Chalfouh
Enhancing global trade

ADVANCED RESOURCES INTELLIGENCE
UNMATCHED SUBSOIL EXPLORATION

Senior Management

Yianna Samuel PH.D.
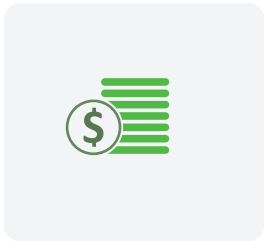Head of Advanced
Resources Intelligence

Aimen Chalfouh , MS
Chief Executive Officer
Head of Research &
Strategic development

Sami Chalfouh , MBA
Chairman
Head of Consulting &
Investment Banking

INNOVATIVE APPROACH

To explore the subsoil onshore and offshore and monitor enviromental state , that is:

Cost efficient.

Accurate.

Fast.

Non invasive.

CURRENT TECHNOLOGIES

Several available, ranging from

1- Seismic/sonar scanning.
2- Geological and geophysical mapping.
3- Geochemical sampling.
4- 2D-3D mapping.
5- Site exploration with drones.
6- On-site sampling with oceanographic.
   research vessels.
7- Satellite remote sensing.

However, these methodologies are:

1- Expensive.
2- Time consuming.
3- Environmentally invasive.
4- Low success rate.
5- Expert personnel needed.
6- On-site/field work and presence.

OUR SOLUTION

Advanced Resources Intelligence (ARI) is based on mathematical frequencies detection models that takles the previous problems

Cost effective. Bypasses/reduces to the minimum, expensive seismic tests.

Accurate. More accurate than old traditional geological assumptions (no need to rely on a maximum strike rate at ca. 25%).
the max. depth error : ~50-150m.

Time optimal. Quick turn around of results

Non invasive. Environmentally friendly.

Rich data. High data richness and resolution.
Best drill position within a radius ±20m

Multidisciplinary. Underground/above ground Onshore/offshore, down to a max depth of 10,000m. various parameters and resources detected.

Work remotely. Less time consuming and more cost efficient than any other on-site survey.

HOW IT WORKS

Data collection.

Rough earth advanced data is gathered (satellite & electromagnetic.)

Data processing.

At this stage we apply our proprietary algorithm.

Data preparation.

Data are prepared to accustom clients needs and our algorithm requirements.

Data delivery.

Data are interpreted, packaged and presented as per client needs.

BEHIND THE SCENE

Data are transformed to purely mathematical.

Mathematical frequency detection models are run using mathematical binaries.

Logarithmic algorithms allow the interpretation of molecular resonance.

The technology is not dependent on any traditional geological and/or geophysical information.

SERVICES & TECHNOLOGY APPLICATION

Our company provides monitoring and detection services for a wide range of industries and organizations:

Oil & Gas.
Mining
Construction
Humanitarian services
Defense
Telecom
Agriculture
Environmental

1- Oil and Gas exploration.
2- Mineral exploration.
3- Water exploration.
4- Underwater exploration.
5- Forensic exploration.
6- Site monitoring.
7- Leak detection.
8- Under water route optimization.
9- Environmental monitoring.
10-Mine detection.
11- Cable corrosion.
12-Ship and other wrecks.
13-Pollution.

WHAT WE DELIVER

Location
Quantity
Spatial extend (horizontal & vertical)
Quality (for oil and water)
Concentration (for minerals and marine environmental parameters)
Flow rate (for water)
Best drill position(s)

CASE STUDIES

MINERAL
EXPLORATION

MINERALS EXPLORATION

Scanning and identification

Rough area scanning including frequency calibrations for minerals and analysis, in order to detect targets of interest.

Identify rough overview concentrations, roughly estimated data of length/width/depth/volume, and roughly estimated minerals (i.e. Gold (Au)) values per ppm.

Analysis

Analytical scanning/frequency analysis of selected target(s), detailing the mineral body via multiple Au/ppm data sets.

Provided information

Geolocation.
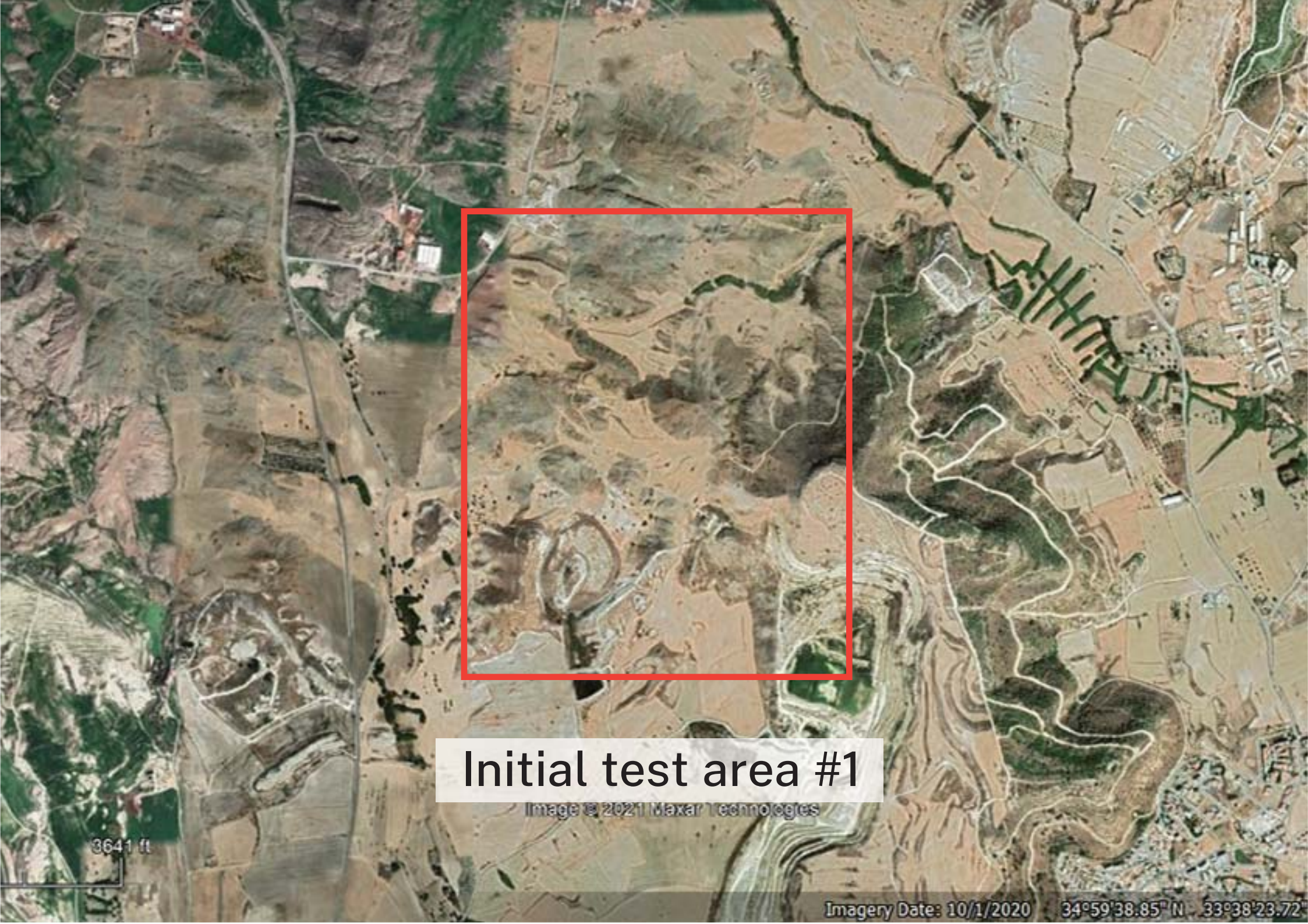Depth.
Spatial extend.
Best drilling position.
Concentration.

Minerals detected

Gold,
Silver,
Platinum,
Diamond,
copper,
Zinc,
Lithium
Rodium,
Cobal , Silica and more......

Initial test area #1

3641 ft

Imagery Date: 10/1/2020   34°59'38.85" N   33°38'23.72"

Results

Potentially viable locations with gold identified.

Concentrations in ppm and depth given

Initial test area #2

4078 ft

Results

Potentially viable locations with gold identified.

Concentrations in ppm and depth given

POTENTIALLY VIABLE CONCENTRATIONS
01
ca. Au: average 8
ca. depth: 50-150m

POTENTIALLY VIABLE CONCENTRATIONS
02
ca. Au: average 11
ca. depth: 100-300m

POTENTIALLY VIABLE CONCENTRATIONS
03
ca. Au: average 8
ca. depth: 100-200m

POTENTIALLY VIABLE CONCENTRATIONS
04
ca. Au: average 10
ca. depth: 50-200

South Africa copper project

RECEIVED COORDINATES
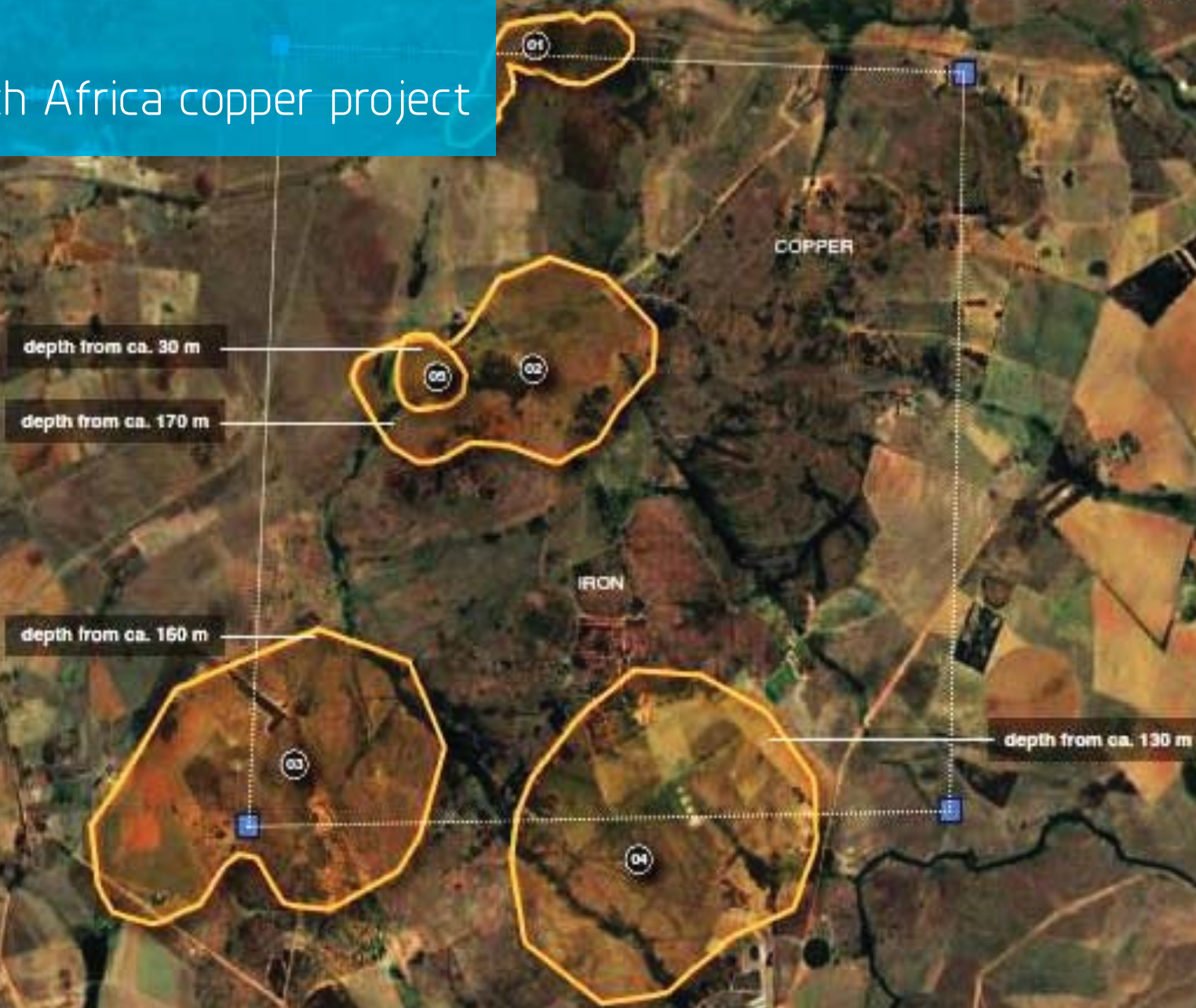
COPPER

IRON

depth from ca. 30 m

depth from ca. 170 m

depth from ca. 160 m

depth from ca. 130 m

OIL& GAS
EXPLORATION

Offshore Exploration Licenses
REPUBLIC OF CYPRUS

CYPRUS

HYDROCARBONS SERVICE
Ministry of Energy, Commerce and Industry
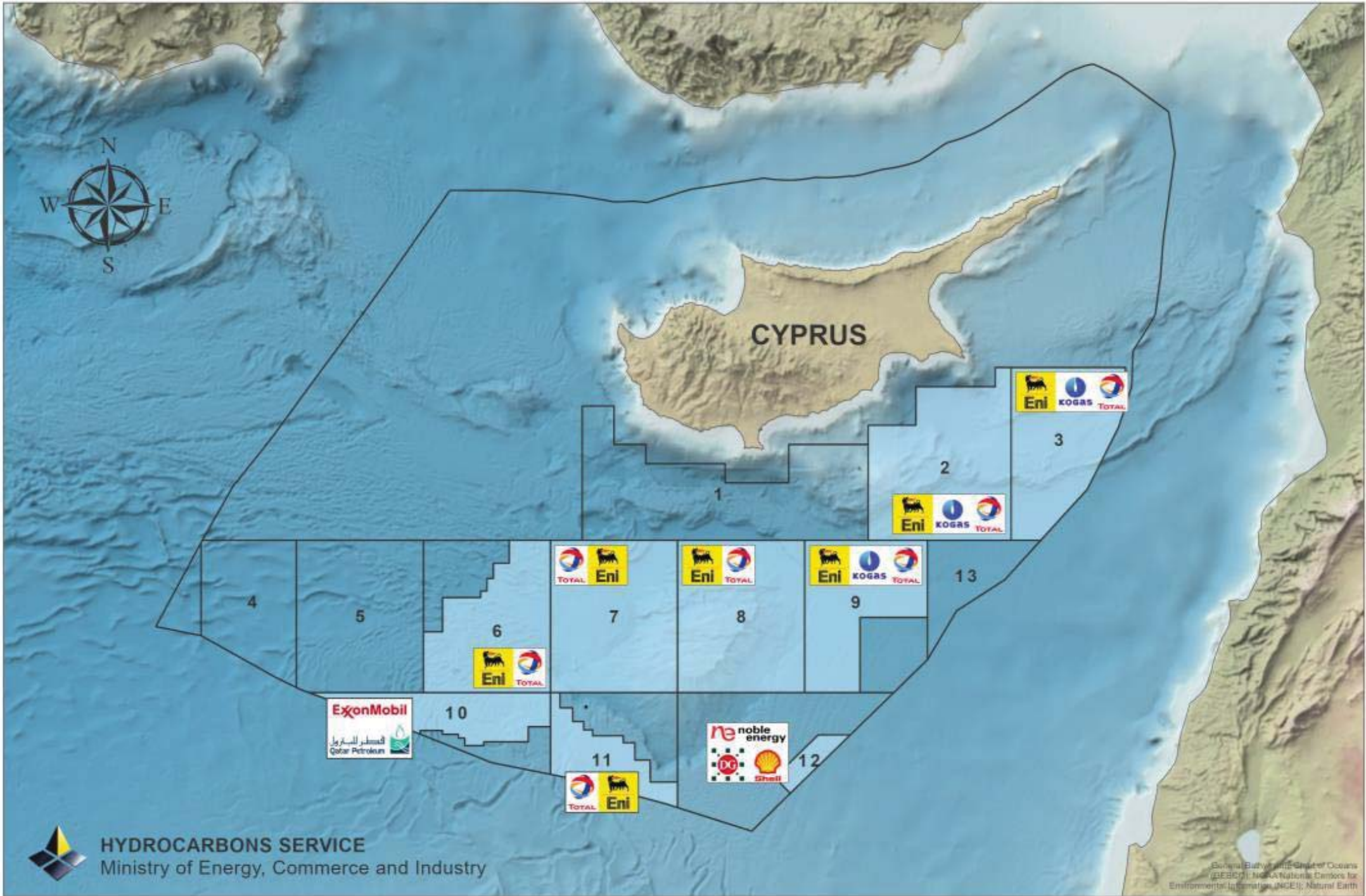
OIL & GAS

Provided information

Geolocation
Depth
Quantity
Spatial extend
Best drilling position
Quality

Best drilling position(s) given based on:

Maximum quantities reached

Shallowest depth (ease of access)

Cost effective
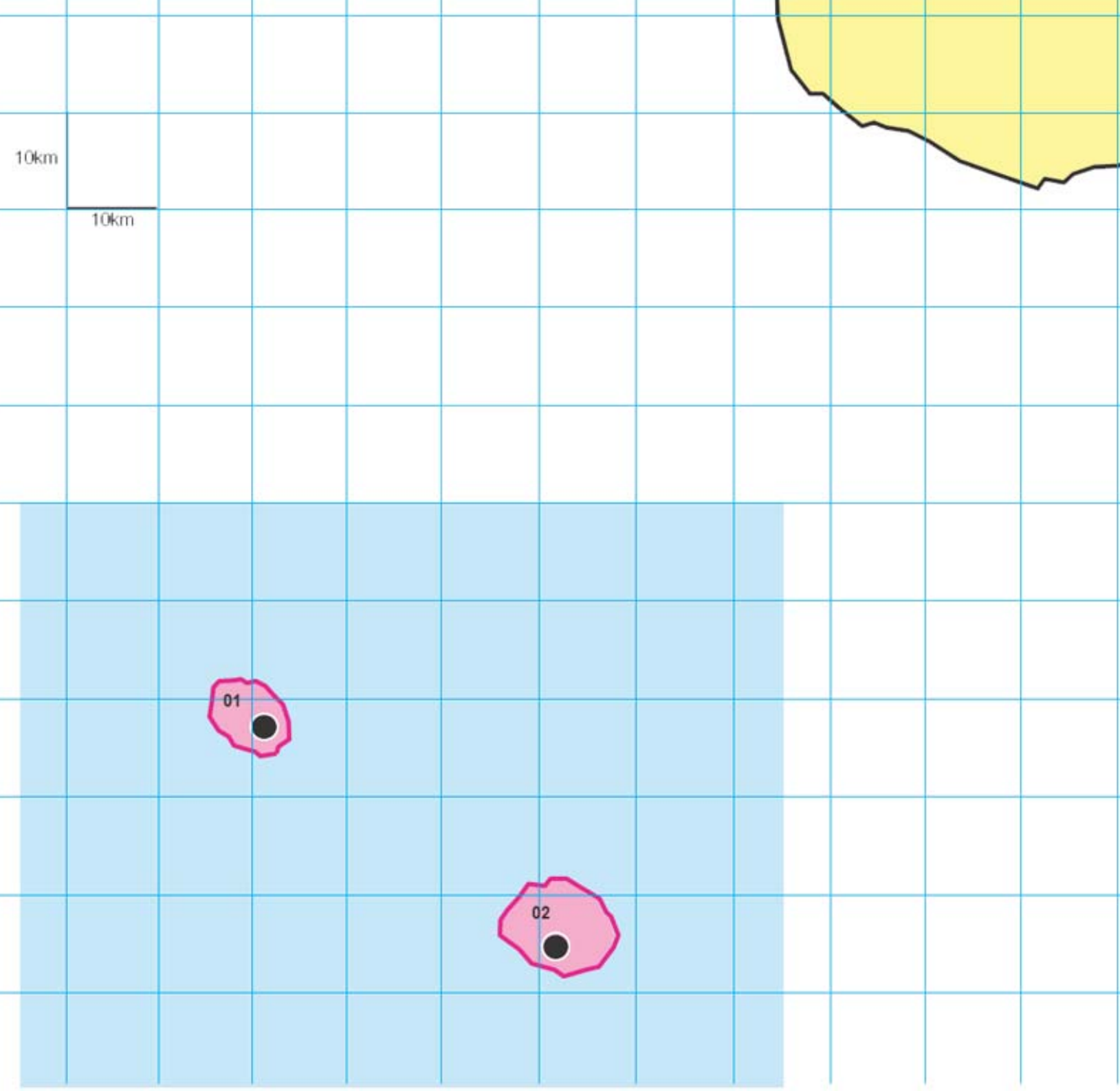
10km

10km

01 IDP O&G TARGET 1
    FIELD SIZE 10 X 7 km

02 IDP O&G TARGET 1
    FIELD SIZE 10 X 10 km

    TOTAL AREA SCANNED
    80 X 60 km

N

O&G TARGET 01
ESTIMATED MAXIMUM
PROFILE/OUTLINE
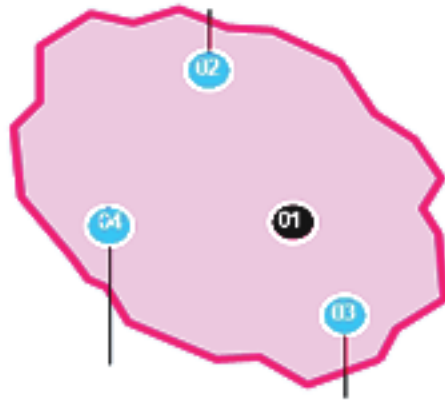
02

04   01

03

O&G TARGET 02
ESTIMATED MAXIMUM
PROFILE/OUTLINE
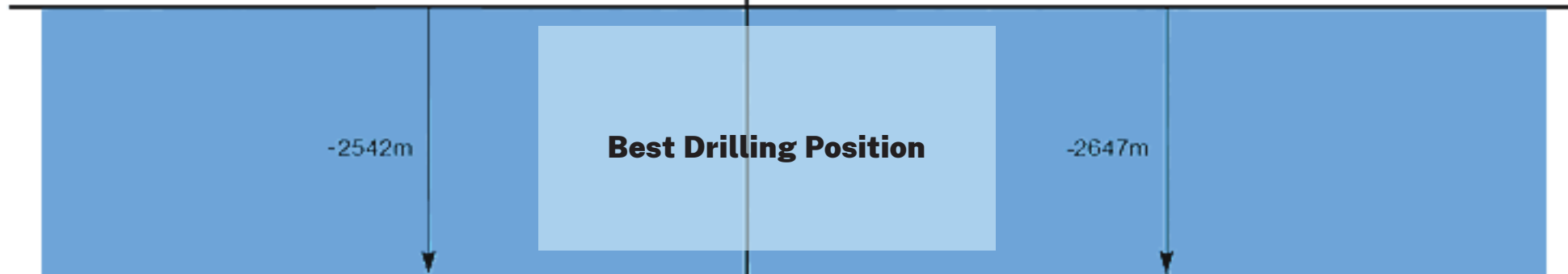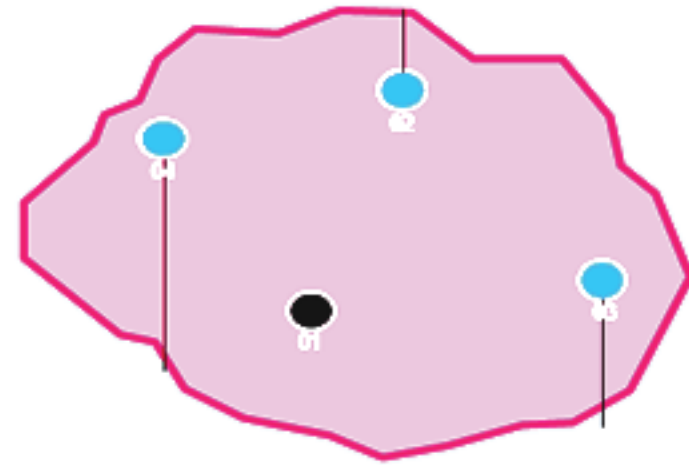
02

04

01

03

Best Drilling Position

-2542m

-2647m

-2350m

TOTAL FROM
SEA LEVEL
TO O&G TARGET 01
-4892m

02   01

04   03

-2400m

TOTAL FROM
SEA LEVEL
TO O&G TARGET 02
-5047m

02

04   01   03

N

Indicative Drilling Positions (IDPs)
Target1

O&G TARGET 01
IDP 1

VIRTUAL BOREHOLE

Depth
-2000
-2100
-2200
-2300
-2400
-2500
-2600
-2700
-2800
-2900
-3000
-3100
-3200
-3300
-3400
-3500
-3600
-3700
-3800
-3900
-4000

CONDENSED GAS

OIL
-2350m – -3150m

RATIO GAS/OIL
7% – 93%

TOTAL VOLUME
650 MMbbl

O&G TARGET 01
IDP 2

VIRTUAL BOREHOLE

Depth
-2000
-2100
-2200
-2300
-2400
-2500
-2600
-2700
-2800
-2800
-3000
-3100
-3200
-3300
-3400
-3500
-3600
-3700
-3800
-3900
-4000

CONDENSED GAS

OIL
-2270m – -3150m

RATIO GAS/OIL
7% – 93%

TOTAL VOLUME
650 MMbbl

O&G TARGET 01
IDP 3

VIRTUAL BOREHOLE

Depth
-2000
-2100
-2200
-2300
-2400
-2500
-2600
-2700
-2800
-2900
-3000
-3100
-3200
-3300
-3400
-3500
-3600
-3700
-3800
-3900
-4000

CONDENSED GAS

OIL
-2440m – -3150m

RATIO GAS/OIL
7% – 93%

TOTAL VOLUME
650 MMbbl

O&G TARGET 01
IDP 4

VIRTUAL BOREHOLE

Depth
-2000
-2100
-2200
-2300
-2400
-2500
-2600
-2700
-2800
-2900
-3000
-3100
-3200
-3300
-3400
-3500
-3600
-3700
-3800
-3900
-4000

CONDENSED GAS

OIL
-2400m – -3150m

RATIO GAS/OIL
7% – 93%

TOTAL VOLUME
650 MMbbl

Indicative Drilling Positions (IDPs)
Target2

O&G TARGET 02
IDP 1

VIRTUAL BOREHOLE

-2000	
-2100	
-2200	
-2300	CONDENSED GAS
-2400	
-2500	
-2600	
-2700	OIL -2400m – -3190m
-2800	
-2900	RATIO GAS/OIL 5% – 95%
-3000	
-3100	TOTAL VOLUME 1.400 MMbbl
-3200	
-3300	
-3400	
-3500	
-3600	
-3700	
-3800	
-3900	
-4000	

O&G TARGET 02
IDP 2

VIRTUAL BOREHOLE

-2000	
-2100	
-2200	
-2300	CONDENSED GAS
-2400	
-2500	
-2600	
-2700	OIL -2400m – -3190m
-2800	
-2900	RATIO GAS/OIL 5% – 95%
-3000	
-3100	TOTAL VOLUME 1.400 MMbbl
-3200	
-3300	
-3400	
-3500	
-3600	
-3700	
-3800	
-3900	
-4000	

O&G TARGET 02
IDP 3

VIRTUAL BOREHOLE

-2000	
-2100	
-2200	
-2300	CONDENSED GAS
-2400	
-2500	
-2600	
-2700	OIL -2400m – -3190m
-2800	
-2900	RATIO GAS/OIL 5% – 95%
-3000	
-3100	TOTAL VOLUME 1.400 MMbbl
-3200	
-3300	
-3400	
-3500	
-3600	
-3700	
-3800	
-3900	
-4000	

O&G TARGET 02
IDP 4

VIRTUAL BOREHOLE

-2000	
-2100	
-2200	
-2300	CONDENSED GAS
-2400	
-2500	
-2600	
-2700	OIL -2400m – -3190m
-2800	
-2900	RATIO GAS/OIL 5% – 95%
-3000	
-3100	TOTAL VOLUME 1.400 MMbbl
-3200	
-3300	
-3400	
-3500	
-3600	
-3700	
-3800	
-3900	
-4000	

WATER

ORTOUNA WATER PROJECT

Water vein and Pond ca. 13 x 11 x 1,5 m
Quality: 70 % (potable)
Flow rate: 40 000 L/h
Depth: 260 m
Width - ca. 1,5 meter
DP - 35° 6'57.06"N - 33° 5'24.22"E

DP

Image © 2021 Maxar Technologies

156 ft

MITSRO WATER PROJECT

Quality: 70 % (potable)
Flow rate: 40 000 L/h
Depth: 215 m
DP - 35° 1'55.43"N - 33° 7'19.47"E

DP

SIERRA LEONE
WATER PROJECT

Underground Lake
Quality: 60 % (good, manual filtration only)
Flow rate: 3 000 L/h
Depth: 60 m
Length/Width/Height - ca. 100x50x2 m
DP - 8° 15'55.53"N - 13° 5'17.87"W

UNDERWATER OPERATIONS

INSTALLATION PHASES

Specify best route (based on sediment type, depth/cost relationship) for cable installation within a horizontal range of ±20m radius along the seafloor:

- Seafloor/subbottom hardness for placement method

- Identification of sand/mud locations for active elements that may affect operations at high currents.

Map seafloor sub-bottom down to 10 Km (eliminate need for multibeam sonar and seismic tests).

Monitor sediment deposition/resuspension (turbidity).

Monitor habitat (seafloor surface and sub-bottom) modifications.

Measure increase of concentrations at construction sites, relative to nearby areas (baseline) for marine parameters (indicators of possible marine/chemical pollution).

Measure baseline EMF levels and monitor during construction phase.

Monitor groundwater quality and quantity/usage
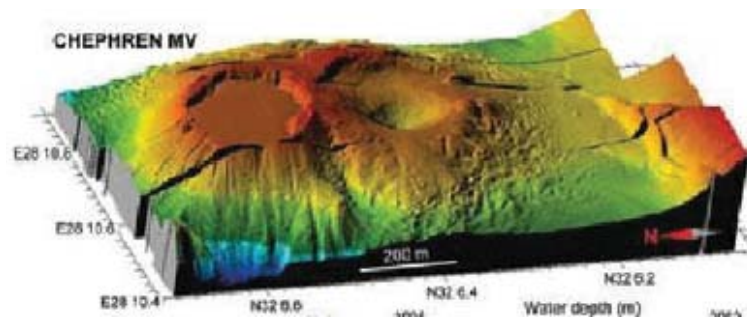Spot seabed irregularities, including visible and buried wrecks.

Identify all existing (telecom) cables along or crossing the route.

Seafloor bathymetry

Identify nearby oil & gas fields to the route of the cable.

Monitor oil leakage (within the water column) from construction machinery and other activities.

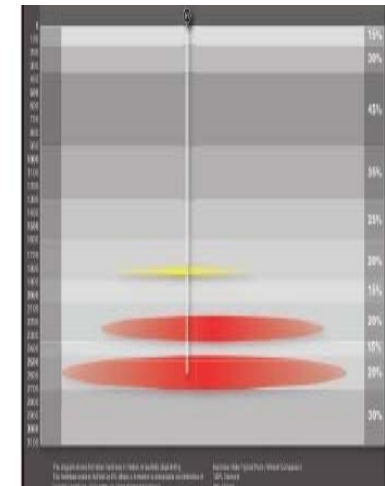## Sub-bottom sediment hardness

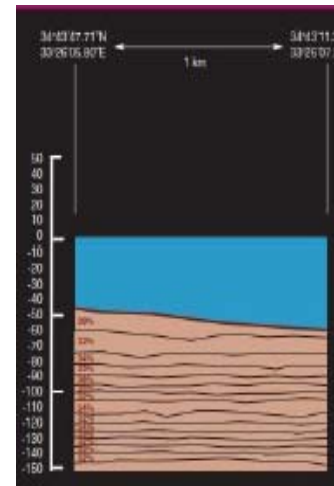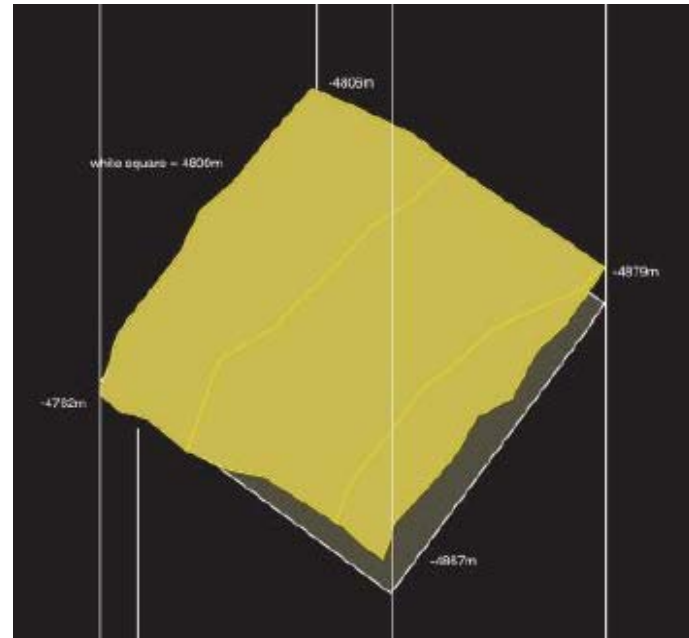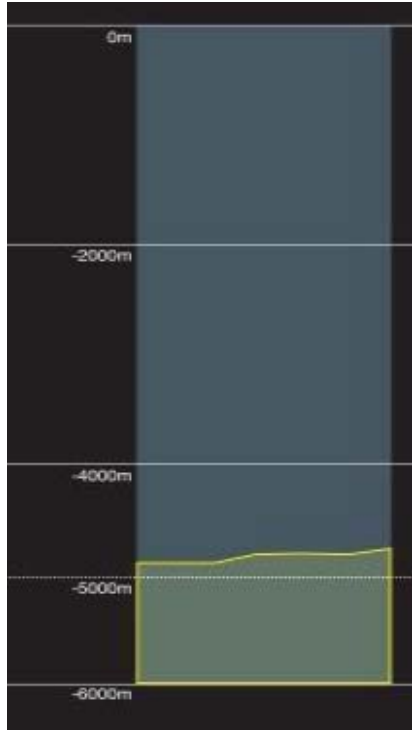Hardness ratio: typical rock/mineral comparison.
100% Diamond
75% Granite
50% Basalt
25% Sandstone
0% undetermined

OPERATION PHASES

Detect temperature differences due to electromagnetic changes (thermal radiation)

Detect and monitor changes in electromagnetic (EM) field due to emissions (and separate the electric from the magnetic signal).

Corrosion measurements to monitor infrastructure conditions.

Monitor groundwater quality and quantity/usage.

Monitor habitat (seafloor surface and sub-bottom) modifications.

Measure increase of concentrations along cable route, relative to nearby areas (baseline) for marine parameters (indicators of possible marine/chemical pollution), including but not limited to:

Oil droplets, femtoplankton (marine viruses), nanoplankton, marine snow, suspended sediments (turbidity).

Chemical elements (P, N, Fe, Ca, Na, etc.), nutrients (phosphates, nitrates, ammonia, etc.) current testing.

TECHNOLOGY BENCHMARKS

ARI is a multidisciplinary technology that has a wide range of application.

	Advanced Resource Intelligence (ARI)	seismic/sonar scanning	geological and geophysical 2D/3D mapping	Multi-beam bathymetry	Drones	On site sampling	Satellite remote sensing
ARI ECONOMIC ADVANTAGE							
Cost	Low	High	High	High	Medium	High	Low
Remote sensing cost	Low	N/A	N/A	N/A	N/A	N/A	Low
Project time	Fast 2/3 weeks	Slow>6 weeks	Extremely slow	Slow>6 weeks	Slow	Extremely slow	Fast
Success ratio	90%	25%	N/A	25%	N/A	N/A	N/A
Expensive equipment	NO	YES	YES	YES	N/A	YES	N/A
ARI TECHNICAL ADVANTAGE							
Accuracy							High
Location accuracy	90%		N/A		High	Low	Surface only
Quantity accuracy	+/-10	N/A	N/A	N/A	N/A	depend	Surface 10m
Depth	10km BG* max		N/A			variable	N/A
Depth error	50-150m per 10km		N/A	N/A	N/A	N/A	N/A
Best drilling pos	20m radius	Exploratory drilling	N/A	N/A	N/A	N/A	
Spatial extend							
Vertical	10km BG*	>=15km BG*	N/A	10m BG*	0		10m
Horizontal	Any	Limited	N/A	Limited	Limited	Limited	Any

*BG: below ground

Exploration

	Advanced Resource Intelligence	seismic/sonar scanning	geological and geophysical 2D/3D mapping	Multi-beam bathymetry	Drones	On site sampling	Satellite remote sensing
Oil & Gas [1]	✓	✓	✓	✓	✓	✓	X
On shore	✓	✓	✓	NA	✓		
Off shore	✓	✓	✓	✓		✓	
Mining [1]	✓	X	✓	NA	✓	X	✓
Water [1]	✓	✓	✓	NA	✓	NA	✓
Marine [1,2]	✓	✓	✓	✓	X	✓	✓
Forensic [3]	✓	X	X	X	X	✓	✓

[1] Purity proportions(oil & gas), concentration(minerals,marine), potability%(water).

[2] environmental parameters (chemical elements, sediment suspension, planktonic organisms, oil slicks and droplets), bathymetry, sediment hardness, detection of material (metal, clay, wood, etc.) on and under the seafloor

[3] human remains (i.e. mass graves) detection, Wrecks / treasures, land mines

Site monitoring

	Advanced Resource Intelligence	seismic/sonar scanning	geological and geophysical 2D/3D mapping	Multi-beam bathymetry	Drones	On site sampling	Satellite remote sensing
Oil & Gas	✔	X	X	X	✔	✔	✔
Mining	✔	X	X	X	X	✔	✔
Water	✔	X	X	X	X	✔	✔
Construction	✔	X	X	X	X	✔	✔
Environment	✔	X	X	X	X	✔	✔

Leak detection	✔	X	X	X	✔	✔	X
Corrosion	✔	X	X	X	X	X	X
EM radiation	✔	X	X	X	X	X	X
5G signal strength	✔	X	X	X	X	X	X

www.chalfouh.com
info@chalfouh.com

5757 W. Century BLVD STE 560,
Los Angeles CA 90045,USA

United States | Morocco | Algeria | Tunisia | Egypt | Sudan | Saudi Arabia | Bahrain | Oman | Indonesia