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STeP® Drilling Location Validation (DLV) Executive Summary

In the world of depletion, rising costs of exploration and market instability, TERT's technologies address some of the most difficult challenges of modern exploration, enabling the Company, its clients, and partners to identify and explore natural resource deposits accurately, cost effectively, and quickly.

TERT

TERT provides innovative exploration services around the world. Terra Insight Services, Inc. is a wholly owned subsidiary of a US publicly traded company, Terra Energy & Resource Technologies (TERT). TERT believes that its technology application will significantly decrease exploration, drilling and development risks, reduce the exploration time and expenditures, and render the whole process more effectively and efficiently, compared with traditional early stage exploration techniques.

TERT's objective in exploration and development is to address the issues and challenges beyond the structural approach, which is offered by today's exploration methods. Part of our unique suite of exploration tools is Sub-Terrain Prospecting (**STeP®),** which can assist the client to enhance their knowledge about any given area in the early exploration stages, which other service providers cannot do. **STeP®** helps elevate the value of the early exploration tools and approaches beyond that of gravity and magnetic data. **STeP®** enables the explorer to move the exploration paradigm prior to obtaining a license or before seismic acquisition over large areas in order to locate drilling prospects, where seismic becomes a validation tool and not the main exploration tool based on high-value targets identified by **STeP®.**

Unlike **STeP®,** traditional and non-traditional methods cannot accurately predict the depth or thickness of an accumulation using only the surface or remote sensing data.

TERT's proprietary **STeP®** technology has been under development for more than 30 years with many tests and pilot projects being carried out in varying geological conditions, both onshore and offshore. Some of the world's largest natural resource companies and governments have used our services with many success stories and references that are available to support our claims.

TERT is offering a new paradigm in exploration validation as it considers that any company should obtain a second opinion before deciding to drill based on traditional datasets, we call this Drilling Location Validation (**DLV**). DLV can be applied for any resource with in any given area where traditional methods have been used to collect the data. TERT offers validation of the target structures and/or drilling locations that have been selected for drilling at a fraction of the cost that may be incurred for drilling a dry well in the least prospective area, although the area does have potential.

The output comprises maps and schemes obtained independently from the Geological & Geophysical data. The **STeP®** result is subsequently integrated with the Geological & Geophysical information provided by the client and is included in the **STeP®** findings report.
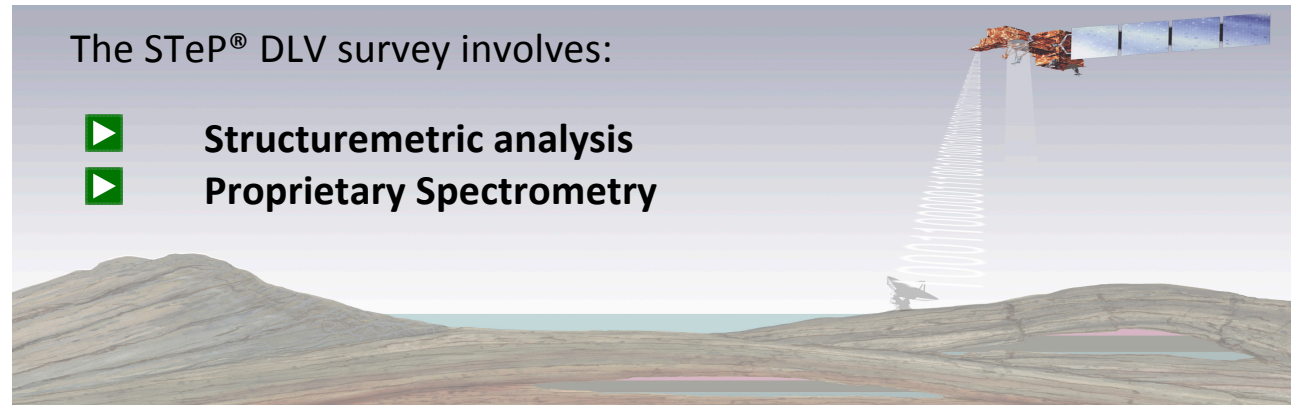
SUB-TERRAIN PROSPECTING – STEP® DRILLING LOCATION VALIDATION (DLV)

The full suite of **STeP®** comprises eight or more independent processing methods that are used for Greenfield, Brownfield, Mature areas. For **DLV** we use two of these remote sensing and analytical components, as shown below. The methods outputs/anomalies are superimposed using GIS software and integrated with the clients-provided coordinates of the drilling location(s), structure-contour maps, and seismic information.

DESCRIPTION

STeP® - Sub Terrain Prospecting, is a satellite-based proprietary technology, which interprets and quantifies the effects of various geological features (resource deposits, tectonic structure/movements, deltas, depressions, etc.), electro-magnetic radiation of the Earth's core, and energy/mass transfer in the mantle to assess various geological conditions related to the resource deposits and delineate structures/anomalies on or off shore. **STeP®** uses extremely sophisticated data mining techniques
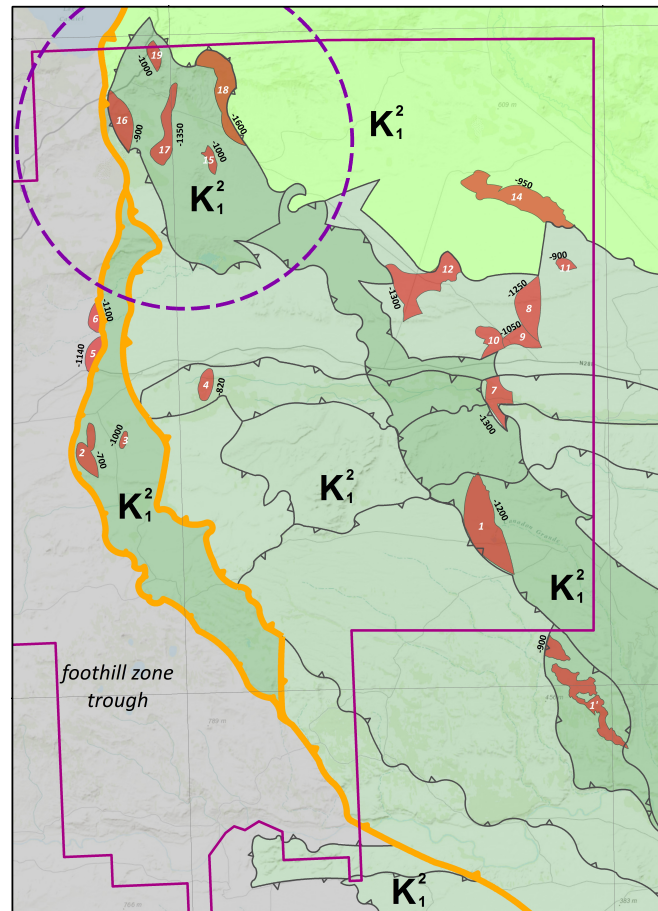
including Kohonen artificial neural nets (also known as self-organizing maps), pattern recognition techniques, and fuzzy logic. Whilst Remote Earth Sensing (RES) technology is not new, **STeP®** is innovative in its manner of application and interpretation in such a way that its results exceed the expectations of conventional remote sensing methods. **STeP®** technology's ability to delineate structure contours, predict the location, depth and, at times, thickness of subsurface hydrocarbon/mineral accumulations via the interpretation of remote sensing data is unique.

The STeP® DLV survey involves:

▶ **Structuremetric analysis**
▶ **Proprietary Spectrometry**

Structuremetric Analysis (SMA) allows for the identification and location of a subsurface geological using the vector stress fields detectable over the area. Every type of geo-medium, meaning any formation or other homogenous geological feature, has its own acoustic density. The influence of tectonic forces causes interference between geological objects (stress) resulting in specific stress patterns of such interference that can be registered at the surface using satellite images. Utilization of the proprietary algorithms, which use principals of proportionality (Harmonic Division) and the golden ratio principle, the application transforms a 2D image into a multidimensional vector model showing many existing subsurface objects and features as well as their morphological distinctions and potentially their estimated depth.

Value Proposition: The Structuremetric Analysis method is applicable to various regional and sub-regional scales; it accurately reveals geology, particularly relating to hydrocarbon bearing formations, distinguishing contours of oil and gas bearing systems. One of the typical maps, to be included in the study, is the map of stress fields showing various structure-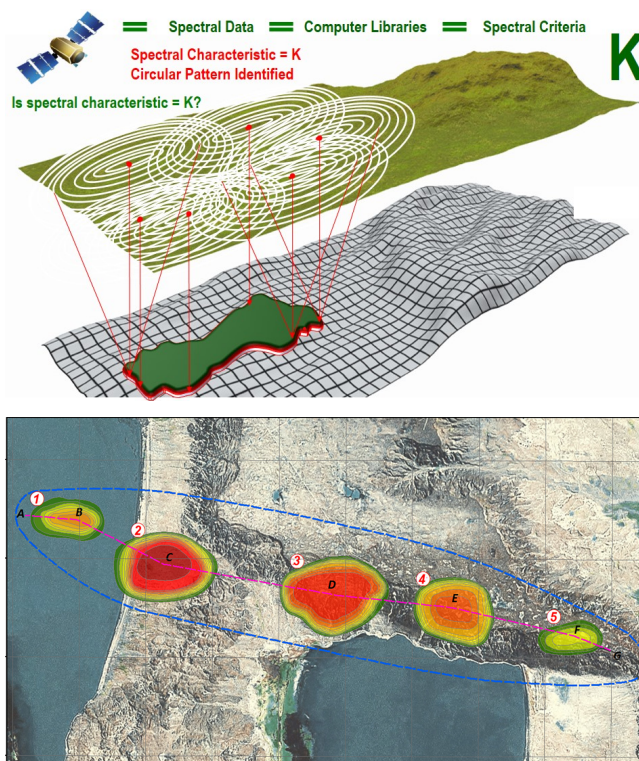formational zones and hydrocarbon structure contours. **Full STeP®** analysis will provide the **depth** of the resource and structuremetric cross sections (right) showing major changes of formations and positions of hydrocarbons

bearing structures. It is important to have an understanding of the fractured systems in order to project the best drilling locations.

Proprietary Spectrometric Analysis (PSA) is based on the processing of multi-spectral, satellite images utilizing proprietary algorithms for discovering spectral anomalies, some of which provide in-depth predictive capabilities via special spectral functions, developed by TERT. Such anomalies are related to the presence of hydrocarbon accumulations in the subsurface. The principle is based on natural seismic "white noise", which originates in the subsurface and, over geological time, manifests at the surface via circular anomalies, some of which are specific to hydrocarbons and geothermal systems.

Value Proposition: The method works at different scales and can cover large and small areas alike. The resulting maps will include contours of spectral anomalies called GIA(s), geo-informational anomalies, which when present, are indicative of a high probability of resource accumulations.

Estimated **pay depth** can also be calculated. Proprietary GIA functions let us estimate the geological resource (prospective resources) within the area of interest.

Note: Both methods are well suited for oil & gas as well as geothermal reservoirs, as they will give a solid indication on Fluid Presence, Fracturing and System Location, Depth and Extent of the reservouirs.
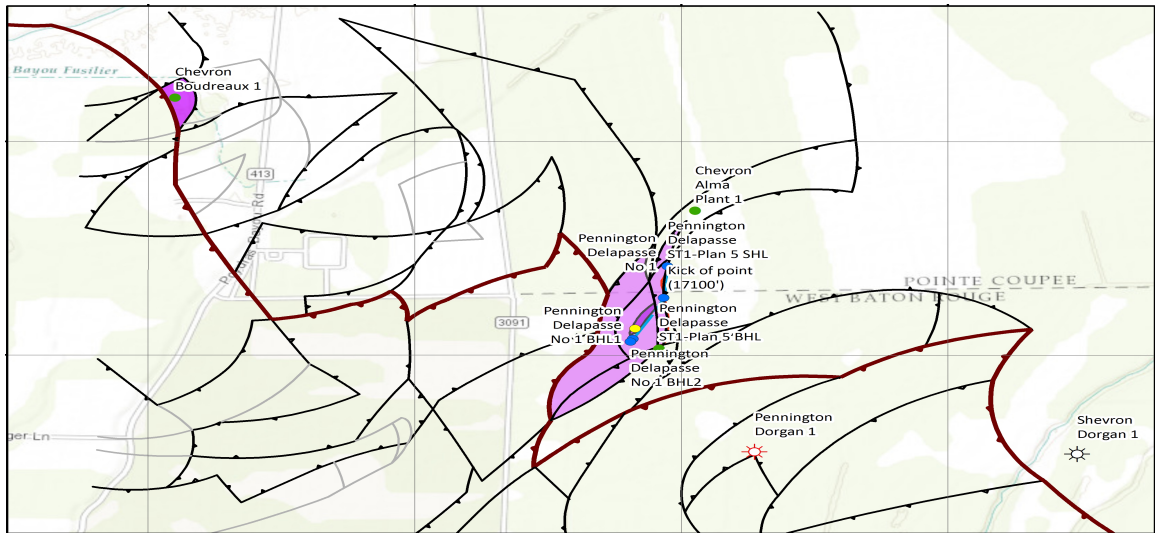
STEP® DLV SERVICES AND DELIVERABLES

The process examines a number of various physical, geological, and geophysical theories and correlates all of them. The independent, highly scientific methods are applied to assess the prospectivity of the structure and/or the area around the wellsite selected by the Customer. The unique and differing data sets provide a large array of data and separate scientific and geological views of the subsurface as well as the oil, gas, and geothermal systems. TERT delivers significantly more than traditional spectral anomalies produced using conventional remote sensing. We provide results rendered unique proprietary methods that deliver accurate locations and contours of the resource targets, irrespective of whether they are structural or stratigraphic.
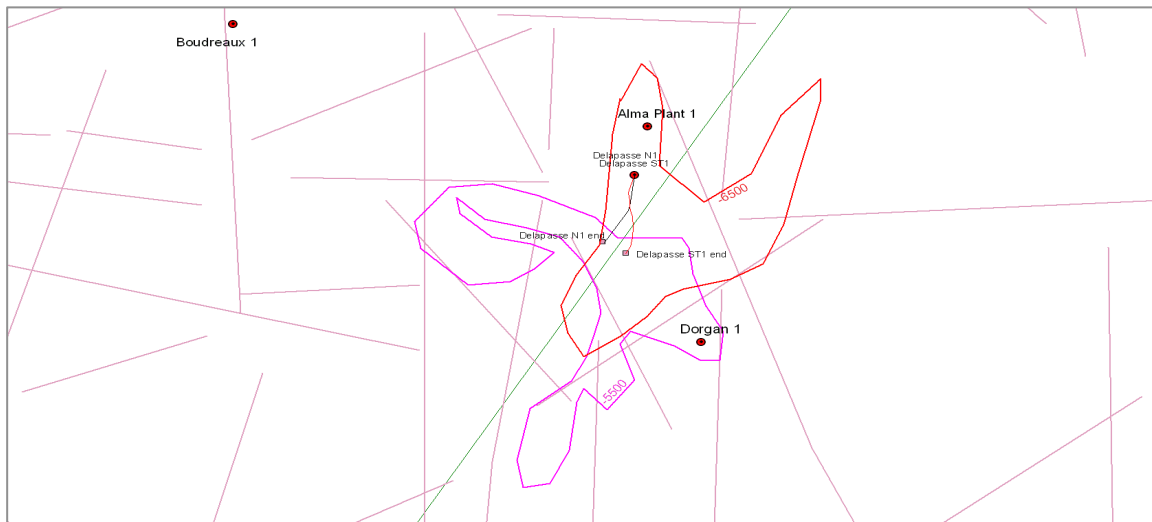
*During **STeP®** DLV analysis, TERT shall carryout the following activities in connection with the structure and the area immediate to the intended drilling location:*

    a. Analyze the geological and geophysical information related to the drillable prospect and target within the **Area of Interest (AOI)**;

b. Conduct limited assessment of the geological situation in the **AOI** based on the collected data;

c. Acquire and select general and specific, detailed digital satellite data/images, and then prepare and process these satellite data/images;

d. Conduct Proprietary spectrometric analysis based on map scale 1:10,000 or better;

e. Conduct Structuremetric analysis based on map scales 1:10,000, or better;

f. Evaluate the seismic data and interpretations provided by the Client and perform certain processing (noise removal, spectral decompositions, geobodies, etc.) in order to validate the prospect;

g. Integrate all of the datasets collected via the activities described in "a" through "f", assess the resource prospectivity of the **AOI**, and delineate exploration targets/structures, as applicable;

h. Produce a short report;

i. Produce all cartographic materials.

Sample of Structuremetric analysis output showing the crestal part of the structure and positions of wells/drilling locations.

Output of Proprietary Spectrometry showing contours of presence of Hydrocarbons for two horizons

In summary:

The report will contain a number of maps and their interpretations leading to the conclusions on contours of potential Hydrocarbon deposits within the AOI and the position of the projected drilling location. Multiple drilling targets will be high-graded in relation to their exploration priority.

CLIENTS MATERIALS

TERT welcomes the client to provide certain geological & geophysical information in addition to the proposed structure contours and the coordinates of the drilling location(s):

(a)   Geological description of the Service Area as well as geological descriptions of the basin, petroleum system, and other related materials;

(b)   Maps or other cartographic forms of or near the Service Area indicating existing exploration and/or production sites, fields, structures, trends, wells, etc. (if any) that could be used as analogs;

(c)   Any other geological and geophysical, including seismic, materials in possession of client;

(d)   Well data (logs, mud logs, past production history, etc.).

Please note: although the aforementioned data might improve the results of our analysis, the **STeP®** process does NOT require it. The minimum data that we need are the coordinates of the intended drilling location.

CONCLUSION

Terra Insight Services, Inc. believes it can deliver high value information to the customer and help them to cut the costs, time, and risks associated with exploring a service area or decreasing the risk of drilling in the least prospective location. **STeP®** can help eliminate some of the shortcomings of seismic and validate seismic targets. Confidence rises when two competing and independent datasets positively integrate with one another.

The results of our surveys and reports will save your esteemed organization much more than the cost of the TERT's services costs as compared with typical G&G. More information about our technologies including scientific and technical basis, typical service process, case studies, output examples, etc., can be found on our web site www.terrainsight.com.

The keys to our success are:

1. Multiple disciplines, independent methods and data
2. More data means less risk and more confidence
3. Quantitative, empirical approach prior to qualitative interpretation means more accuracy and less guessing.

Why have you drilled a dry well?

You need to know why before drilling another well