

Multinational E&P Geosciences Experience

Target Exploration has been providing Petroleum Exploration, and Oil and Gas fields' development, production services and R&D* solutions to international and national upstream petroleum companies since 1990.

The multidisciplinary management and associate geosciences consultants of Target Exploration accumulated extensive Petroleum E&P, GeoEnergy and Environmental Geosciences databases and research experiences. They published numerous exclusive and nonexclusive reports and scientific papers on regions, countries and oil and gas fields in mature and frontier basins and sub-basins in, Africa, Arabia, America and Europe.

Target Exploration's multidiscipline consultants may be deployed on-sites, at clients' offices, or in our offices, to provide clients with:

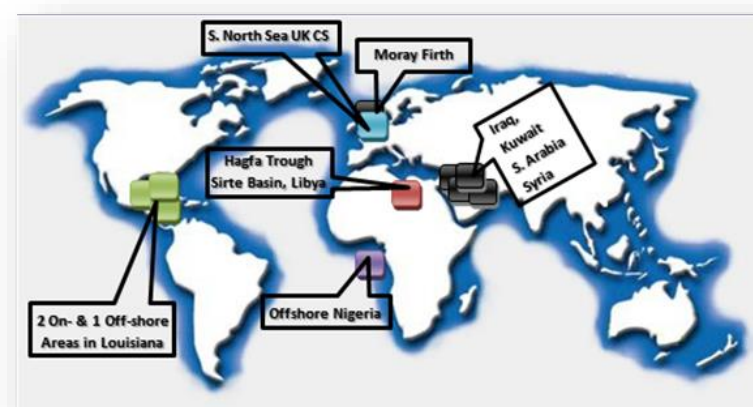
- Wellsite supervision, well-sitting of exploration and development drillings, cuttings examination and cores description, geological and wireline logging, Geophysical and Geochemical acquisition and processing, geological mapping and geotechnical surveying.
- New-ventures' due-diligence studies that incorporates geological, systematic dry-hole post-mortems and prospects generation studies of a country, region, concessions or fields .
- Interpretation and integration of Sedimentological, Petrological, Paleontological, Palynological, Geochemical, Petrophysical and Geothermal history of areas and basins as Petroleum Systems by using industry standard and/or Target's basin modelling software.
- Geothermal Energy research, Geothermal Gradients mapping and Geothermal Energy prospects generation.

Target Exploration's areas of particular knowhow and expertise are:

1- Undiscovery Wells: Are wells that missed, by-passed, stopped above or at the edge of Oil & Gas Traps

Target Exploration Consultants' research confirmed that hydrocarbon entrapment is inherently associated with anomalous geothermal gradients in many basins, and developed an exclusive (CGG-ESTI®) Software for generating Bottom Hole Temperature (BHT) databases, and correcting, calculating, plotting and interactive cross-plotting the Compensated Geothermal Gradients and Extrapolated Surface Temperature's Intercepts (CGGs/ESTIs) of group of wells to identify the CGG-ESTI signature of hydrocarbon producing wells; then use the anomalous CGG-ESTI signature to identify potential, probable and possible "Undiscovery Wells" with similar CGG-ESTI signature in the geothermal gradients map of the same area or basin. Target Exploration Consultants produced reports and published peers referred papers on the geothermal gradients anomalies of hydrocarbon entrapments at areas in UKCS of the North Sea, Iraq, Libya, offshore Nigeria, and on-and off-shore Louisiana, USA. (IBRAHIM 2018C) (PPTX).

[Click title for details.](#)



2- Geothermal Energy: Geothermal Prospects Generation by Geothermal Gradient Mapping

Target Exploration's exclusive (CGG-ESTI®) Software can also be used for geothermal prospects generation, through delineating hot spots with high geothermal gradients in areas or basins that are prospective for Geothermal Energy.

Target Exploration produced several non-exclusive reports on geothermal gradients anomalies that are associated with producing and decommissioned oil fields as well as hot spots with high geothermal gradient background in the UKCS-North Sea, Middle East, North Africa, Nigeria and Louisiana, USA.

[Click title for details.](#)



3- Due Diligence Review and Risk Analysis of EPSA, DPSA and Service Contract Opportunities

Target Exploration Consultants developed -in addition to the usual due-diligence reviews of E&P opportunities and dry-hole post-mortems, a new statistical risk analysis of multiple exploration concessions, field development and production sharing new-ventures in the challenging environments of MENA countries. They are invaluable for companies planning EPSA, DPSA or SC types of new-ventures in MENA and elsewhere.

[Click title for details.](#)

4- Exclusive AOIs, Leads, Anomalies, Prospects, Single Well Discoveries and Dormant Fields

Target Exploration consultants have been generating structural and stratigraphic prospects in a variety of basins, tectonic settings, and synchronising geothermal evolution of source, reservoir and seal rocks, HC charge and dissipation with the structural evolution of structural, stratigraphic or combination traps:

- Generated and/or compiled geological, geophysical, geochemical and geothermal reports, maps and databases on several basins and countries.
- Developed exploration play concepts and generated conventional and unconventional prospects in several basins and countries.
- Identified numerous Undiscovery Wells and have access to hundreds of Single Well Discoveries and Undeveloped Fields Summaries of several MENA oil producing Countries.

[Click title for details.](#)



5- Petroleum Geology, Prospectivity and Typical Fields, Iran

Target Exploration Consultants and Associate Consultants have access to:

- Seismic Surveys and Prospectivity Maps of Offshore Iran.
- Regional studies of the Petroleum Geology of SW Iran.
- Geothermal Gradient of parts of Iran.
- Petroleum Potential and New Ventures Guides of Iran.

[Click title for details.](#)

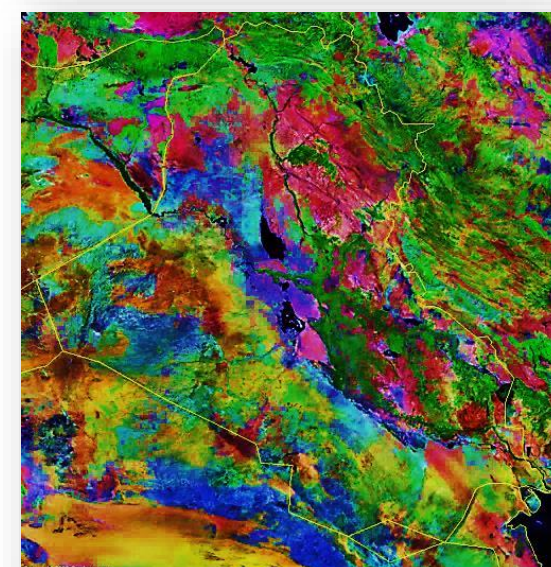


6- Petroleum Geology, Iraq

Target Exploration Consultants and Associate Consultants studied and generated reports on:

- Geology and Prospectivity of On-and Off-Shore Iraq.
- GIS Gravity Maps of Onshore and Offshore Iraq.
- Petroleum Geology of South Iraq.
- Geothermal Gradient of Iraq and adjacent areas.
- Petroleum Potential and New Ventures Guide of Iraq.
- Typical Giant Oil Fields of Southern Iraq.
- Petroleum Geology and Hydrocarbon Prospectivity of the Western Desert of Iraq.
- Petroleum Geology and Hydrocarbon Prospectivity of North-western Iraq
- Geology and HC Resources of Hamrin Field, northern Iraq.
- Geology and Geophysics of Rafidain Field, Western Iraq.

[Click title for details.](#)

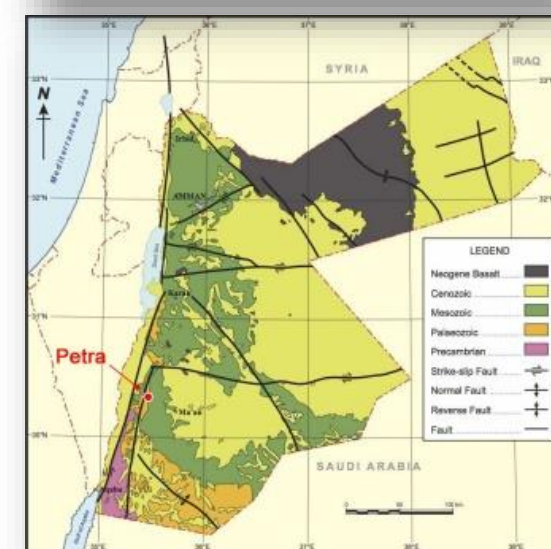


7- Petroleum Geology and Prospectivity, Jordan

Target Exploration Consultants studies and nonexclusive reports include:

- Regional Geology of Jordan.
- Petroleum Geology and Remaining Anomalies of Jordan.
- Exploration and Production Potential of Open Jordanian Blocks.

[Click title for details](#)

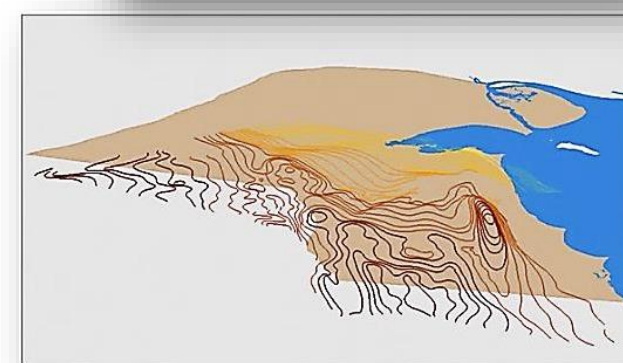


8- Petroleum Geology, Prospectivity and Typical Fields, Kuwait

Target Exploration Consultants and Associate Consultants generated:

- Petroleum prospectivity reports of Onshore and Offshore Kuwait.
- GIS Gravity and Magnetic maps of Offshore and Onshore Kuwait.
- HSE studies of Sand and Dust Storms Frequency of Kuwait.
- Geo-hazard studies of Petroleum and Gas Seepages of Kuwait. ([IBRAHIM 2019A](#))

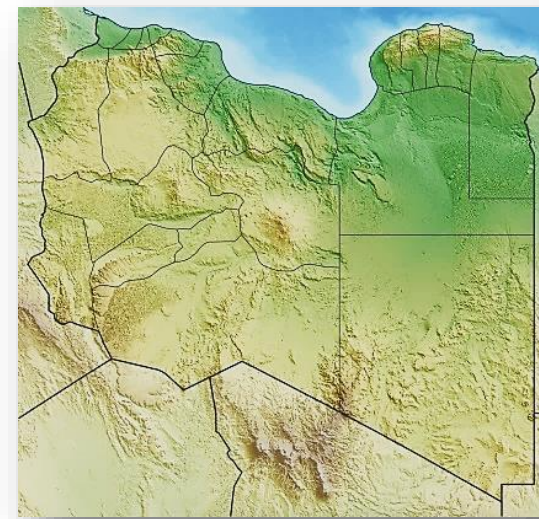
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9- Petroleum Geology, Prospectivity and Typical Fields, Libya

Target Exploration Consultants and Associate Consultants generated:

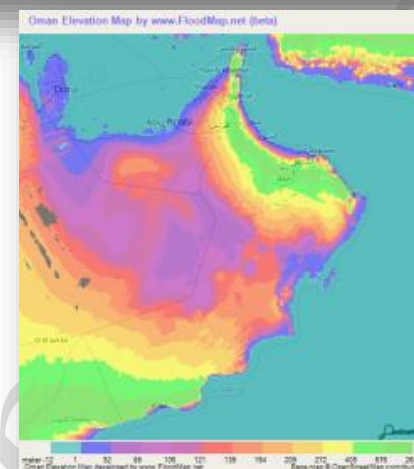
- New GIS Gravity Maps of Onshore and Offshore Libya.
- New E&P Blocks of Libya.
- Geology of Western Offshore Libya.
- Geothermal Gradients of Hagfa (Marada) Trough, Sirte Basin, Libya
- Petroleum Geology, Undeveloped Discoveries, Re-discoveries and “Un-discoveries” in Kotla Trough, Sirte Basin, Libya.
- List and Summaries of >200 undeveloped fields and single well discoveries.
[Click title for details.](#)



10- Petroleum Geology, Prospectivity and Typical Fields, Oman

Target Exploration Consultants and Associate Consultants generated:

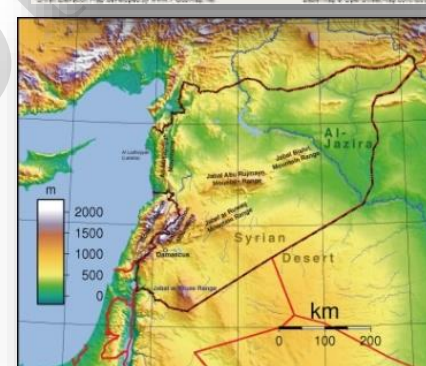
- New E&P Blocks of Oman.
- Regional Geology and Typical Fields of Oman.
- Petroleum Geology and Remaining Undeveloped Discoveries and Un-discoveries of Oman.
[Click title for details.](#)



11- Petroleum Geology and Prospectivity, Syria

Target Exploration Consultants' studies and nonexclusive reports include:

- E&P Potential and Ranking of some Open Blocks of Syria.
- Regional Geology of Syria.
- Petroleum Geology and Remaining Anomalies of Syria.
[Click title for details.](#)



12- Library of Reports, Maps, Sections and Rock Samples Repository

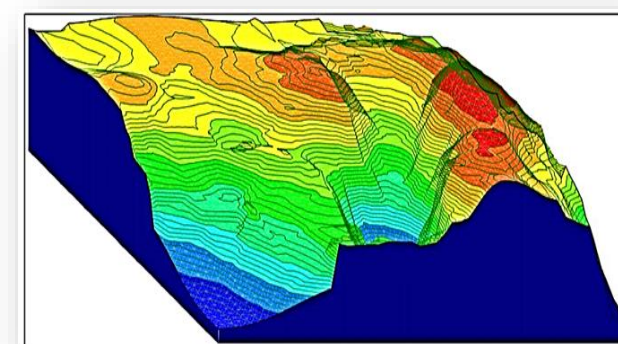
Target Exploration Consultants library incorporates exclusive and nonexclusive petroleum exploration and production databases, new-ventures studies and country evaluation reports. Our rocks, cores, cuttings and rock thin section samples repository contains representative samples of reservoir rocks of some giant oilfields, and rock exposures in MENA countries.

- For list of Target's Non-exclusive Reports, click: [Non-exclusive Target Reports](#).
- To search for Target Exploration Consultants peer reviewed publications in scientific journals or papers, abstracts and presentations at international, regional or local conferences/meetings, click: [Target Publications](#).
- To search for Target Exploration Consultants papers, extended abstracts and presentations at Target Conferences click [Target Conferences](#).

13- Software and R&D* Solutions

Target Exploration Consultants developed in-house software for analyses of collected data sets, or whenever an industry's standard software doesn't deliver the desired solutions for Petroleum Exploration, or Reservoirs Development and Production challenges:

- **LOG-AND:** A bundle of interactive open-hole log analysis programmes for porosity/matrix identification cross-plots and Sw% calculation. Based on Bateman and Konen's (1977).
- **ST-GRTH:** Local (one or a group of structures) and regional structural evolution analysis programme to recognise the onset of maturation, migration against the development of local and regional structural closures. Based on (IBRAHIM.1981, Ibrahim & Mahrouqi, 2001)
- **CGG-ESTI:** An interactive geothermal gradient analysis and plotting and cross-plotting programme of single well and basin-wide group of wells to identify geothermal gradient/ surface temperature signature of discovery and producing wells, then use the same criteria to identify d “un-discovery” wells in the area. It is based on Ibrahim publications (IBRAHIM, 1994A, 2000A, 2000B, 2018A, IBRAHIM, 2018B).
- **E&P-RANK:** An E&P block ranking software developed to rank large number of concessions in one or several basins in single or several countries. Developed while working on assessing and ranking 137 blocks offered in the Libyan round of 2000. Based on (IBRAHIM 2001).
- **GCA-DM-PX:** Converts C1, C2, C3, C4+ and C5+ drilling mud Gas Chromatographic readings to C1/C2, C1/C3, C1/C4+ and C1/C5+ Gas Ratios ready for plotting as cross plots against the four Oil and Gas reservoir domains of Pixler (1969). The program interactively interprets the Gas Ratios for potentially productive oil, gas zones in matrix, fractured-matrix and fracture-dependent reservoirs and lists them against drilling depths using modified Pixler's (1969) parameters.



- **GCA-DM-W&S:** Converts C1, C2, C3, C4+ and C5+ drilling mud Gas Chromatographic readings to Wh, Bh, and Ch Gas Ratios ready for plotting as logs against drilling depth. The program interactively interprets the Gas Ratios for potentially productive oil, gas and condensates zones in matrix, fractured-matrix and fracture-dependent reservoirs using modified Whittaker and Sellens (1987).
- **GCA-DM:** An interactive programme that uses combined modified Pixler's (1969) and Whittaker and Sellens (1987) methods. It lists raw drilling mud Gas Chromatographic readings, converts and lists them as gas ratios. Then interactively interprets the Gas Ratios using both methods for potentially productive oil, gas zones in matrix, fractured-matrix and fracture-dependent reservoirs, and lists the interpreted results against drilling depths with higher level of certainty. [\(IBRAHIM, 2011\(D2/12:00\)\)](#).
[Click title for list of Target Software.](#)

14- Environments, Climatic and Geohazards Research and Risk Analyses

Target Exploration Consultants developed a geostatistical approach to analysing Climatic Changes and Geohazards impacts on Oil and Crossover Renewable Energy operations in MENA countries. Companies operating in MENA Countries may utilise such statistical analyses and studies to forecast frequencies and intensities of Sand and Dust Storms, hydrocarbon seepages when planning and estimating the likely delays/loss of work days due to force majeure when estimating the duration of weather-sensitive projects. [\(MENA, 2017, IBRAHIM 2019A\)](#).

[Click title for details.](#)

15- Target's Conferences and Conference Proceedings

Target Exploration consultants have been sharing their research and innovations with fellow professionals via Target Exploration conferences, courses, fieldtrips; peer-reviewed publications, and papers, posters and presentations to international, regional and local technical conferences and meetings. Target Conferences and conference documents are valuable sources of exploration and production information of MENA countries. Their proceedings can be ordered, along with our other publications from [Target Exploration](#).

[Click title for Target Conferences and Proceedings.](#)



16- Target's Training Courses and Course Manuals

Target Exploration Consultants offers courses during international and regional events such as GEO, MENA and IPC conferences. In addition the courses on offer, past courses course notebooks Target also offers in-house training courses for oil companies.

[Click title for Target Courses and Course Manuals.](#)



17- Target's Fieldtrip Seminars and Fieldtrip Guidebooks

Target Exploration Consultants organises regular geological fieldtrips to source, reservoir and cap rocks exposures of the petroleum systems of MENA along with the regional Middle East GEO conferences and following our Iraq Petroleum and MENA Oil & Gas Conferences. Target may organise geological fieldtrips to order in MENA countries (such as Iraq, Jordan, Kuwait, Libya, Oman, UAE, etc.).

[Click title for Target's Fieldtrips and Fieldtrip Guidebooks.](#)



18- Chia Surkh-1: The First Undiscovery Well of Arabia?

Another "Un-discovery Well" that missed, bypassed or stopped short of hydrocarbon trap is well Chia Surkh-1. It is the first rotary drilling petroleum exploration well drilled in the Middle East; spudded in 1901 close to oil seep northeast of Khanaqin town, Diyala Governorate of the **Arabian Republic of Iraq**. The well reached TD in the Lower Miocene Kalhur reservoir (Jeribe Fm. equivalent), **and declared plugged and abandoned as dry hole with oil & gas shows in 1902 or 1903.**

Around 110 years later, Genel Energy drilled well **Chia Surkh-10** in the dormant marginal Chia Surkh Oil Field anticline in 2013 and tested 11,950 BOPD of 41°API oil and 15 MMCFD gas from Oligo-Miocene reservoirs. The Editor of the Oil & Gas Journal reported it as a **major oil and gas discovery** in the 10th of April 2013 issue of the OGJ.



19- Target's Consultants

Associate consultants of *Target Exploration* have for more than 30 years been providing the upstream petroleum industry with orthodox and novel geological, geophysical, structural, stratigraphic, paleontological, sedimentological, petrographic, geochemical and geothermal research, geo-software and R&D solutions. In the last decade their petroleum industry experiences, skills and research have been applied to Environments, Geo-hazards, Geothermal, Solar and Renewable Energies' research.

Consultant Name, C.V. & (Abbr.)	Technical Experience	Regional Experience
<u>Abdel-Hamid Benhabireche, MSc (ABH)</u>	Fields Development Geosciences	Algeria
<u>Ahmad Al Shaikh, MSc (AS)</u>	Fields Development Seismic	Iraq and UAE
<u>Ahmad Fahim, BSc (AF)</u>	Seismic QA & QC	Egypt and MENA
<u>Ali Al-Jubouri, PhD (AJ)</u>	Sedimentary Petrography	Iraq
<u>Basim Al-Kubaisi, PhD (BK)</u>	Source Rocks Geochemistry	Iraq and Jordan
<u>Falah Al-Jubori, PhD (FJ)</u>	Stratigraphic Palynology	Iraq and Jordan
<u>Foad Abomreqa, BSc (FA)</u>	Wellsite Operations	Libya
<u>Giuma Reeh, PhD (GR)</u>	Gravity-Mag & Seismic Exploration	North Sea and Libya
<u>Haitham Hamid, PhD (HH)</u>	Seismic Exploration	Iraq and Canada
<u>Hassan S. Hassan, PhD (HSH)</u>	Carbonate Exploration Geologist	On-and Off-shore Libya
<u>Irfana Tallat, MSc (IT)</u>	ArcGIS & Computer Modelling	UK
<u>Esmael Khalil Ibraheem, MSc(EKI)</u>	Petroleum Reservoir Engineering	Iraq
<u>Mohammed Warrak, PhD (MW)</u>	Mapping & Structural Modelling	Europe, Middle East and UK
<u>Muhammad W. Ibrahim, PhD (MWI)</u>	Petroleum Geology (Director and R&D Manager)	Africa, MENA, UK and USA
<u>Nahidh Marouf, PhD (NM)</u>	Petrophysics & Basin Modelling	Iraq
<u>Patrick Clews, MSc (PC)</u>	Reservoir Characterisation	Global
<u>Samir Abassi, MSc (SA)</u>	Drilling & Completion Engineering	Algeria and South Amerca

COUNTRY	CONSULTANT	GEOLOGY	SED & STRTIG	STRUCTURE	PALYN/PALEN	LOG INTERP	GEOPHYSICAL AC/INTP	S RX & HC SYS	DRILLING	WEL SITE OP	GEOTHERMAL	ENVIRONMAT	ArcGIS MAP	SOFTWARE DEV
ALGERIA	(ABH)													
ALGERIA	(SA)													
EGYPT	(AF)													
IRAN	(MWI)													
IRAQ	(AS)													
IRAQ	(AJ)													
IRAQ	(BK)													
IRAQ	(FJ)													
IRAQ	(HH)													
IRAQ	(MWI)													
IRAQ	(NM)													
JORDAN	(MWI)													
KUWAIT	(MWI)													
KUWAIT	(PC)													
LIBYA	(FA)													
LIBYA	(GR)													
LIBYA	(MWI)													
LIBYA	(HSH)													
OMAN	(MWI)													
OMAN	(PC)													
SAUDI ARABIA	(MWI)													
SYRIA	(MWI)													
SYRIA	(MW)													
UAE	(AS)													
UAE	(MW)													
UAE	(PC)													
UK	(IT)													
UK	(MW)													
UK	(MWI)													
UK	(PC)													
USA	(MWI)													
USA	(SA)													

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*Definition of Research & Development (R&D according to Deardorff's Glossary of International Economics www.personal.umich.edu/~alandear/glossary/r.html) is: "The use of resources for the deliberate discovery of new information and ways of doing things, together with the application of that information in inventing new products or processes".

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