Centre), London, UK.

Dr. A. Al Laboun  
Consultant Petroleum Geologist, Riyadh, Saudi Arabia

Dr. Ali Al Mashadani  
Director General, Nahrain Oil Services Company Ltd., Baghdad, Iraq.

Mr. S. Al Mukhtar  
Former INOC Lawyer, President, Arab Lawyers Network, London, UK.  
Qualified and admitted Iraqi Lawyer, studied Arab and Islamic law at Al-Mustansiryah University in Baghdad, Iraq and awarded Bachelor degree in law in 1968. Awarded a degree of Master of law from London in 1986. Worked as the sixteenth employee of Iraq National Oil Company soon after its establishment in 19964. Admitted to the Iraqi Law Society in 1969 and from that date until 1974 practised Iraqi law as in-house Counsel in the legal department of the Iraqi National Oil Company. During that period participated in almost all of the projects that were undertaken then. That included most of the contracts and agreements with the then eastern block countries (USSR, Rumania, Bulgaria, Czechoslovakia) as well as France, Brazil, India, Turkey, Syria and others. The projects involved all the facets of the oil industry including exploration, appraisal, development of oilfields as well as upstream and downstream operations. Admitted to the Iraqi Bar in 1974. In that year the Baghdad Court of Appeal granted him the right to practice law on the Baghdad Circuit and thereafter, granted the right of audience at all levels of the courts of Iraq including the Court of Cassation. Worked as legal adviser to Abu Dhabi National Oil Company in the United Arab Emirates. 1980 practised as legal consultant in England advising on Arab and Islamic law. Advised many international clients and law firms working in the USA, European, African and Asian countries including the Arab Countries. Participated in arbitration proceedings both institutional and ad hoc as a member of the panel, advocate or legal expert. Appeared as expert before the High Court of Justice in England and was accepted as expert on Arab and Islamic law. Advised on oil related matters including exploration and development rights.
in the Arab Gulf region, west Africa (Nigeria, Cote de Voire) Indonesia, Mexico, and the 7th Round UK North Sea oil. Also on crude oil trading in the early 80’s.


Dr M. Al Raisi
Chief geologist, Schlumberger Gulf Market, actively involved in analysis of imaging logs, horizontal well planning and evaluation and integration of geological data with production and reservoir monitoring services. He has 10 years experience in reservoir characterization by integrating borehole images with seismic, petrophysical measurements and core data. Worked in studies ranging from single well fracture and facies analysis to field scale integrated modeling of sandstone and carbonate reservoirs. Worked with Petroleum Development Oman (PDO) as Wellsite Geologist: (1990-1991), Operational Geologist, Exploration Geologist and Seismic Interpreter (1991-1997). Muatasam has a PhD in structural control on sedimentary fill, from University of South Carolina (USC), Master of Science in reservoir characterization of Terry Sandstones, from Colorado School of Mines (CSM), and BSc in Geology from Pennsylvania State University (PSU).

Dr M Al Rawi
Director, Carta Design Ltd, Co. Kildare, Ireland
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