Information's about RSS-NMR technology

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1. Antecedents

All is coming from Russian military scientific investigation. Some genius works on a military use of two discoveries in weapons uses and they found one application: It is a tool for detect the nuclear submarines of US Navy using like “marker” the uranium combustible for the propulsion.

It’s a military laboratory in the years 70 soviet 100 %, after partition of URSS they were Ukrainian (officially). they are now re attached to a Russian university after Crimea problem in 2014. Using the simple principle (annexed) they develop the technology for oil and gas, metals and even Diamant (use the kimberlite like marker, easy, no?)

2. A lot of company’s intents to develop the technology from the beginning to now

For Bolpegas which wants always develop the technology here in Bolivia and south America, with 25 years in the business we were not sure of the validity of one on those partners and after a Zoom we definitely understood that they are false. After that I done a complete study of all this companies, patents, website, direction, actives and they are 100 % false. A lot of resellers exist we verify them (trials, patents, people and companies). I do not have secrets and for not let waste your time, you can visit the web page of those companies. They are not reliable and if they were with contacts now, they are not active. For explanation of the technology they do nice web page, please enjoy them
https://www.geodeepvision.com/
https://georesonance.com/
http://geodirect.in.ua/
https://transcomplex.com/technologies/ (download the PDF you have a very nice explanation of the technology https://transcomplex.com/wp-content/uploads/2017/02/igt_eng.pdf)
https://www.geodirectus.com/

At the end and using my own contacts in my own group, I found definitely the right laboratory and the Russian guys.

3. Russia / USA relation and of course (middle east aligned to US position and Europa in the eternal conflict)

As you know we must be discreet on this stuff because Russia is under embargo for a lot of things since 2014 and if you are American, European you can be in trouble. Exxon and Chevron which are the 2 majors which does not trust to the transition have also some doubts about the end of the petrol, but not really clear at level of what or why! We must be discreet on this stuff. They are also looking around this methodology

4.What is the RSS-NMR

For be concise, your main question will be "What is the difference between the existing remote methods in various companies and the remote method called RSS-NMR"?

For comparison, let's take the seismic technology used by all oil exploration companies. Seismic machines generate a high-powered signal that is directed underground. Firstly, this powerful signal does not carry any information, and secondly, it dissipates in all directions and therefore must be very powerful in order to reach the deep. When it reaches the boundary of the two media underground, it is reflected and picked up by receivers on the surface. (Faceless signal does not

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penetrate inside the substance, it is an anomaly). And then a long interpretation of the data is necessary. We talked to many interpreters who have different opinions about the same object. That is, some kind of anomaly is revealed. Which may be a deposit or not. Only drilling can confirm the presence of the deposit. Statistics say that only 3 or 4 wells hit the target. The efficiency of seismic is not higher than 30-35%. The main property of seismic is reflection.

How RSS-NMR technology works? The transmitter sends a narrowly focused signal that is specific to the substance (oil, gas), i.e., the signal includes information about the oil or gas. The signal Re-emits when it reaches the oil or gas and, on the surface, we perceive the information about the oil or gas with certainty. (The informative signal penetrates inside the searched substance and immediately reveals this deposit (oil, gas, minerals, etc.)

This is called the resonance of the desired material. We do not need interpretation; it is a direct discovery of the deposit. The accuracy is 90-95%. (The same direct body data we all get during a medical examination by MRI in the clinic)

We have two stages the most interesting for the moment is the stage 1 .
The first stage is the RSS remote sensing method, we get the resonance of data from satellite imagery in the nuclear research reactor in Ukraine. The accuracy is 90%, which is three times higher compared to seismic.

Stage 2 is NMR survey on the ground. The accuracy of the survey is 95%.
Analog satellite images of the surveyed area are processed in a research nuclear reactor and require the highest qualification of personnel and precision accuracy.

The NMR technology includes two discoveries received by the Nobel Prize; these are NMR and Kirlian effect. If it's offshore we are 95% cheaper than OBN and of course onshore we go very fast because no interpretation needed

4. Deficiency of the old 2D seismic

What is the market? Oil and gas: brownfield, they have found even 30 % to 40 % of the reserves of oil in the developed field since the beginning of petroleum era and why? The exploration at the starting mainly the quality of 2D seismic used in the years 60 /70' was terrifically bad, if you want to do comparation it's like to do a super dynamic web page in HMTL 6. With argentic photography's but on paper support.

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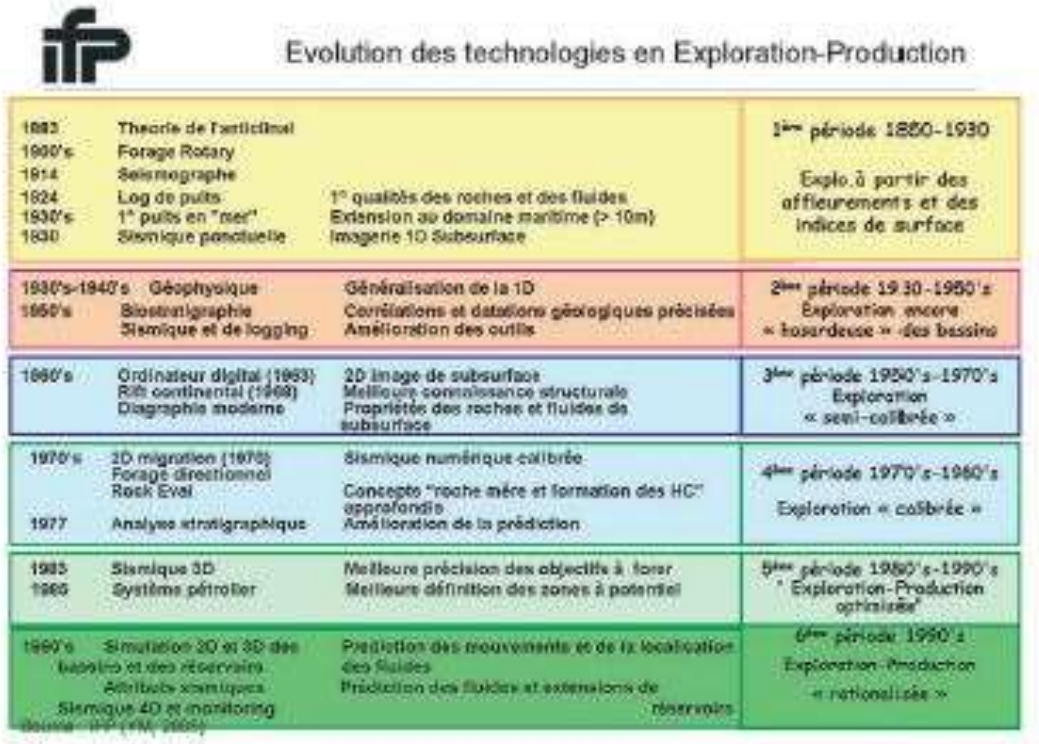

Total energy is the sole company to understand the story in big investments or big operations to secure the field and the rentability of an old field.

I participated to the first OBN done by total in Gabon (not the technology developed by the Russian), but the philosophy of the approach of exploration are similar to the Russian technology (redo the photography)

https://ep.totalenergies.com/en/expertise/reservoir/ocean-bottom-nodes-obn-wide-offshore-seismic-acquisition-campaign-improve

And when the guy in charge Ruben Sanchez declares.
"Technically, unlike other regions, seismic imagery on Al-Shaheen was of average quality. Conventional seismic imaging exercises are undertaken using eight to fourteen cables of two to eight kilometers in length, usually comprising a single type of sensor called a hydrophone. A vessel tows the cables several meters below the water surface. In an area characterized by many complex surfaces and at sea-level structures, this type of seismic acquisition has a number of drawbacks: it is dependent on meteorological factors such as swell and ocean currents, there are risks associated with existing infrastructure, the biosphere and maritime traffic etc. Another technique is to deploy cables directly on the seabed (Ocean Bottom Cables) containing sensors connected to a recording vessel. This technology and method provided the potential for a significantly improved deployment scenario as well as it represented a unique opportunity to meet both technical and HSE challenges."

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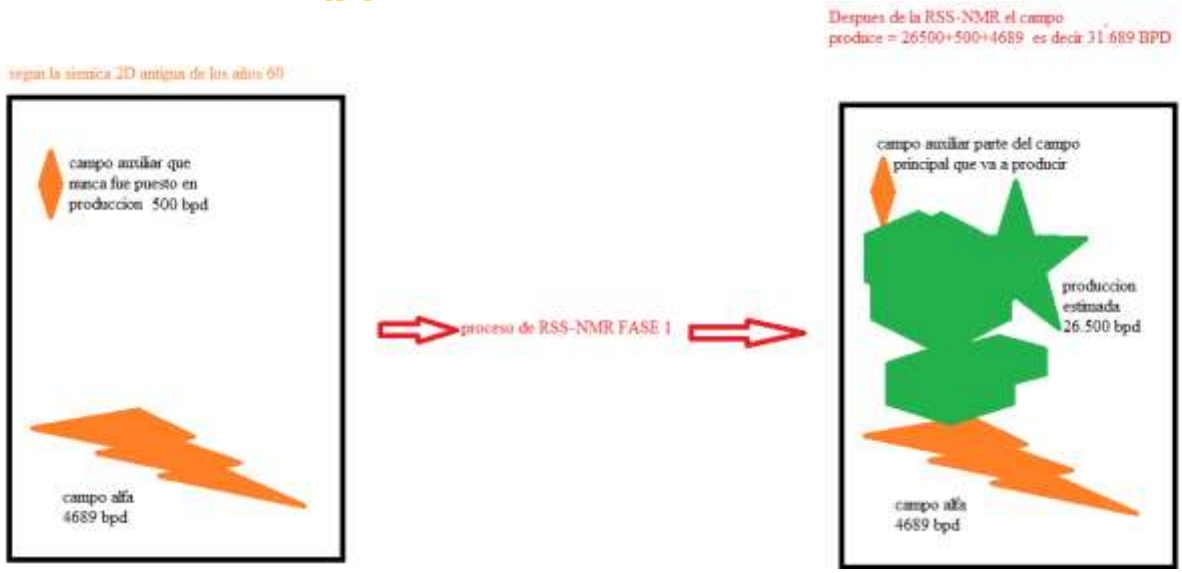
The Russian technology is the perfect and no expensive tool for refurbish brownfield or limit exploration costs in greenfield

We can call it

- Corrective seismic on brown field
- Re exploration of bloc by a new seismic imagery in 3D
- And in case of green field a screening before the phase seismic (reflective, refractive, MT even OBN which is very expensive).

Those two mains' applications are resumed in those 2 diagrams



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Now the seismic company speak about 3D even 4D but definitely they for exploration and re exploration I do a page on LinkedIn also. have a look here https://www.linkedin.com/pulse/use-rss-nmr-green-fields-refurbish-brown-oil-gas-part-friedman-/

Innovative RSS-NMR technology, Comparison with conventional geophysical methods

Indirect geophysical searches for oil and gas and, above all, trap identification are a necessary but insufficient exploration stage, as only one third of the structures identified by geophysical methods and verified by exploration drilling turn out to be commercially oil and gas bearing. Therefore, the development and introduction into practice of direct methods of searching for deposits of hydrocarbons and other types of minerals to effectively assess the prospects of their development at the stage of geophysical exploration is of great importance.

The innovative technology RSS-NMR (Resonance Spectral Sensing - Nuclear Magnetic Resonance) refers to "direct" electromagnetic methods of geophysics and is based on the application of the **resonance effect**. The idea of the technology lies in the resonant separation of the spectrum of the substance we need from a broadband mixture of spectra from other substances and many interferences of different nature. As a result, any type of minerals in areas of any complexity can be quickly and reliably explored.

The simplest analogy of this process is tuning a radio receiver to the right station among the masses of airwaves interference and signals from other stations.

The main thing in our approach to geophysical study of the earth's interior is that we do not use the interpretation of indirect data, but directly determine the presence of the desired mineral in the earth's interior and then determine the characteristics of its bedding.

Technology RSS-NMR realizes it remotely (RSS method), as well as directly on the ground (NMR method). Application of these methods makes it possible to conduct regional surveys of territories of different area and complexity at any point of the globe, their detailed survey in any climatic conditions, regardless of epidemics, warfare and so on.

Consider the effectiveness of our RSS-NMR technology compared to 3D seismic surveys, Earth Remote Sensing (ERS) and magnetic resonance systems (MRS) for finding groundwater.

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Comparative characteristics of 3D seismic and RSS-NMR technology

Performance	3D	RSS	NMR
Studies Purposes	The main purpose of seismic exploration is to find structures favorable to oil and gas accumulation	Identification and survey of deposits in areas of up to tens of thousands of square kilometers, Verification and optimization of points for drilling wells. Evaluating the prospects for well rehabilitation.	Survey of the identified deposits to verify RSS results and set optimal drilling points in the field. Evaluating of well recovery prospects.
Studies results	Ground contours of anomalies, fault zones, depths and thicknesses of anomaly horizons, structural maps, expected porosity of reservoirs, 3D models, points for drilling exploration wells.	Ground contours of deposits, fault zones, depths and thicknesses of deposits horizons, gas pressure, watering horizons, structural maps, 3D models, optimal zones and points for drilling productive wells, calculation of predicted resources.	Ground contours of deposits, fault zones, depths and thicknesses of deposits horizons, gas pressure, watering horizons, structural maps, 3D models, optimal points for drilling productive wells, calculation of predicted resources.
Duration of the studies	From 3 to 6 months and more	1 month	1 month
Limitations	Works only in sedimentary rocks. Detects mostly traditional dome traps. Does not work in shallow water and hilly terrain.	Virtually no restrictions. Works in sedimentary and hard rocks.	Virtually no restrictions. Works in sedimentary and hard rocks.

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	Long duration of the ground phase of studies and data interpretation. Difficult to study in difficult landscape, climatic and epidemiological conditions.	Emphasizes deposits of any structure. Used in any climatic, geological and epidemiological conditions.	Emphasizes deposits of any structure. Used in any climatic, geological and epidemiological conditions.
Ecology	The need to cutting glades, a large vibration load.	Absolutely environmentally friendly. Safe for people and the environment.	Absolutely environmentally friendly. Safe for people and the environment.
Effectiveness	30% in new territories, up to 50% in additional field exploration.	More than 80%	More than 90%
Cost parameters	Tens of thousands of dollars per square kilometer.	Much less costly	Much less costly

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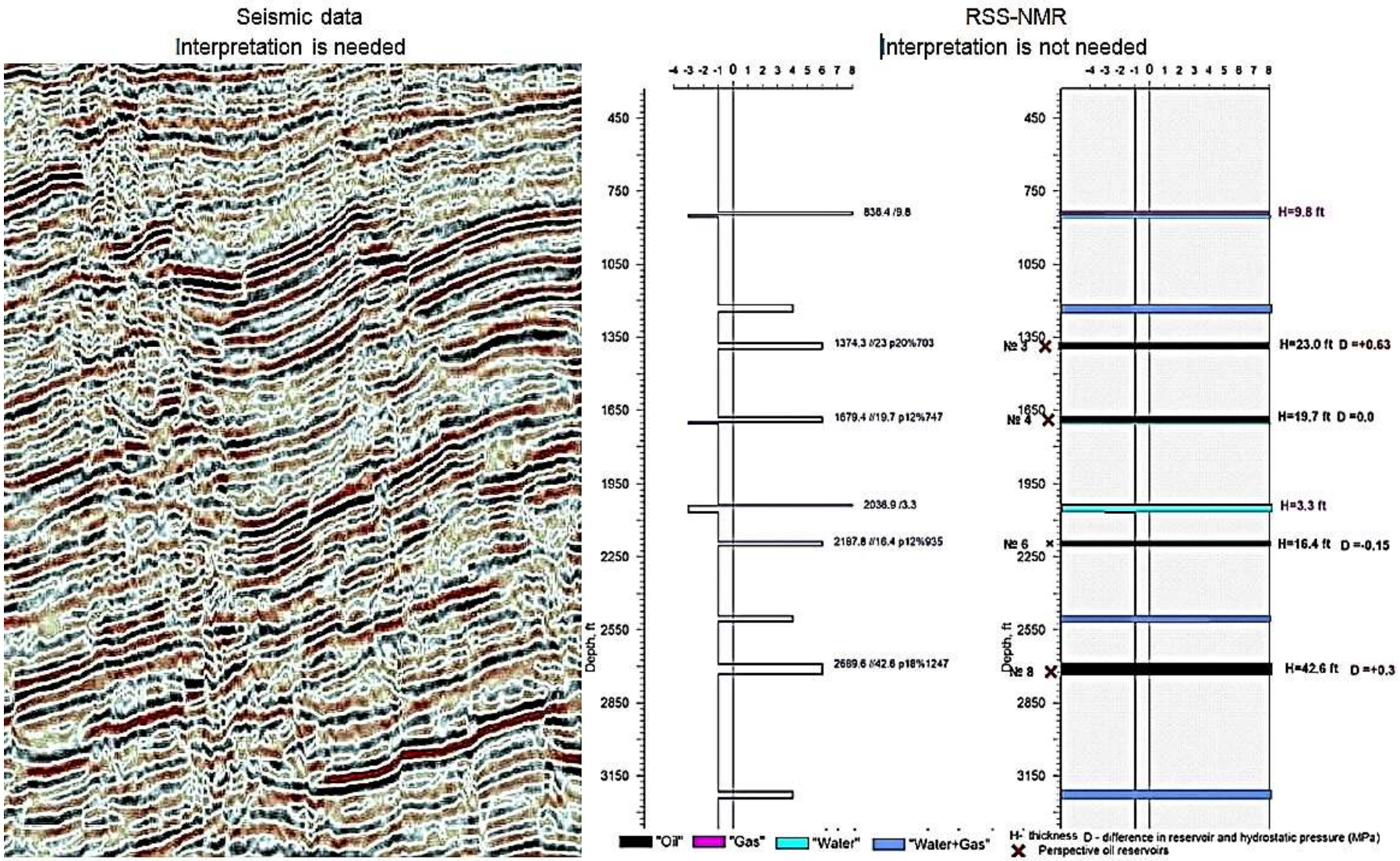
Symbolically, the difference between the technologies is illustrated by the following figure:

How 3D seismic and RSS-NMR are showing underground deposits:



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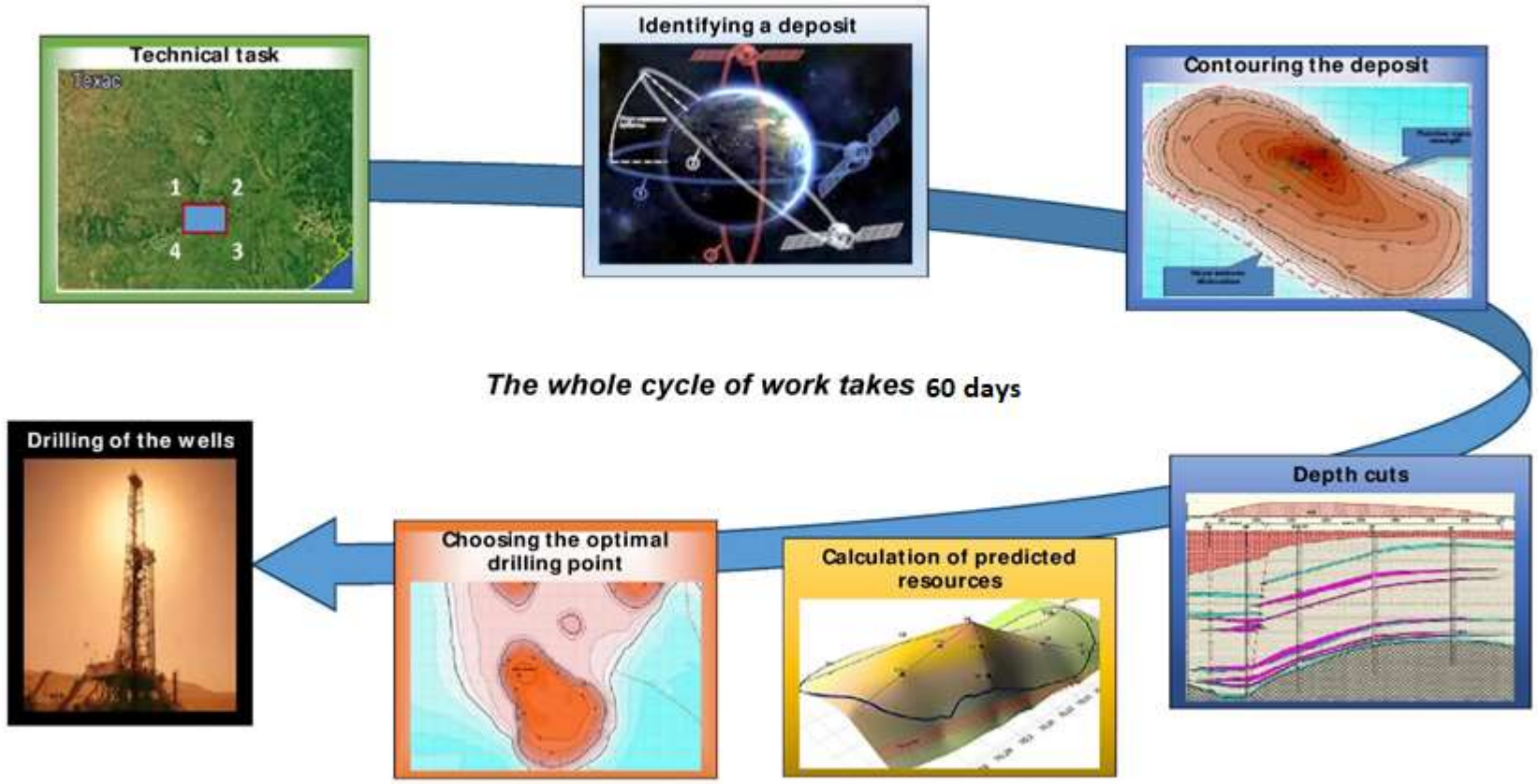
How RSS technology works for remote deposits survey directly



The whole cycle of work takes 60 days

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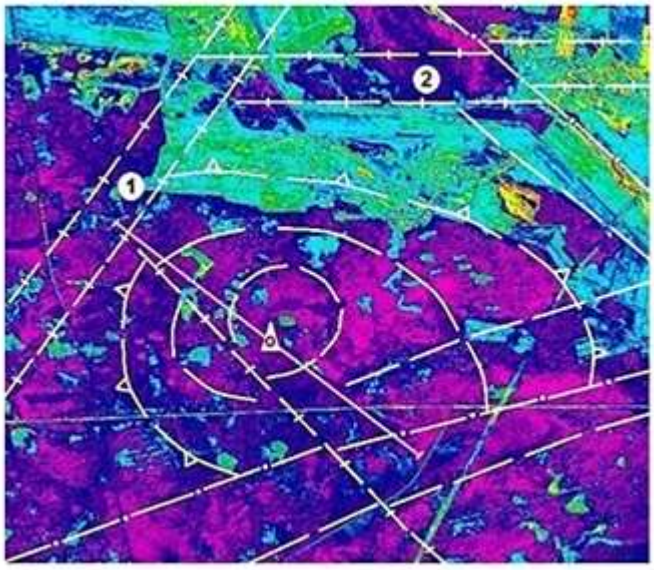
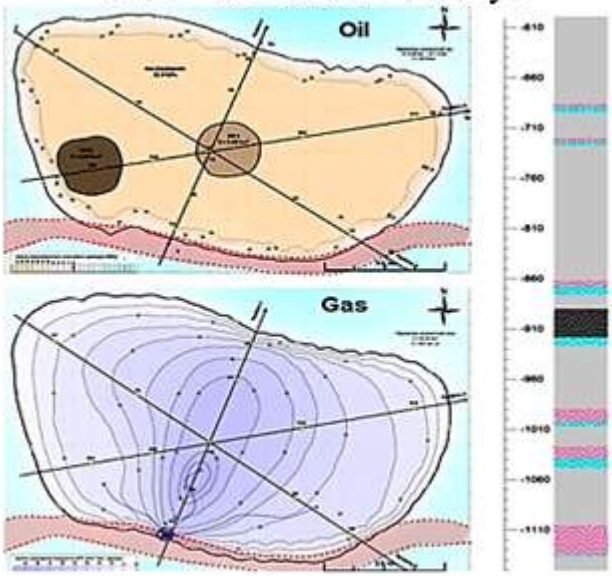
Comparison with ERS

Earth remote sensing is a non-contact study of the Earth, its surface and subsurface, individual objects and phenomena by recording and analyzing their own or reflected electromagnetic radiation. Space remote sensing systems,ERS, allow receiving data from large areas, which can then be used for forecasting territories, promising for the occurrence of various types of minerals.

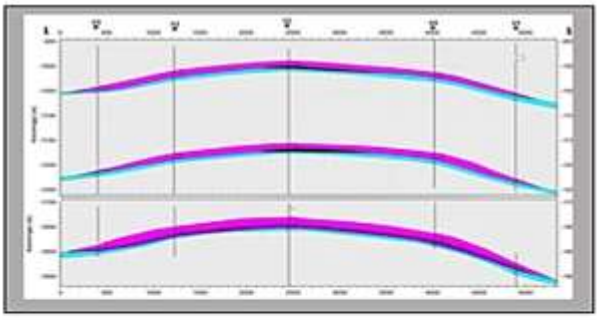
ERS - oil prospective zones

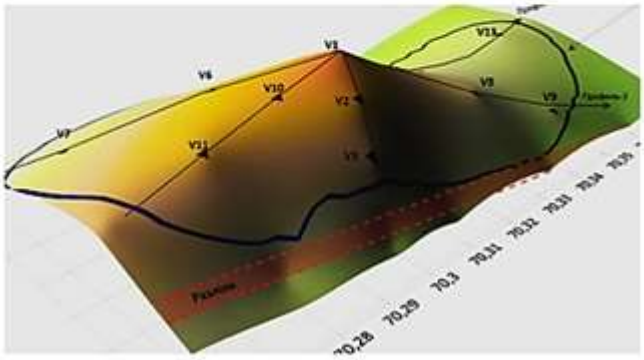


RSS - 2D and 3D surveys



ERS - terrestrial mineral displays





We can see a qualitative difference in the results of studies. ERS identifies promising areas for further studies; RSS identifies mineral deposits and gives specific characteristics of their depth occurrence.

RSS-NMR vs. MRS

The MRS technology is designed to detect aquifers and measure their characteristics. The principle of operation of the compared MRS and NMR technologies is the same and is based on the phenomenon of nuclear magnetic resonance. However, MRS requires bulky antennas and huge peak power to penetrate 150 to 200 meters in depth. In this case only water horizons are detected, while NMR detects various minerals and works much deeper:

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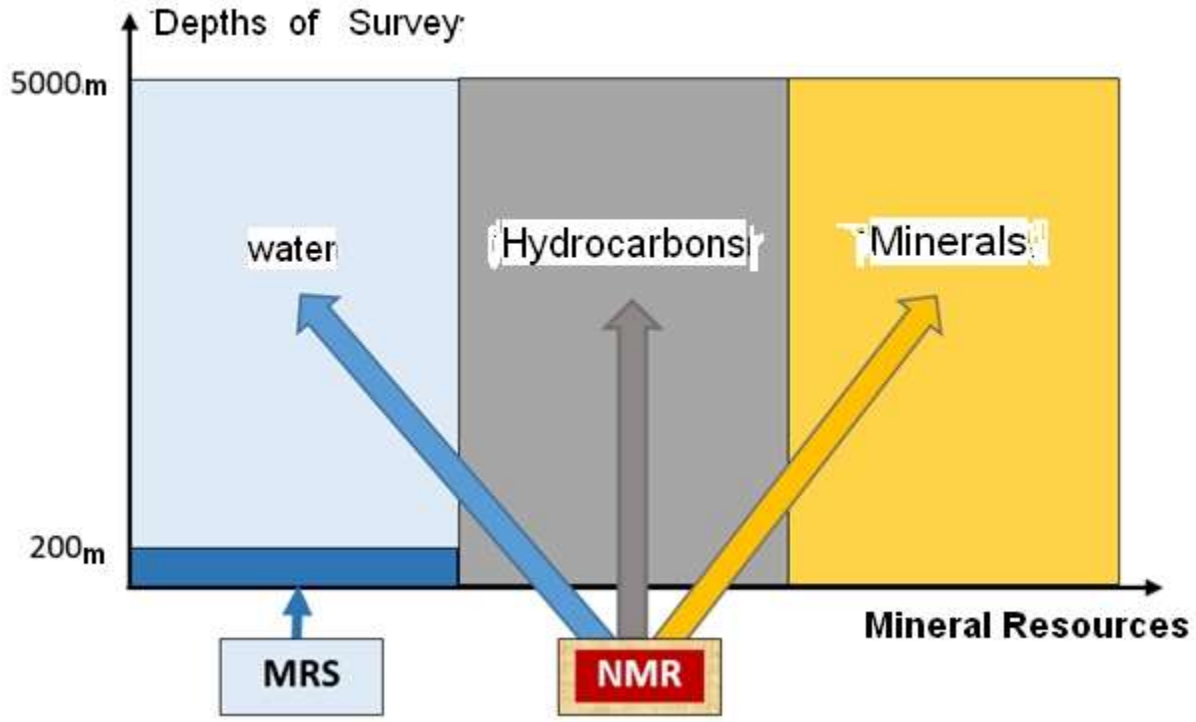

Thus, RSS technology is a remote method of surveying areas, directly identifying the minerals sought and providing in-depth exploration and assessment of development prospects.

Conclusions on the results of the comparative analysis of technologies

The efficiency of geophysical technologies and methods consists of the reliability of survey results, the speed of obtaining them and the cost of the work.

In all these parameters, RSS-NMR technology significantly exceeds any of the geophysical methods discussed above and, therefore, radically increases the profitability of companies exploring and producing hydrocarbons, underground fresh water and minerals.

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Method's Description

For your consideration an effective geophysical method of mineral search and prospecting "Poisk" is offered, which was created by Russia- an scientists. The method has passed practical tests since 1998 and showed high effectiveness dur-ing investigation of land and shelf of the Earth.

The method of geoholographic mineral search was developed on the basis of up-to-date achievements of science and technology, and allows to remotely carry out search and prospect-ing of different kinds of minerals on land and sea shelf, assess the availability of industrial develop-ment of deposits.

This unique geophysical method of mineral search and prospecting provides high effective-ness of work with small time and money expens- es because of physical principles and innovation- al technologies it is based on.

The complex of works on mineral search and prospecting with the help of "Poisk" geoholo-graphic method is carried out in 2 stages.

1st, search stage of works includes obtaining of aerospace photographs of a territory under investigation in different spectra, their geoholo-graphic processing on special equipment and obtaining of preliminary search results (contouring of kindly regions).

2nd, prospecting stage includes carrying out of geoholographic works directly on-site where deposit boundaries, occurrence depths, quality and bed thick-ness are specified and optimal points of exploratory and industrial wells are defined.

Method's Capabilities

- **Territory of action** is unlimited (any region on land or shelf on the territory of the Earth);
- **Minimum area under investigation** of the Cus-tomer's territory is defined by the size of aero-space photographs used during the first stage of works. At present such "single" area under inves-tigation is 60 x 60km (3600 sq. km);
- **Maximum square** of the investigated territory is virtually unlimited;
- **Sounding depth** - from 0 to 5 km;
- **Detectable minerals** - water, oil, gas, different metals in ore beddings;
- **Method's delicacy** - 1-1.5 grams of substance per ton of the ore body;
- **Detection success of deposits** - on first stage of sounding - not less than 80%, on second stage -97 % for water source and hydrocarbons, for all other min-erals - not less than 90%;
- **Work execution terms** are usually 1 -3 calen-dar months at first stage of work and 2-6 months at second stage depending on total square of in-vestigation and scope or works;

Описание метода

Вашему вниманию предлагается геофизический метод поиска и разведки полезных ископае- мых «Поиск», разработанный Российскими уче- ными. Метод прошел практическое тестирование с 1998 года и показал высокую эффективность при исследовании как суши, так и шельфа Зем- ли.

Метод геоголографического поиска ископае- мых был разработан на безе современных до-стижений науки и технологии. Он позволяет уда-ленно выполнять поиск и разведку различных видов полезных ископаемых на суше и морском шельфе, оценивать возможность промышленной разработки месторождений.

Этот уникальный геофизический метод поиска и разведки полезных ископаемых предусматри-вает высокую эффективность работ в короткое время и с малыми затратами благодаря своим физическим принципам и инновационным техно-логиям, на которых о основан.

Комплекс работ по поиску и разведке минера- лов с помощью геоголографического метода «Поиск» выполняется в 2 этапа:

1-й этап, поисковый, вклю чает аэрокосми-ческое фотографирование исследуемой терри-тории в различных спектрах, геоголографиче-скую обработку снимков на специальном обору-довании и получение предварительных резуль-татов поиска (оконтуривание искомых регионов)

2-й этап, разведочный, вклю чает в ы полне- ние геоголографических работ непосредственно на месте, где определяются границы месторож-дения, глубины залегания, качество и мощность пласта, а также намечаются оптимальные точки исследовательских и промышленных стволов.

Возможности метода

- **Территория обследования** — не ограниче- на (любая территория суши или шельфа на по-верхности Земли);
- **Минимальная площадь для исследова- ния** — определяется размерами аэрокосмиче- ских снимков во время первого этапа работ. В настоящее время такая «одиночная» площадь составляет 60х60 км (3600 кв.км);
- **Максимальная площадь** исследуемой территории — практически не ограничена;
- **Глубина зондирования** — от 0 до 7 км;
- **Определяемые минералы** — вода, нефть, газ, различные металлы в рудном залегании;
- **Чувствительность метода** — 1-1,5 г веще-ства на 1 тонну руды;
- **Точность определения месторождений** — на первой стадии зондирования — не менее 80%, на второй стадии —97% для воды и гидро-карбонатов, для всех остальных ископаемых — не менее 90%;
- **Сроки исполнения работ** — обычно 1-3 календарных месяца на первом этапе, и 2-6 ме-сяцев на втором этапе в зависимости от общей площади обследования и масштабов работ;

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• **Method safety** - the method is environmental- ly appropriate and completely safe for people.

(The success of deposit detection is defined by results of exploratory works carried out in 1998-2007 in Ukraine, Russia and abroad).

In comparison with other geophysical methods of mineral search and prospecting, the "Poisk" method provides an efficient shortening of work duration and a higher success in detection of minerals.

The cost of works is quite important too. For instance, in comparison with tra-ditional geophysical methods the gross work cost (per 1 sq. km) of the "Poisk" method is decreased by tens of times.

Method's Concept

Traditional satellite and ground geophysical methods of mineral search are based on reception and further processing of reflected from the surface of the earth or underground aperiodicities of various natural (solar radiation) or artificial sound-ing signals.

In the basis of the "Poisk" method lies an original concept of resonance remote mineral search and prospecting when sound of the earth is executed with the help of particular signals only inherent to chosen minerals producing the effect of resonance in their deposits.

Physical Principles In the Basis of the Method

To basic physical principles which allow to realize the method of resonance mineral search in practice belong Kirlian effect and also the effect of energoinformational transfer of particular substance radiation onto other carriers.

We have used the abovementioned physical principles and effects at following stages of prospect works with the help of the "Poisk" method:

1. Obtaining of aerospace photographs of the required territories with addi-tional highlighting by particular resonance signals;
2. Narrow hypogene sounding of mineral de-posits with particular signals with the help of field equipment directly on-site;
3. Holographic processing of resonance sig- nals coming to satellite and field equipment from the whole bulk of sought-for mineral deposits.

• **Безопасность метода** — метод экологиче- ски чист и полностью безопасен для людей.

(Успех определения месторождений определен по результатам выполненных в 1998-2007 гг. работ в Украине, России и за рубежом).

В сравнении с другими геофизическими методами поиска и разведки полезных ископаемых, метод «Поиск» предоставляет значительное уменьшение сроков работ и значительное увеличение успешности определения минералов.

Стоимость работ также имеет значение. Например, в сравнении с традиционными геофизическими методами, общая стоимость работ (на 1 кв.км) методом «Поиск» меньше в десятки раз.

Концепция метода

Традиционные спутниковые и наземные геофизические методы поиска минералов основаны на получении и дальнейшей обработке отраженных от поверхности Земли или от подземных неоднородностей различных природных (солнечная радиация) или искусственных зондирующих сигналов.

В основе метода «Поиск» лежит оригинальная концепция удаленного поиска и разведки минералов по их резонансу с помощью определенных сигналов, на которые только выбранные минералы дают резонансный эффект в местах их залегания.

Физические принципы в основе метода

Базовые физические принципы, позволяющие реализовать эффект резонансного поиска минералов на практике, относятся к эффекту Кирлиан, а также к эффекту энергоинформационного переноса излучения конкретного вещества с помощью несущей частоты.

Мы используем вышеупомянутые физические принципы и эффекты на следующих этапах разведочных работ с помощью метода «Поиск»:

Получение аэрофотоснимков требуемых территорий с дополнительной подсветкой конкретными резонансными сигналами;

Узконаправленное гипогенное облучение ме-сторождения ископаемых определенными сигна- лами с помощью полевого оборудования непо- средственно на месте;

Голографическая обработка резонансных сиг-налов приходящих с спутника и полевого оборудования для всего объема искомого вещества по месторождению.

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Scientific Preconditions

It is well known in the physics of the atomic nucleus the data about magnetic and electrical moments are of special importance.
According to the works of the academician E.Zavadsky (1946), all nuclei with spins that are not equal to zero have the magnetic moment μ_1, which is connected with the spin of this nucleus **J**, nuclear magneton - μ_{nucl} and proportional to gyro-magnetic relation — g_1 :

$$\mu_1 = g_1 \bullet J \bullet \mu_{nucl};$$

The gyromagnetic relation g_1 is a constant magnitude and is equal to ratio of nuclear mag- netic moment to the nuclear angular moment.
If we bring the atomic nucleus with spin **J** and moment μ_1 to the magnetic field with intensity **I**, then we can see magnetic interaction, and the energy of interaction of magnetic moment of the nucleus with the field W_m will be proportional to **H**:

$$W_m = \mu_1 \bullet H \bullet (m/J);$$

where **m** is the projection of the vector **J** to the direction of intensity of the magnetic field. I.e., the energy of interaction is proportional to the intensi- ty of the magnetic field.
According to the quantum mechanics, several energetic (quantum) levels of nucleus energy are possible, and the difference of values of 2 adja-cent energetic levels will be equal to:

$$\Delta W_m = g_1 \bullet I_{nucl} \bullet H;$$

Then the frequency corresponding to this ener- gy will be called Larmor's frequency:

$$f_L = \Delta W_m / h;$$

where **h** is Planck's constant.
If we place the sample body to the constant orienting magnetic field I (the spins will be orient-ed along the magnetic field) and simultaneously apply variable rotating magnetic field I_{var}, but per-pendicular to the orienting nucleus of the field — **I**, then at the frequency of the variable field equal to Larmor's frequency f_L, we can observe resonant absorption and resonance scattering of the energy by the sample body.
Thus, having recorded resonance frequencies for each substance in nuclear magnetic reso- nance facility and then influence the examined substance by the generator with such a frequen- cy, then by presence of resonance phenomena it is pos-sible to judge about presence of the searched body in the depths of the earth. Only in case when the modulated signal of the generator hits the searched substance, a perturbation ac-tion to the receiving device of the vector magnetic field of this sub-stance occurs.
As a rule, the value of Larmor's frequencies for different substances present in the magnetic field of the Earth, lies within terahertz range (100 GHz - 100 THz).

Научные предпосылки

В физике атомного ядра уделяется особенное внимание магнитным и электрическим момен-там.
В соответствии с работами академика Е.Завадского (1946), все ядра с ненулевыми спи-нами имеют магнитный момент μ_1, связанный со спином этого ядра **J**, ядерным магнетоном — μ_{nucl} и пропорционален гиромагнитному отноше-нию — g_1:

$$\mu_1 = g_1 \bullet J \bullet \mu_{nucl};$$

Гиромагнитное отношение g_1 есть постоянная магнитуда и равна отношению ядерного магнит-ного момента к ядерному угловому моменту.
Если внести атомное ядро со спином **J** и мо-ментом μ_1 в магнитное поле интенсивностью **I**, то мы можем видеть магнитное взаимодействие, и энергия взаимодействия магнитного момента ядра с полем W_m будет пропорциональна **H**:

$$W_m = \mu_1 \bullet H \bullet (m/J);$$

где **m** есть проекция вектора **J** на направле-ние интенсивности магнитного поля. То есть, энергия взаимодействия пропорциональна ин-тенсивности магнитного поля.
В соответствии с квантовым механизмом, не-которые энергетические (квантовые) уровни ядерной энергии возможны, и разность в значе-ниях 2 соседних энергетических уровней будет равна:

$$\Delta W_m = g_1 \bullet I_{nucl} \bullet H;$$

Тогда частота соответствующая этой энергии (называемая Ларморовой частотой) будет:

$$f_L = \Delta W_m / h;$$

где **h** — постоянная Планка.
Если мы поместим образец вещества в посто-янно ориентированное магнитное поле **I** (спины будут ориентированы вдоль магнитного поля) и одновременно подадим изменяющееся вращаю-щееся магнитное поле I_{var}, но перпендикулярно ориентации ядер в поле **I**, тогда при частоте пе-ременного поля, равной Ларморовой частоте f_L , мы можем наблюдать резонансное поглощение и резонансное рассеивание энергии образцом вещества.
Таким образом, имея записанные резонанс- ные частоты для каждого вещества в условиях ядерного магнитного резонанса и затем воздей-ствуя на исследуемое вещество с помощью ге-нератора таких частот, по наличию резонансного эффекта возможно судить о наличии искомого вещества в глубинах земли. Только в случае ко-гда модулированный сигнал генератора воздей-ствует на приемное устройство по вектору маг-нитного поля, искомое вещество присутствует.
Как правило, величины Ларморовых частот для различных веществ в магнитном поле Земли лежат в терагерцовом диапазоне (100ГГц — 100ТГц).

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The visualization of a deposit's boundaries is carried out during special pro-cessing of aerospace (aerial) photographs in radiation fields and their introduction into rotary magnetic field (Kirlian effect).

Then, with the help of impact of a narrow resonance signal on mineral deposits directly from the Earth's surface it is possible to detect direction on an underground object with the sough-for substance, and by slope angle it is possible to calculate the depth of an object underground.

Such sounding of a locality region with the help of test resonance radiation allows to link the deposit's boundaries on an invisible surface of earth to the map of the region, define qualitative and quantitative characteristics of mineral deposits, choose points for industrial boring for effective development of reserves.

Method's Technique

Mineral search and prospecting with the help of resonance sounding of earth by the "Poisk" method is done in 2 stages.

1s' Stage. **Carrying out aerospace photography of an area under investigation**
(Fig. 1)

At first stage of prospecting work our experts carry out the following work with the help of the "Poisk" complex equipment:

- Execution of aerospace photography of a specified territory or its areas with "highlighting" by resonance signals;
- Radiochemical processing of aerospace photographs on a special complex of ground equip- ment;
- Identification and contouring of deposit boundaries on aerospace photo-graphs and transfer of obtained borders onto maps of the area.

2nd Stage. **Carrying out works directly on-site**
(Fig. 2)

With the help of ground equipment of the "Poisk" complex (installed on air car-riers if needed) our experts carry out a complex of prospect- ing work directly on-site. The following is done:

- More precise definition of boundaries of deposits obtained at first stage;
- Volumetric contouring of deposits, identification of a horizon quantity, places of domes and lenses for oil, assessment of separate physical parameters of the sough-for substances (temperature, salinity, condition of substance - gas, liquid, steam, solid body, concentration of minerals in ores etc.);
- Selection of optimal points for exploratory and industrial boring.

Визуализация границ месторождения выполняется с помощью специальной обработки спутниковых (авиационных) снимков в полях излучений и их интерпретации во вращающемся магнитном поле (эффект Кирлиана).

Затем, с помощью воздействия узкого резонансного сигнала на месторождение с поверхности Земли, возможно определить направление подземного объекта с искомым веществом, и по углу наклона возможно вычислить глубину залегания объекта под землей.

Такое зондирование локального района с помощью тестового резонансного излучения позволяет связать границы месторождения на невидимой поверхности Земли с картой района, определить качественные и количественные характеристики месторождения, выбрать точки для промышленной проходки для эффективной разработки запасов.

Техника метода

Поиск и разведка ископаемых с помощью резонансного зондирования земли методом «Поиск» производится в 2 этапа:

1-й этап. **Выполнение аэрокосмического фото- графирования исследуемого района**
(рис.1)

На первом этапе разведочных работ наши эксперты выполняют следующую работу с помощью оборудования комплекса «Поиск»:

- Обработка аэрокосмических снимков указанной территории или ее районов с помощью «подсветки» резонансными сигналами;
- Радиохимическая обработка аэрокосмических снимков на специальном комплексе наземного оборудования;
- Идентификация и оконтуривание границ месторождений на аэрокосмических снимках и перенос полученных границ на карты района.

2-й этап. **Выполнение работ непосредственно на месте**
(рис.2)

С помощью наземного оборудования комплекса «Поиск» (установленного на авианосителе при необходимости) наши специалисты выполняют комплекс разведочных работ непосредствен- но на месте. Следующие работы должны быть произведены:

- Более точное определение границ месторождения, полученных на первом этапе;
- Объемное оконтуривание месторождений, идентификация количества горизонтов, расположения куполов и линз для нефти, оценка различных физических параметров искомого вещества (температура, соленость, состояние вещества — газ, жидкость, пар, твердое тело, концентрация минералов в рудах и т.п.);
- Выбор оптимальных точек для разведочной и промышленной проходки.

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- portable devices for visual recording of spec- tral resonant lines of sub-stances (polymetals) on the boundaries of deposit areas contours;
- portable broadcasting stations, GPS receivers and auxiliary equipment for dwelling in field condi- tions;
- laptop with software for recording and pro- cessing geophysical measure-ments in field con- ditions;

At th ir d, final stage of works, a computing and editorial and publishing complexes are used for calculation materials, preparation of diagrams and final report on the carried out work..

Techniques of Work Execution

The succession of prospecting works execution with the help of the geoholo-graphic mineral search method lies in the following:

- Preparatory scanning of informational and energy spectra of the needed min-erals from pho- tographs or ores (or from samples of minerals) and their recording on "test" or "operational" holo- grams;
- Order and obtaining of the required number of aerospace photogprahs of the investigated territo- ry during simultaneous "highlighting" of the area with laser beam modulated with the rotating elec- tromagnetic field of test holograms;
- Processing of every aerospace photograph in the research reactor with thermal neutrons IR- 100 (with traversing box in the active zone and sta- tionary plant of gamma radiation with dose rate of up to 1000 R per hour);
- Countouring of the borders of the detected in the photographs mineral deposits on a nuclear- magnetic resonance plant and further visualiza- tion of the deposit borders with the help of Kirlian camera;
- Transfer of mineral deposits contours on a geographic map of the investigat-ed region with the help of computer calculating complex and obtaining preliminary data on the deposit's pa- rameters. Providing the Customer with operation- al materi-als on the detected mineral deposits;
- Further investigation of mineral deposits di- rectly on-site carried our with the help of mobile equipment of the "Poisk" geoholographic com- plex;
- Analytical processing of data array, obtaining of qualitative characteristics of deposits, mineral reserves and position data of optimal boring points;
- Preparation of the final report and providing the Customer with it.

- портативные устройства для визуальной за- писи спектральных резонансных линий веществ (полиметаллов) на границах контуров месторож- дений;
- портативные радиостанции, GPS приемники, и вспомогательное оборудование для организа- ции работ на месте.
- ноутбук с программным обеспечением для записи и обработки геофизических измерений в полевых условиях;

На тре тье м, заключительном этапе работ ис- пользуются вычислительный и издательский комплексы для обработки материалов, подготов- ки диаграмм и финального отчета по выполнен- ной работе.

Техника выполнения работы

Успешность выполнения изыскательских ра- бот с помощью геоголографического метода по- иска минералов заключается в следующем:

- Предварительное сканирование информаци- онных и энергетических спектров необходимых минералов с фотографий или руд (или с образ- цов минералов) и их запись на «тестовые» и «рабочие» голограммы;
- Заказ и получение необходимого количества аэрокосмических снимков исследуемой террито- рии во время соответствующей «подсветки» рай- она лазерным излучением, модулированным вращающимся магнитным полем тестовой голо- граммы;
- Обработка каждого аэрокосмического снимка на исследовательском реакторе на тепловых нейтронах ИР-100 (в горячей камере в активной зоне и с помощью стационарного источника гам- ма-излучения с дозой облучения до 1000 Р/час);
- Оконтуривание границ обнаруженных на снимках месторождений на установке ядерного магнитного резонанса и дальнейшая границ ме- сторождений с помощью камеры Кирлиана;
- Перенос контуров месторождений минера- лов на географические карты исследуемого рай- она с помощью компьютерного вычислительного комплекса и получение предварительных дан- ных о параметрах месторождения. Передача заказчику оперативных материалов по обнару- женным месторождениям;
- Дальнейшее исследование месторождений непосредственно на месте, выполняемое с помо- щью мобильного оборудования геоголографиче- ского комплекса «Поиск»;
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Executed Geophysical Works In . Russia, Ukraine

1.By request of "Chernomorneftegaz" city of Simferopol', Crimea, the areas of gas leaks in the Black Sea underwater pipeline were detected. 2003-2015

2.Search for underground drinking water was carried out territory of the Crimean peninsula with indication of boring points. About 100 works were carried out, all wells gave drinking water of the required quality. 2003-2021.

3.Determination of position data of containers with battle poisonous substances drowned in coastal regions of the Black Sea. Remote identification of chem-ical substances in containers (organophosphorous, organochloric and arsenic organic substances). 2004-2009.

4.Identification of "Lenin" ship which sunk at the depth of 520m with the help of the "Poisk" remote complex. 2005 .2016

5.By request of "Krymgeologiya" works were carried out on additional inves-tigation of the earlier discovered on the Crimean peninsula "Tat'yaninskoe" deposit of gas condensate. According to the results of the investigation reserves of gas con-densate and boring point were defined, and the boring of prospecting-industrial well was started. 2005 ,2015

6.Supplementary exploration of uranium fields by request of the Ministry of Power Engineering of Ukraine. According to results of the shaft sink- ing, the data were fully confirmed. 2006—2010.

7.By request of the city of Sevastopol administration works were carried out on the search for drinking water on the city territory and its neighborhood. According to the results of the investigation 78 boring points were indicated, all of them gave suitable for drinking water. Water occur- rence depth is 20-100m. 2006-2021

8.Big gas and gas condensate field was prospected and confirmed under Ukrainian granitic sheet near Kirovograd at more than 2500 meters deep. 2009.

9.Big gas beds were prospected and confirmed in Donetsk region by request of 'Zasyadko' coal mine. That gas beds are the main reason of methane explosion dangerous in a mine. Confirmed by test boring. 2009.

10.In 2008-2021 we were done several prospecting works searching granite and sand beds in Ukraine. All prospected fields were confirmed by boring and several beds are in industrial exploitation now.

11.Coal-bed's anomalies searching, water and gas fields prospecting tasks were processed by request of 'Kuzbass Coal' association (Russia). 2009.

Выполненные геофизические работы в России, Украине .

1.По запросу «Черноморнефтегаза» из Симферополя, Крым, места утечек газа из подводных труб были обнаружены нами в 2003-2015 году.

2.Поиск подземных источников питьевой воды на территории Крымского полуострова с указани- ем точек бурения. Около 100 работ было выпол- нено, питьевая вода — требуемого качества. 2003-2021гг.

3.Определение данных расположения контейнеров с боевыми отравляющими веществами в прибрежном районе Черного моря. Удаленная идентификация химических веществ в контейнерах (фосфорорганический, хлорорганический, мышьякорганический). Обнаружено и поднято свыше 1600 объектов. 2004-2009.

4.Определение местоположения теплохода «Ленин», затонувшего на глубине 520 метров, с помощью комплекса «Поиск». 2005 . 2016

5.По запросу «Крымгеологии» выполнены ра- боты по ранней разведке месторождения газово- го конденсата «Татьянинское» на Крымском полуострове. По результатам исследований были определены запасы газового конденсата и точки бурения, и бурение промышленных скважин бы- ло начато. 2005 , 2015

6.Дополнительная разведка урановых месторождений по запросу Министерства энергетики Украины. В соответствии с результатами шахтной проходки, данные разведки полностью подтверждены. 2006—2010.

7.По запросу Севастопольской администра- ции выполнены работы по поиску питьевой воды на территории города и окрестностей. По результатам исследований было указано 78 точек бурения, все из них дали качественную питьевую воду. 2006-2021.

8.При работах в Кировоградской области под Украинским гранитным щитом обнаружено и подтверждено крупное месторождение газа и газового конденсата на глубинах свыше 2500 м. 2009.

9.По заказу шахты им.Засядько (Донецкая обл.) обнаружены и подтверждены крупные газо- вые залегания, приводящие к просачиваниям метана и взрывам в шахте. Подтверждено бурением. 2009.

10.В 2008-2021 годах проводились работы по поиску залеганий гранитов и песков для промышленной добычи. Все найденные месторождения (около 10) подтверждены бурением, на нескольких начаты работы по добыче.

11.По заказу объединения «КузбассУголь» (Россия) произведены работы по разведке аномалий разломов угольных пластов, залеганию воды и газа в районе планируемой проходки. 2009.

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Abroad

1.By request of "INKOTEK-region", Moscow, jointly with Russian Academy of Energy Sciences, Moscow, and Tyumen Institute of Oil and Gas an investigation of 7 oil fields was carried out in the Tyumen region. According to the results of the investigation an industrial boring of wells was started, the boring results on 2 fields confirmed the investigation data. On other fields the boring is not finished. 1998—2003.

2.By request of the Ministry of National Securi- ty of the Islamic Republic of Mauritania a search for underground drinking water in the region of the city of Atar was carried out, at the depths of 250m a powerful flow of drinking water was dis- covered. The initial debit of the well comprised 32,000 liters per hour. 2006.

3.Search for underground drinking water in Greece jointly with "Geomir". 2006.

4.Minerals search on the territory of the Al-Fujairah emirate at the request of the Global Development Group, UAE, 2007.

5.By request of ore-dressing and processing enterprise 'Erdenet' (Mongolia) searching and contouring work was processed on copper-ore deposits near Erdenet town (Mongolia). Data provided were confirmed by boring. 2007-2009.

6.By request of company 'MAK' (Mongolia, Ulan-Baator) underground water searching and countouring works were processed in south Gobi desert. Data provided were confirmed by 6 industrial holes. 2008-2009.

7.Large scale fields of natural gas and oil were prospected in Gobi desert region by request of ' company (Mongolia). 2008-2021

8.Prospecting works of uranic ores are processing now by request of 'MAK' company (Mongolia). 2009-2010.

9.Test prospecting and contouring task of searching gas and oil fields was done in Utah state (USA) by request of 'Carpathia' company. The state attestation had obtained as a result. The method precision was confirmed as 98%. 2009.

10.Underground water prospecting works were done in Australia, New South Wales state by request of farmers' association. Data provided were confirmed by boring. 2009. 2014

11.In 2010 - 2015 the works to search hydrocarbons had been carried out in Indonezia

12.In 2015 - 2020the works to search for gold had been carried out in Bahama islands and Mongolia

13.In 2021 permanent works are being carried out to search hydrocarbons for various organizations from different countries 2021

За рубежом

1.По запросу фирмы «ИНКОТЕК-регион», Москва, в сотрудничестве с Российской Академией Энергетических наук и Тюменским институтом нефти и газа, были произведены работы по исследованию 7 месторождений нефти в тюменском регионе. В соответствии с результатами разведки было начато промышленное бурение, результаты бурения подтвердили данные разведки по 2-м месторождениям. По остальным месторождениям бурение не было завершено. 1998-2003.

2.По запросу Министра национальной безопасности Исламской республики Мавритания была произведена разведка подземных источников питьевой воды в районе города Атар, на глубине 250 м был найден мощный поток питьевой воды. Начальный дебет источника оценен в 32000 литров воды в час. 2006.

3.Поиск подземной питьевой воды в Греции в сотрудничестве с «Геомиром». 2006.

4.Поиск минералов на территории эмирата Аль-Фуджейра по запросу Глобал Девелопмент Групп, ОАЕ, 2007.

5.По заказу ГОК «Эрденет» (Монголия) выполнены работы по поиску и оконтуриванию медно-рудных месторождений в районе г.Эрденет. Данные подтверждены бурением. 2007-2009.

6.По заказу фирмы МАК (Монголия, Улан-Батор) произведены работы по поиску и оконтуриванию залежей воды в южной части пустыни Гоби. Данные по залеганиям и дебету подтверждены шестью промышленными скважинами. 2008-2009.

7.По заказу фирм (Монголия) в районе пусты- ни Гоби разведаны крупные месторождения газа и нефти. 2008-2021.

8.По заказу объединения «Монатом» (Монголия) выполняются работы по поиску урановых руд на территории Монголии. 2009-2010.

9.По заказу компании «Карпатия» (США) на территории штата Юта (США) выполнена тестовая задача по поиску и оконтуриванию нефтегазовых месторождений. По результатам выполнения работ получена государственная аттестация метода и аппаратуры для подобных работ. Точность метода по результатам аттестации—98%. 2009. 2014

10.По заказу объединения фермеров штата Новый Южный Уэльс (Австралия) произведены работы по поиску залеганий воды. Полученные данные разведки подтверждены бурением. 2009.

11.Произведены работы по поиску углеводородов в Индонезии 2010-2015.

12.Произведены работы по поиску золота на Багамах ,Монголии 2015-2020г..

13. Производятся постоянные работы по поиску углеводородов по заказу различных организаций из разных стран 2021

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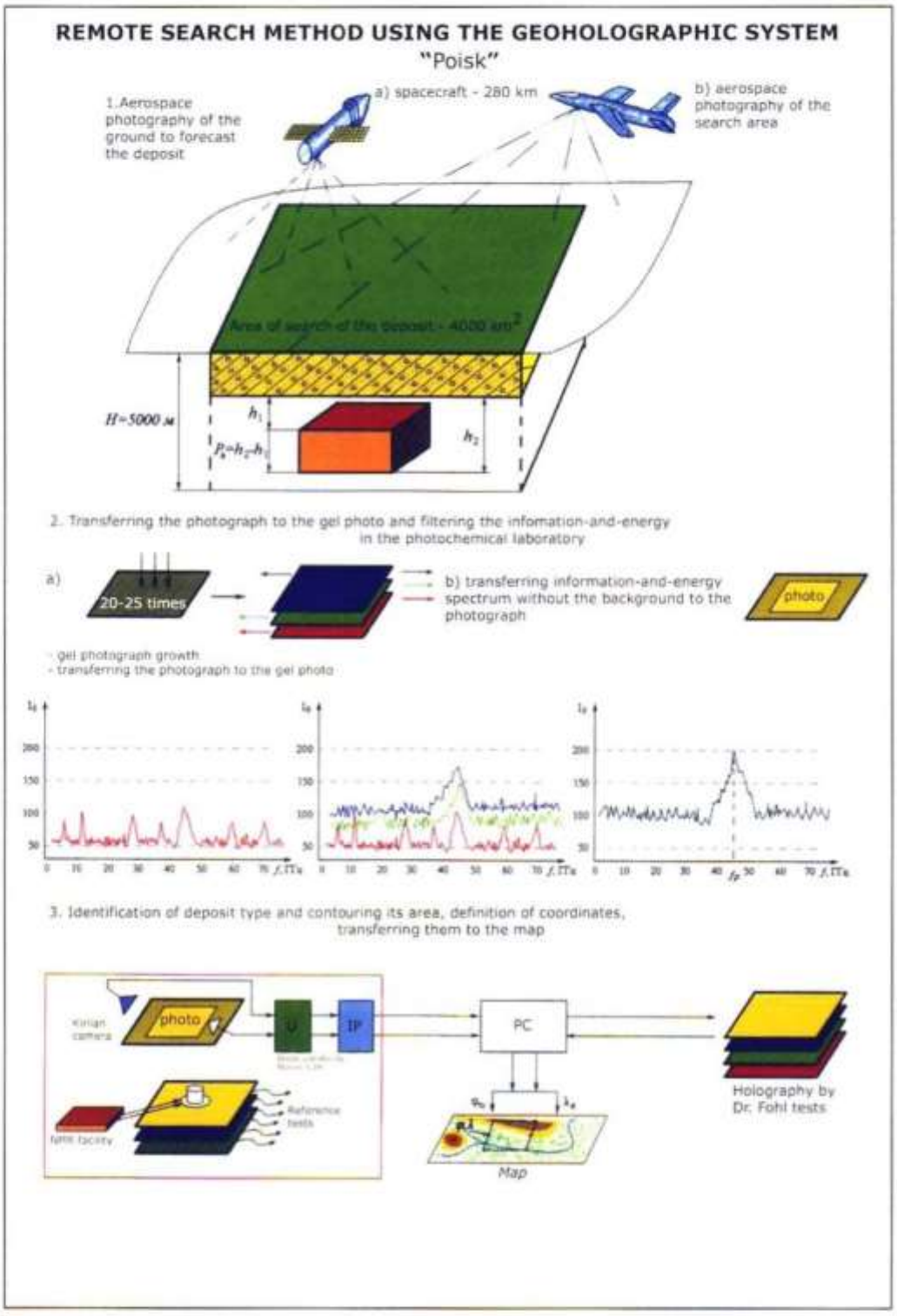

Fig.1. Geoholographic search for minerals (1st stage)
Рис.1. Геоголографический поиск минералов (1-й этап)

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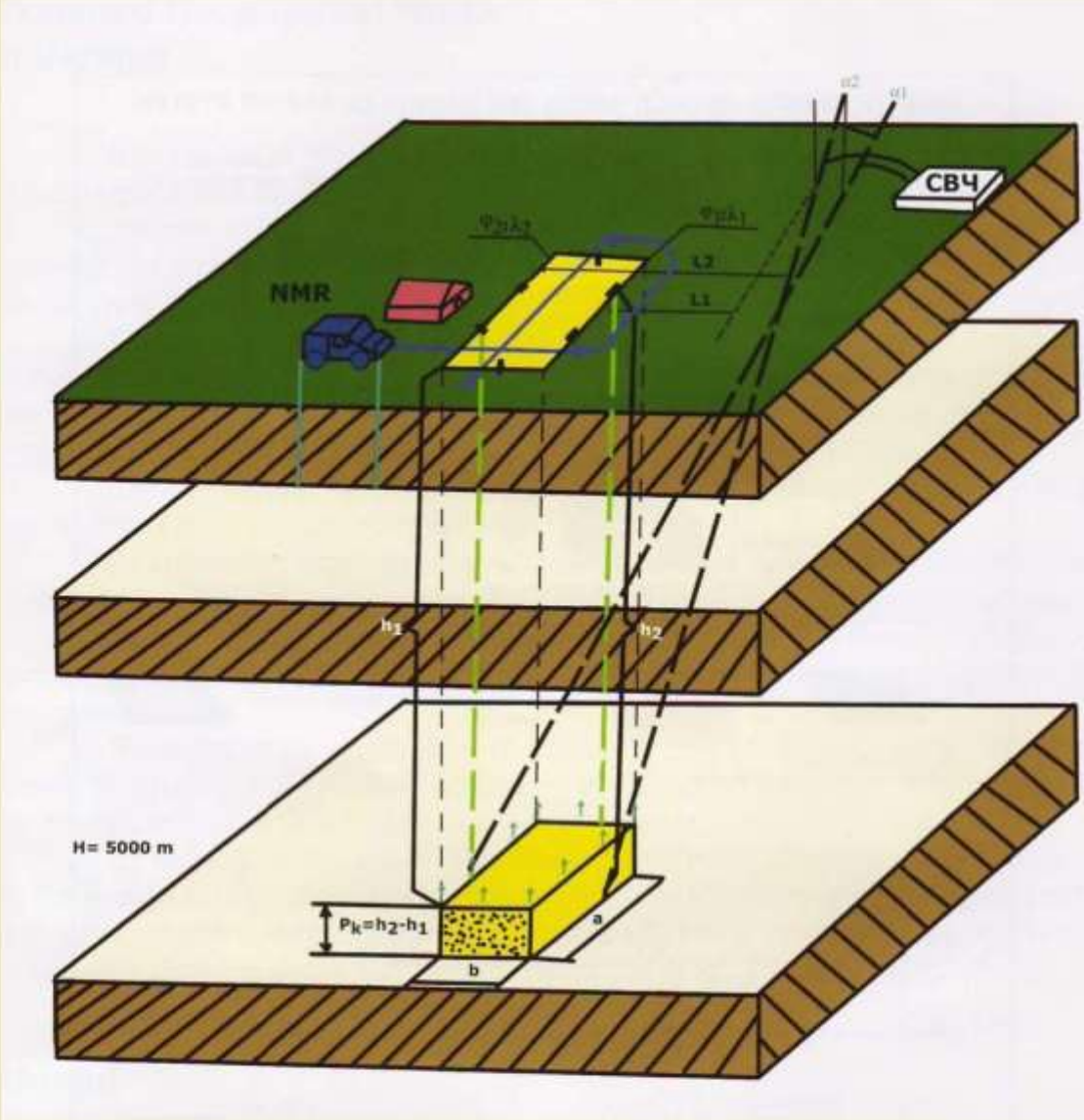

Fig.2. Geoholographic search for minerals (2nd stage)
Рис.2. Геоголографический поиск минералов (2-й этап)

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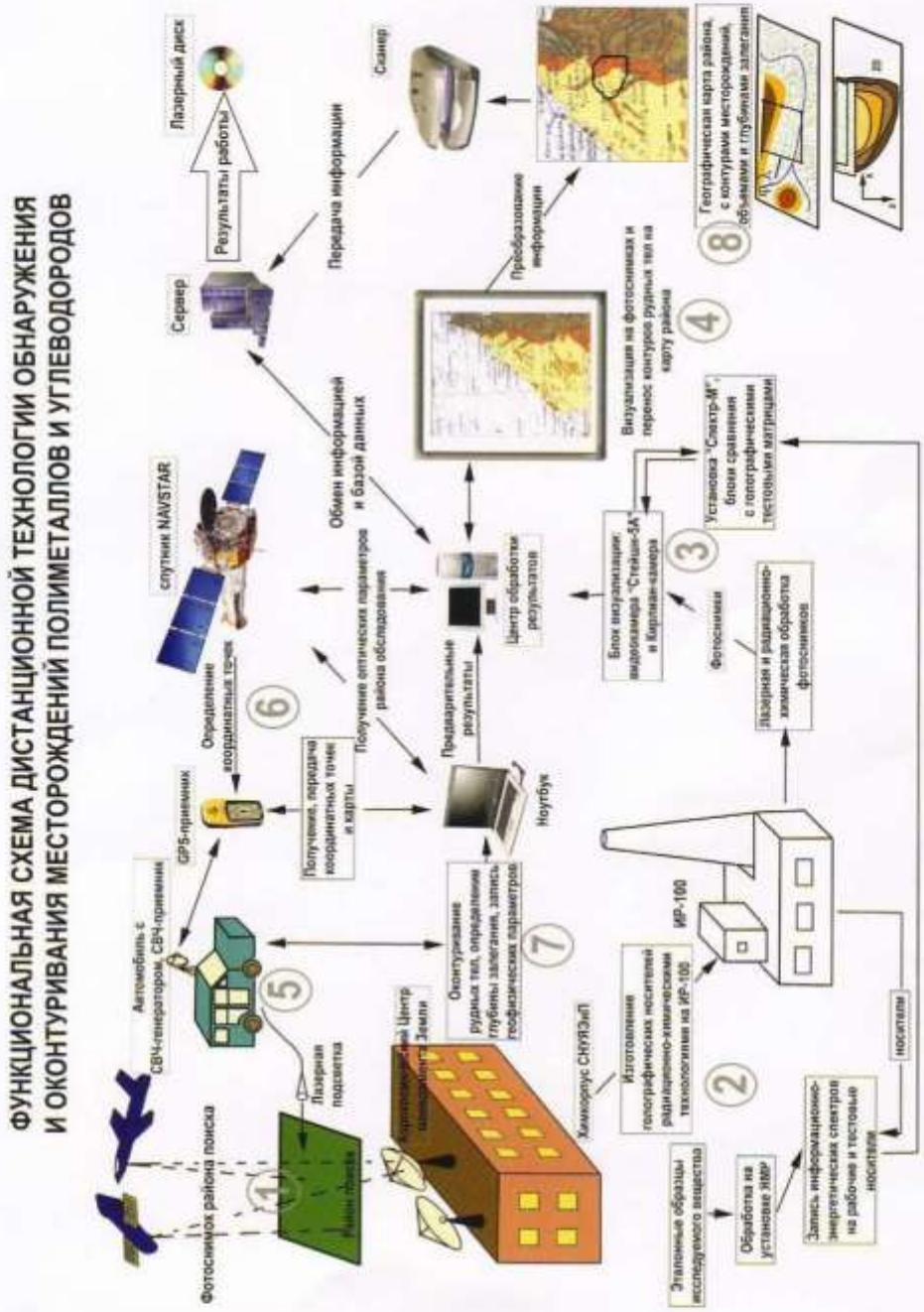

Fig.3. Overall method concepts

Рис.3. Общая схема метода

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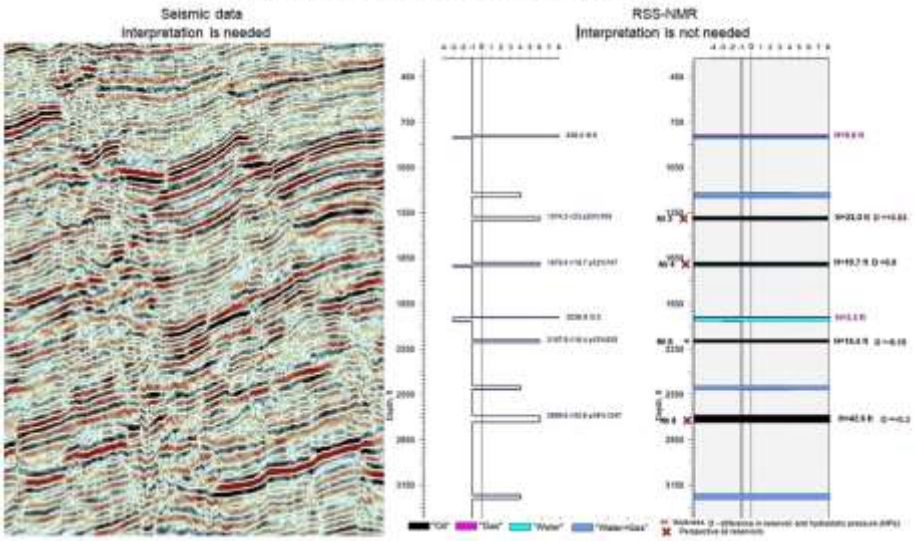
How 3D seismic and RSS-NMR are showing underground deposits:



Comparative Characteristics of 3D-Seismography and the RSS/NMR Technology

1. Qualitative Characteristics

#	Parameters	3D-Seismography	RSS/NMR Technology
1	Topographical binding	+ (anomalies)	+
2	Construction of 3D models of objects	+ (anomalies)	+
3	Search of unstructured traps of oil and gas	-	+
4	Drilling support	+	+
5	4D-seismics (monitoring in time)	+	+
6	Detection of mineral deposits at regional stages of works	-	+
7	Detection of gas "caps" in oil horizons	-	+
8	Definition of gas pressure in gas "caps"	-	+
9	Definition of gas in gas-bearing horizons	-	+
10	Definition of oil temperature in a deposit	-	+
11	Definition of presence of oil mobility	-	+
12	Detection of water horizons over oil and gas deposits and water influx of oil- and gas-bearing deposits	-	+
13	Work possibility in any climate and geological conditions of an area	-	+

2. Quantitative Characteristics

#	Parameters	3D-Seismography	RSS/NMR Technology
1	Accuracy of land contours	Contours of anomaly	Contours of deposit ±10m
2	Accuracy of definition of horizons occurrence	Depths of bedding of anomalies	2,5 %
3	Productivity of executed works	30-35 %	Over 90 %
4	Duration of works (on a territory of 1 thousand sq. km and more)	2 years and more	2 months
5	Specific cost of works	$ 6 000 /sq. km and more	Several times cheaper, decreases with increase of a surveyed territory
6	Average number of drillings of exploratory wells before discovery of a deposit	6	1
7	Expenditures saving on drilling if a deposit is discovered	-	> $ 20 million
8	Expenditures saving during prospecting of a deposit's reserves	-	> $ 10 million

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