



geophysical surveying company  
**UzenGeoService**



Providing geophysical services to upstream companies while optimizing and monitoring the development of raw hydrocarbons fields within the Republic of Kazakhstan

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## ABOUT THE COMPANY

The company was founded in the Republic of Kazakhstan in 2015 as a result of the merger of private geophysical companies.

The main activities of the Partnership are providing geophysical services to upstream companies while optimizing and monitoring the development of raw hydrocarbons fields within the Republic of Kazakhstan..

Nowadays, UzenGeoService LLP is a young fast developing company. Our company encompasses the unique symbiosis of best practices of using Russian equipment as well we advanced foreign technologies.

UzenGeoService LLP is 100% Kazakh enterprise successfully operating in the market of geophysical services.

Company activities are based upon the strict compliance with obligations assumed, on the continuous improvement of completeness and quality of the services provided along with flexible pricing policy.

Our objective is providing services that ensure expansion and optimization of activities of our Customers. In pursuing this objective we rely upon our corporate culture, deep understanding of Customers' work processes and extensive experience in developing and implementing innovative technical solutions.



## PERSONNEL

The number of company employed personnel totals more than 50 highly qualified Kazakhstani specialists trained outside the Republic of Kazakhstan as well. Vast experience in geophysical operations in such companies as Weatherford, JSC "GIS Company", Schlumberger, allows the personnel to perform the work smoothly and in quality and prompt manner.

All the company's servicing personnel have Safety and Fire Fighting certificates, as well as other necessary permits for works and services. Training is delivered in certified training organizations.

The servicing personnel include English and Russian speaking specialists able to hold conversations and issue daily reports in two languages.

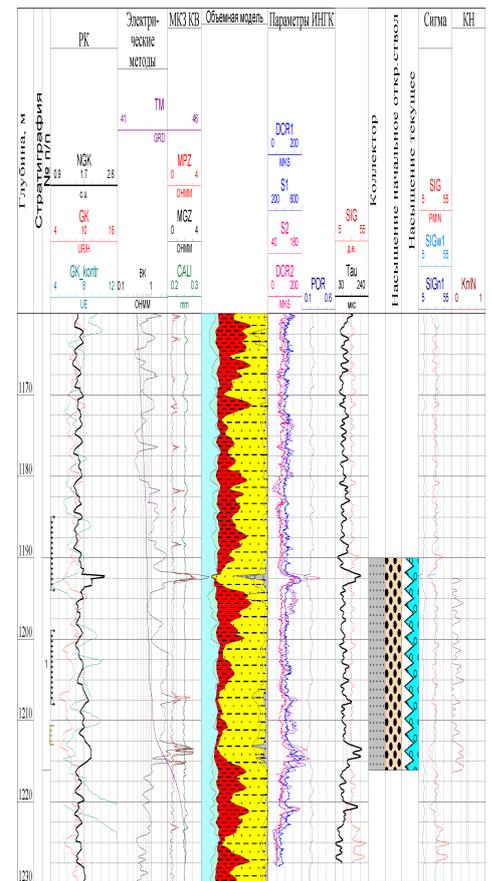
## INTERPRETATION CENTER

The work of the interpretation center of UzenGeoService LLP is aimed at timely, prompt and quality issue of reports to Customer on the works performed. As the company has an experienced interpretative group, the quality of the reports is guaranteed.

The interpretation center not only continuously monitors the entire interpretation process, but also provides training for young specialists with a view to improving their technical level. We also cooperate with such institutes as Optimum Design Institute LLP, NIPI Neftegaz JSC.

Interpretation centers of UzenGeoService LLP are represented in Mangistau, Atyrau, Aktobe, Kyzylorda regions of the Republic of Kazakhstan.

Successful interpretation work is ensured by a wide range of software tools and techniques, such as Solver, PRIME, Geolog, Kappa, Saphir.



## PRODUCTION BASE

The production and technical base is equipped with the necessary state-of-the-art engineering and equipment for providing high-quality services.

The central office is located in Aktau. Production bases are located in Kargalinskoye, Borankul, Zhanaozen and in Aktau. The availability of the necessary geophysical equipment and engineering as well as positive cooperation with our partners makes it possible to commence operations promptly after a request is received from the Customer.

Geophysical surveys are carried out by forces of production base units. The company is equipped with 10

geophysical complex parties, equipped with modern PKS-5, PKS-5G logging and hydrodynamic stations mounted on URAL, KAMAZ, GAZ specialized vehicle chassis, modern complex geophysical instruments and digital recorders of foreign and Russian production, such as Complex KarSar, Vulkan, AMK Horizon.



## TECHNICAL EQUIPMENT

Metrological equipment of the company, such as KarSar URP (for measuring geophysical cable), UMH (pressure and temperature calibration), GL (repair laboratory), allows timely and quality calibration, calibration against standards, high-quality repair of devices.

For operations in wells with high wellhead pressures, UzenGeoService LLP possesses ULG 65x35 and ULG 35 specialized lubricator units which enable to carry out special geophysical and hydrodynamic surveys in high pressure wells up to 680 atm. wellhead pressures.

To carry out surveys in eccentric faceplate equipped wells, the company has a special set of wellhead equipment, accessories and instruments with 28 mm max. diameter. Well development using an ejector unit.

The company uses explosive products from manufacturers such as:

DYNA Energetics, Innicor, Vzryvgeoservice, Promperforator, Perfosystem Production. The company continues to develop itself, consistently developing and implementing the latest technologies and methodologies, as well as training young specialists whilst cooperating with leading Kazakhstan and foreign universities.



## OUR ADVANTAGES



QUALIFIED  
PERSONNEL



ESTABLISHED  
MANAGEMENT



INNOVATIVE TECHNICAL  
SOLUTIONS



USE OF ADVANCED  
TECHNOLOGIES



HIGH PERFORMANCE  
LEVEL



CUSTOM-TAILORED  
APPROACH TO EACH  
AND EVERY CUSTOMER

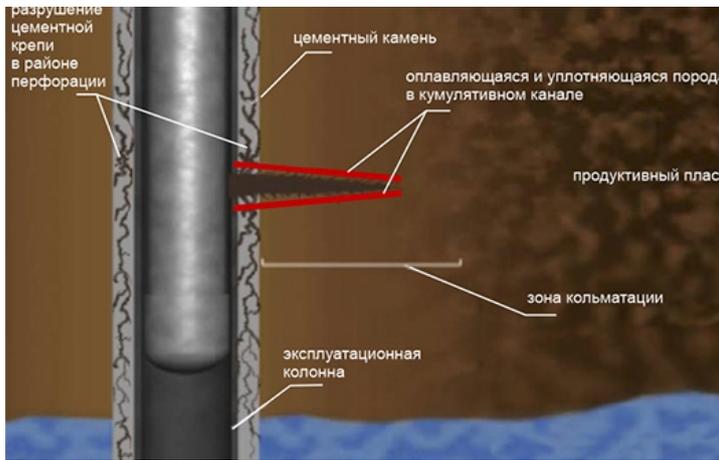
# MAIN GEOLOGY AND GEOPHYSICAL SERVICES PROVIDED:



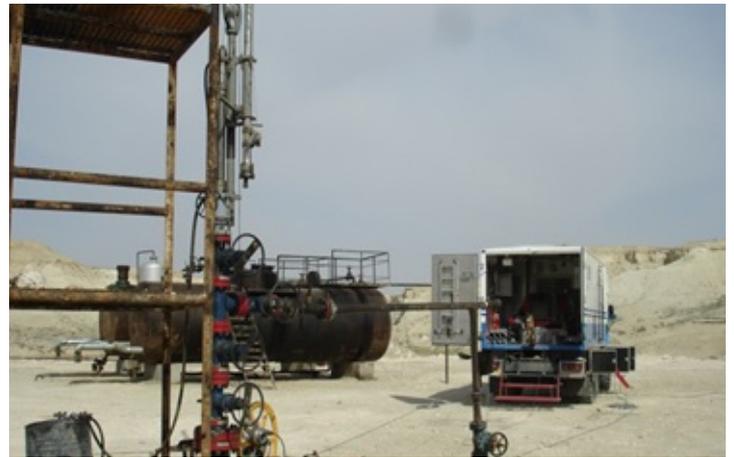
Geotechnical Surveys and Gas Logging



Geophysical Surveys (Logging) while Drilling Vertical and Horizontal Holes



Perforating Jobs in Vertical and Horizontal Holes



Geophysical Surveys whilst Monitoring Field Development



Well Hydrodynamic Surveys



Introduction of innovative technologies to increase oil and gas recovery, limiting water manifestation, sand sloughing and other similar technologies

## GEOTECHNICAL SURVEYS

Prior to starting any commercial exploitation of the oil field, formation geotechnical surveys must be carried out. This is necessary for accurate determination of the intervals to be surveyed. After reservoir fluid is extracted, necessary hydrodynamic characteristics are calculated on its basis. The results are obtained in the form of geological and physical parameters of rocks that are intersected by a well.

Unfortunately, geotechnical surveys whilst drilling wells do not make it possible to map the formation with one-meter accuracy, but enables to carry out dynamical tests on some intervals under conditions that are as close as possible to operational ones. Geotechnical surveys are carried out not only to increase the efficiency of field development, but also to ensure the safety of processes, to be accident-free.

Geotechnical surveys and gas logging are carried out using Geotest-5 geotechnical survey station. High-precision gas analyzing equipment, a functionally equipped geological cabin and software adapted to the tasks to be performed allow for efficient implementation of:

- section sampling of cuttings,
- fractional analysis of cuttings,
- determination of carbonate content and rock density,
- luminescent analysis of cuttings and drilling mud,
- continuous gas extraction from the flow of flush fluid at the well outlet,
- determination of bulk and total gas content of drilling mud,
- continuous measurement of saturated hydrocarbons content in gas mixtures extracted from the flush fluid,
- periodic thermovacuum degassing (TVD) of sample solutions, cuttings and core samples.

## TASKS HANDLED:

- Optimizing obtaining geological and geophysical information - selection and correction of core and cuttings sampling intervals.
- Revealing of reference horizons.
- Prompt lithologic-stratigraphic dismemberment of the section, marking promising oil and gas objects.
- Determining formation saturation nature.
- Assessing of reservoir bed permeability and porosity properties.
- Detecting gas, oil, water contacts.
- Monitoring survey processes and determining formation hydrodynamic and process characteristics

## GEOPHYSICAL SURVEYS DURING WELL SITE CONSTRUCTION

### 1. Standard Logging

(Intermediate surveys) are carried out after completion of intervals drilling scheduled for overlapping by the conductor, intermediate column(s), as well as the production column above the first productive or promising interval, to assess the spatial position and wellbore integrity for safe drilling.

### 2. Final Logging

The final logging in all wells is performed in productive and promising oil and gas intervals, in conjunction with materials from other survey types

#### TASKS HANDLED:

- Dismembering the section under survey into formations up to a thickness of 0.4 m, binding of formations along well depths and absolute elevations;
- Detailed lithological describing of each formation, marking all type reservoirs (porous, fractured, cavernous and mixed) and determining their parameters – clay content coefficients, total and effective porosity, permeability, water, oil and gas saturation (if reservoir effective thickness exceeds 0,8 m);
- Separating reservoirs by the nature of their saturation into productive and aquifers, and the productive ones into gas and oil-saturated;
- Determining the positions of fluid-fluid contacts, boundaries of transition zones, effective gas and oil saturation thicknesses;
- Determining reservoir pressures and temperatures;
- Determining mineralization of formation waters;
- Forecasting of potential production rates;
- Forecasting of the structure of the geological cross-section in the near-wellbore and interwell spaces.
- Determining the spatial position of the wellbore along the zenith and azimuth angle (directional survey) and matching the well path to project data;
- Determining the average well diameter (caliper logging) and the cross-sectional profile of the borehole in two orthogonal planes (profile logging), marking key seats, cavities, packings, cuttings and mud cakes against these data;
- Measuring temperature and its vertical gradient in drilled and idle wells.
- Detection of gas, oil, water contacts.
- Monitoring the survey process and determining formation hydrodynamic and process characteristics.

### Acoustic Cement-bond Logging

Designed to determine the height of the cement mix reached, the degree of filling the annulus with cement and its adhesion to the casing and rocks, the presence of the expanded (gas-saturated) cement in the cement of the vertical channels and the intervals. Acoustic cement-bond logging is based upon measuring the characteristics of wave packets propagating in the column, cement stone and rocks. Informative characteristics are the amplitude or coefficient of the effective wave along the column, as well as the interval time of propagation of the longitudinal wave. Phase correlation diagrams are used to estimate the cement-bond at a quality level. The vertical resolution of the method is 40 cm, the horizontal resolution is 40 cm. It is used in cased wells filled with free-of-gas liquid based on oil or water.

## TASKS HANDLED:

- Determining the height of the cement reached;
- Assessing the state of contact of a plug-back mixture with the casing string and rocks;
- Assessing annulus integrity.

## Methods Applied for Well Construction:

- Electrical logging (methods: apparent resistance (AR), self-polarization potential (SP), resistivity logging, lateral multi-probe logging (LL), lateral probe logging (LPL), micrologging (ML), induction logging (IL), high-frequency induction isoparametric probe logging (VIKIZ), micrologging scanning (MS));
- Radioactive logging (methods: gamma logging (GL), neutron gamma logging (NGL), variations of neutron-neutron logging (NNL), density gamma-gamma logging (DGGL), litho-density gamma-gamma logging (LDGGL), spectrometric gamma-ray logging (SGL);
- Acoustic logging (methods: acoustic logging (AL), acoustic cement-bond logging (ACL), acoustic intergral scanning (AIS), acoustic multisector logging, acoustic broadband logging (ABL);
- Directional survey;
- Caliper logging, profile logging
- Temperature logging



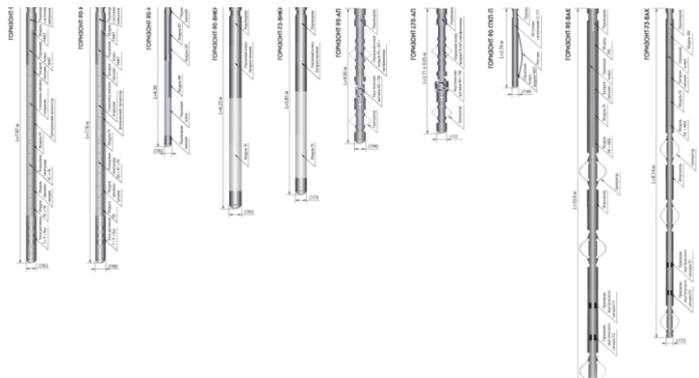
## Horizontal Open Hole Well Surveys:

- Horizontal wells are surveyed by autonomous geophysical instruments that are designed to carry out a standard set of well geophysical surveys in an autonomous mode by running geophysical instruments into directional and horizontal wells on drill pipes.
- Small-sized devices are used with drilling fluid flushing and the possibility of retrieving the devices from the containers through a drilling tool if an accident. The system can work both on accumulator batteries and dry batteries, depending on the required temperature range in the borehole.
- Logging on drill pipes minimize the accident rate of works.
- AMK HORIZONT instrumentation complex is used when logging in directional and horizontal wells.

## PERFORATING JOBS

The perforating jobs are designed to create channels in a casing (one or multiple), cement stone and a part of rock contaminated with mud particles while drilling the well in order to provide pressure communication between the formation and the well.

Formation secondary fracturing is one of the most important operations affecting the further effective operation of oil and gas and gas wells.



Most of the work on the secondary fracturing of oil and gas bearing formations is currently carried out using cumulative perforation. Depending on the task in hand, as well as well conditions and the reservoir bed characteristics, cumulative, drilling or hydromechanical perforations can be applied.

Case cumulative single-use perforators are cable run into the borehole. After one shooting, the case of the device breaks down and is retrieved together with the explosion products. The equipment is used in cased wells filled with liquid that is used in wells filled with gas or gas condensate.

### TASKS:

- Separation of formations in exploratory wells in need of surveying upper horizons;
- Isolation of the object in production and injection wells when passing to the above objects;
- Creation of artificial bottomhole;
- Cutting off the perforation interval when surveying column integrity.

### Tubing Perforating Jobs

The perforation of cemented well bores (liners) in comparison with slotted, wire, perforated uncemented liners enables to minimize the risk of uncontrolled leakage of hydraulic fracturing fluid into the formation (depending on the length of the perforated interval).

### Advantages:

- Simplicity of arrangement, no risk of insufficient integrity of installed packers (crossflows between zones);
- The number of ports is not limited by the internal diameter of the casing liner, the dimensions of the baffle and the sequence of balls with increasing sizes;
- No risk of fracture breakthrough between sections;
- No washing out of a significant mass of the propant during the bottomhole normalization;
- Possibility to isolate fractures after breakthrough of the water front

### Disadvantage:

Increased working pressure friction losses are possible as the liquid passes through the shaped holes:

### Explosive Packer Installation

The installation of cement plugs is used to obtain a stable water-gas-oil resistant cement stone column of a certain strength for transition to the overlying horizon, side tracking, strengthening the unstable and cavernous part of the well bore, testing of the horizon using the reservoir tester, well overhaul and preservation or abandonment.

When an explosive packer is installed, a VP and VPSH packer is used (slips explosive packer).

Smoke gun powder charge is used as a packer charge. The ignition of the charge is carried out by an electric igniter such as TEZ-3P or EVPT by current feed through the cable from the surface. Running into hole is carried out on KOBD-4, KOBBD-4 type cable

MAIN TECHNICAL CHARACTERISTICS OF ORICON SHAPED CHARGES

Наименование кумулятивного заряда	Переработочная система	Тип кумулятивного заряда	Фазовая ориентация зарядов, град	Масса ВВ в заряде, г	Плотность перфорации, отв/м	Диаметр входного отверстия по ТУ, мм	Глубина пробития по ТУ, мм	Диаметр входного отверстия по СС-05, мм	Глубина пробития по СС-05, мм	Диаметр входного отверстия по АРІ-19В, мм	Глубина пробития по АРІ-19В, мм
ORION50-01	ПК50К/Л ORION	БО	0-180	6,5	20	14	110	14,4	162,5	12,8	126
ORION50-02		СП		6,5		6	510	5,5	760	5,5	518
ORION50-03		ОП		6,5		8	430	6,8	559	6,2	487
ORION63-01	ПК63К/Л ORION	БО	0-180	12	20	17	150	18,5	204	15,1	177
ORION63-02		П		11		10	640	7,4	715	8,5	738
ORION73-01	ПК73К/Л ORION	БО	0-180	17	20	20	180	20,2	239	18,1	183
ORION73-02		СП		16		9	720	9,0	857	8,2	663
ORION73-03		П		16		10	560	9,8	578	8,2	612
ORION89-01	ПК89К/Л ORION	БО	0-180	21	20	21	200	21,6	302	18,5	185
ORION89-02		СП		23		11,5	1010	12,1	1162	10,8	1092
ORION89-03		П		23		12	750	12,9	985	9,9	800
ORION102-01	ПК102К/Л ORION	БО	0-180	28	20	24	220	25,3	316	21,2	219
ORION102-02		СП		27		10	1200	11,5	1281,8	10,9	1164
ORION102-03		П		27		11	1000	12,5	1077	11,5	1131
ORION102-04		СП		34		16	1330	12,4	1528,3	11,4	1229
ORION102-01	ПК114К/Л ORION	БО	0-180	28	20	24	220	24,7	297	19,2	198
ORION102-02		СП		27		10	1200	11,5	1282	10,5	1149
ORION102-03		П		27		11	1000	12,4	984	-	-
ORION102-04		СП		34		16	1330	12,2	1568,3	10,8	1495
ORION102-04		СП		34		18	1330	12,2	1568,3	11,1	1555
ORION114-01	ПК114К/Л ORION	БО	135	18	40	20	180	20,1	246	18,2	176
ORION114-03		П		21		12	750	11,3	858	10,0	782

EXPLOSIVE PACKER TYPE	ВП-88	ВП-92	ВП-102	ВП-110	ВП-118	ВП-135
OUTER SIZE, MM	88	92	102	110	118	135
LENGTH, MM	470	485	530	565	600	600
WEIGHT, KG, MAX	5.3	6.5	8.1	10	12	16
INNER CASING SIZE, MM	96,3— 98,3	100,3— 102,3	109— 115	117,7— 124	125,2— 133	144— 152

## PRODUCTION LOG TESTS

Determination of leakage spots in the production column, tubing, bottomhole, second bore cutting-in interval is used in all categories of wells with different survey technologies: injection from the water conduit, unit, flowing, invoking the inflow by compression or swabbing, injection of short-lived radioactive isotopes.

### TASKS HANDLED:

- Determining places of leakages of the production column and downhole equipment;
- Determining the type of leaks: casing or tubing couplings, fractures along the body of the pipe, column rupture, tubing breakage;
- Monitoring well structure technical members;
- Defining flow rate (injectivity) of leaks;
- Determining the leaked interval inflow composition;
- Detecting behind casing leaks.

### Defining the Inflow Profile

Defining the inflow profile is based upon recording the physical fields determined by the presence and structure of fluid flows in the wellbore and near-wellbore space. The measurements are carried out with steady (long-term operating wells), unsteady (wells with changing flow conditions), and transient thermodynamic fields. Unsteady conditions occur after a well is started or shut-in. The combination of a short-time start and a subsequent stop leads to the appearance of transient fields. To solve the problems of determining the inflow profiles and sources of water troubles, surveys under various conditions are used: in the shut-in and flowing wells, as well as in the process of invoking the influx through swabbing, ejector unit, flowing wells and compression. Measurements are carried out within a separate interval of detailed studies. When working in wells with low reservoir pressures (non-flowing), additional measurements along the wellbore in the variation intervals of the static and dynamic levels of the media interfaces are performed. SOVA, KSAT and PLT series integrated geophysical equipment is used.

### Methods used:

- Gamma ray logging;
- Magnetic collar locator;
- Barometry, manometry;
- High-sensitivity temperature logging;
- Dielectric moisture logging;
- Inductive resistance logging;
- Thermoconductive flow indicator;
- Mechanical flow measurement.
- Acoustic noise logging

## TASKS HANDLED:

- Marking oil, water and gas inflow intervals;
- Defining the inflow profile, sources of water troubles;
- Estimating flow rate and inflow composition, determining water cut percentage;
- Marking intervals of radiogeochemical anomalies;
- Determining the position of static and dynamic levels of wellbore phase separation

## Determining the Injectivity Profile

In determining the injectivity profile, injectivity profile and intervals, behind the casing leaks intervals are marked, total and interval volume of well-injected water is determined, injection pressure and overburden on formation are determined. Geophysical surveys are carried out whilst injection, outflow and in a shut-in well. Water is injected from the water conduit or the unit. SOVA, KSAT and PLT series integrated geophysical equipment is used for surves.

## Methods used:

- Gamma ray logging;
- Magnetic collar locator;
- Barometry, manometry;
- High-sensitivity temperature logging;
- Thermoconductive flow indicator;
- Mechanical flow measurement.

## TASKS HANDLED:

- Determining well injectivity.
- Recording injected fluid discharge profile.
- Determining the column integrity below the tubing shoe and packer.
- Determining the tubing integrity against the set of measurements: high-sensitivity thermometer, indication downhole flowmeter, manometer.

## Swabbing

Swabbing involves reducing the well fluid level by step-by-step carry over of the over-the-piston (swab) fluid volumes to the surface. Standard equipment for well workovers and geophysical lifts equipped with a regular logging cable are used for the work. On the X-mas tree, a tee and quick-release valve and a geophysical lubricator equipped with a hydraulic stuffing box are mounted. The tee and quick-release valve is hooked up with a measuring tank.

## TASKS HANDLED:

- Lowering of the liquid level before perforation to ensure formation fracturing at the underburden on formation;
- Well developing;
- Bottomhole formation zone cleaning;
- Increasing production well flow;
- Invoking formation inflow whilst geophysical surveys: hydrodynamic, determining inflow profile, source of water troubles, diagnostics of well integrity.

## Well Development Using UEOS Type Ejector Pump (Jet Pump)

To develop wells by ejector surveys, UEOS jet pump is used to invoke inflow from the formation to survey wells and influence on the subsurface formation zone, in particular for fields with abnormally low reservoir pressures and high (up to one Darcy) reservoir permeability. Designed for developing and intensifying inflow, long-term oil production in complicated downhole conditions – sand ingress, high gas factor, water cut, temperature, with deteriorated reservoir filtration properties, in directional and curved wells.

### TASKS HANDLED:

- Lowering the bottomhole pressure and invoking formation inflow;
- Wireline cable eophysical surveys in the mode of preset values of underburdens on formation by geophysical instruments not exceeding 43 millimeters in diameter;
- Formation hydroimpact;
- Multi-cycle hydrodynamic studies from smaller underburdens on formation to larger ones with recording of bottomhole pressure by autonomous manometers;
- Conducting hydrodynamic surveys in wells under steady or unsteady conditions;
- Formation influence by hydrodynamic methods, physical fields using small-sized devices run into the borehole on a cable in modes of underburden on formation;
- Retrieving reaction products out of the near-wellbore formation zone under various chemical treatments

## Determining Current and Residual Oil and Gas Saturation

Determination of the current and residual oil and gas saturation by pulsed spectrometric neutron gamma-ray logging (PSNGR) is based upon recording the gamma radiation of inelastic scattering (GRIS) and radiation capture (GRRC) of neutrons generated by a high-frequency fast neutron emitter. In the modification of carbon-oxygen logging, the generator used emits 14 MeV neutron pulses at a certain fixed frequency (~ 10 kHz). Analysis of the spectra of GRIS and GRRC, due to their individual features for the elements composing the rock, makes it possible to determine the mass contents of carbon, oxygen, calcium, silicon and a number of other elements in the rock, thus ensuring the solution of problems of evaluation of porosity, lithology, and oil saturation.

### TASKS HANDLED:

- Estimating current and residual oil saturation;
- Defining intervals of water cut of reservoirs irrespective of mineralization of formation waters;
- Section lithologic dismemberment;
- Supporting the process of reservoir oil recovery intensification.

## Gyroscopic Directional Survey

Gyroscopic directional survey is performed to determine the wellbore spatial position, to adjust the well path during drilling of directional wells and to verify matching of the actual wellbore path and the design data.

### TASKS HANDLED:

- Monitoring the specified direction of the borehole axis in space;
- Marking borehole axis bend segments that can cause complications during drilling and operation;
- Determining true depths of productive formations

## WELL HYDRODYNAMIC SURVEYS

The main objective of surveying accumulations and wells is obtaining information about them to calculate oil and gas reserves, designing, analyzing, regulating the development of accumulations and operating wells. The survey starts immediately after the discovery of accumulations and continues throughout the lifetime of the field, i.e., is carried out during well drilling and operating that provide direct access to the accumulation.

The composition of various measures aimed at measuring certain parameters (pressure, temperature, liquid level, flow rate, etc.) and sampling of formation fluids (oil, water, gas and gas condensate) in flowing or shut-in wells and their recording in time.

Interpretation of well hydrodynamic surveys enables to evaluate the productive and filtration characteristics of formations and wells (reservoir pressure, production flow rate or filtration coefficients, water cut, gas factor, hydroconductivity, permeability, piezoelectricity, skin factor, etc.), as well as features of the near-wellbore and remote formation zones. These surveys are a direct method for determining the rocks filtration properties under modes of occurrence, the nature of formation saturation (gas/oil/water), and the physical properties of formation fluids (density, viscosity, volumetric coefficient, compressibility, saturation pressure, etc).

### Types of Surveys:

- Surveys using steady sampling method (indicator diagram);
- Surveys using unsteady sampling method (pressure build-up curve – pressure falloff curve);
- Bottomhole pressure measurement;
- Reservoir pressure measurement;
- Bottomhole temperature measurement;
- Well interaction surveys – pressure interference testing;
- Subsurface and wellhead sampling;
- Static level marking;
- Dynamic level marking;
- Recording of level build-up curve;

### TASKS HANDLED:

- Bottomhole pressure;
- Reservoir pressure;
- Reservoir temperature;
- Bottomhole zone skin factor;
- Formation productive flow rate;
- Formation fluid mobility;
- Formation permeability;
- Formation hydroconductivity;
- Formation piezoelectric conductivity;
- Potential liquid flow rate (oil, gas, water);
- Average daily flow rate of liquid and gas with determination of the oil-water content in percents;
- Density of formation fluid;
- Recommendations on the optimal exploitation regime for the reservoir during its further operation.

### PULSE, THERMO-GAS-ACID AND IMPLOSION STIMULATION TECHNOLOGY

The technology is designed to restore or increase the flow rate of oil wells where oil inflow was reduced during operation and injection processes to increase injectivity. Universal, almost the only ones and unique sources of energy and chemical agents for well treatment technologies are energy-saturated materials that represent gas-burning composite materials. The function of the device is based on the release of energy and agents as a result of the chemical combustion reaction directly at the well bottom.

A special feature of thermo sources made of composite materials based on ammonium nitrate and epoxy compound is their explosion safety and the ability to simultaneously create high or higher pressures, temperatures and gaseous products in the same process operation, including those consisting mainly of active high-temperature chemical reagents, for example, hydrochloric acid or mud acid.

Due to the fact that during the operation of the thermo source in the well treatment interval, high energy parameters and intensive processes of influence are created, in order to ensure the efficiency of the treatment, a substantially smaller amount of agents is required, as compared to the known methods. In addition, all the energy released by the device directly in the treatment zone is consumed, unlike existing technologies, with virtually no losses.

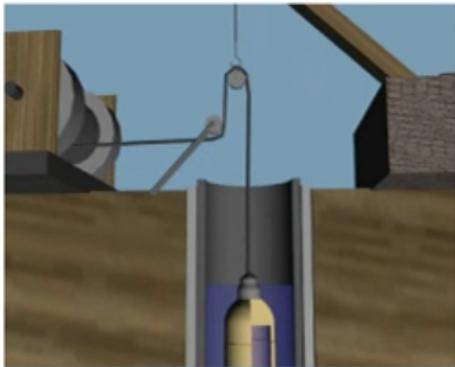
Accordingly, such technologies have high ecological safety, because all chemical agents start to be released only in the treatment zone, then they are consumed and neutralized directly within the treatment interval of the bottomhole formation zone.

On the other hand, the energy-saturated composite materials used in the technology are not only sources of energy and chemical agents, but possessing high strength characteristics, can serve as a structural member in devices that make it possible to create pulsed, wave, overburden or underburden, as well as hydraulic influences. This provides a wide combined treatment with high parameters of almost all existing types of influence (pressure, temperature, chemical) on the bottomhole formation zone

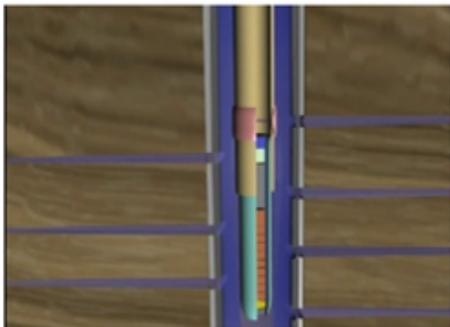
## TASKS HANDLED:

- Gas-hydrodynamic, thermal and chemical effects in the bottomhole zone during the well operation;
- Formation of new fractures in the bottomhole zone;
- Under the influence of high temperature asphaltene sediments are melted, formed in the bottomhole zone during the well operation;
- Improvement of physical and chemical properties of oil in the desired direction;
- Chemical effect on the reservoir (hydrochloric acid treatment).

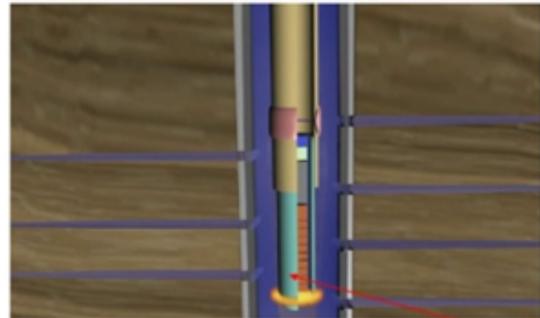
Последовательность проведения термогазокислотно-импульсионной технологии на скважине.



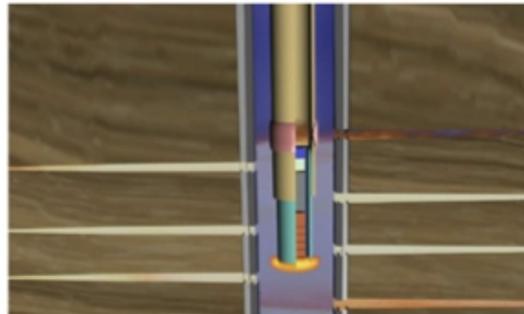
1) Укомплектованное термогазокислотно-импульсионное устройство спускается с устья скважины на кабель-тросе.



2) Термогазокислотно-импульсионное устройство устанавливается в интервале обработки (напротив перфорационных каналов).



3) С устья скважины через кабель-трос подают электрический импульс на узел воспламенения, расположенного на нижнем торце термисточника (термисточник – это пластиковый контейнер с размещенным внутри него сгораемым композиционным составом, способным при горении выделять высокотемпературные газообразные продукты и высокоактивные химические реагенты: либо соляную кислоту, либо смесь соляной и плавиковой кислот).



4) В результате послойного сгорания состава термисточника образующиеся высокотемпературные газообразные продукты создают в области интервала обработки повышенное давление и проникают в поры и трещины призабойной зоны, расплавляя находящиеся в ней загрязнения в виде парафино-асфальтеносмолистых отложений.



Handling devices and equipment generating ionizing radiation

Table 1: License details for handling devices and equipment generating ionizing radiation. Includes fields for license type, validity period, and holder information.

Table 2: License details for handling devices and equipment generating ionizing radiation. Includes fields for license type, validity period, and holder information.

Table 3: License details for handling devices and equipment generating ionizing radiation. Includes fields for license type, validity period, and holder information.

Table 4: License details for handling devices and equipment generating ionizing radiation. Includes fields for license type, validity period, and holder information.



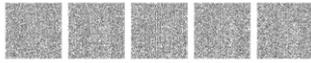
Designing (process) and/or mining operations (raw hydrocarbons), petrochemical production, operation of trunk gas pipelines, oil pipelines, oil product pipelines in petroleum industry

Table 5: License details for designing (process) and/or mining operations in the petroleum industry. Includes fields for license type, validity period, and holder information.

Table 6: License details for designing (process) and/or mining operations in the petroleum industry. Includes fields for license type, validity period, and holder information.

Table 7: License details for designing (process) and/or mining operations in the petroleum industry. Includes fields for license type, validity period, and holder information.

Table 8: License details for designing (process) and/or mining operations in the petroleum industry. Includes fields for license type, validity period, and holder information.



Transportation of nuclear materials, radioactive substances, radioisotope sources of ionizing radiation, radioactive wastes including their transit within the Republic of Kazakhstan

Table 9: License details for transportation of nuclear materials, radioactive substances, radioisotope sources of ionizing radiation, radioactive wastes including their transit within the Republic of Kazakhstan. Includes fields for license type, validity period, and holder information.

Table 10: License details for transportation of nuclear materials, radioactive substances, radioisotope sources of ionizing radiation, radioactive wastes including their transit within the Republic of Kazakhstan. Includes fields for license type, validity period, and holder information.

Table 11: License details for transportation of nuclear materials, radioactive substances, radioisotope sources of ionizing radiation, radioactive wastes including their transit within the Republic of Kazakhstan. Includes fields for license type, validity period, and holder information.

Table 12: License details for transportation of nuclear materials, radioactive substances, radioisotope sources of ionizing radiation, radioactive wastes including their transit within the Republic of Kazakhstan. Includes fields for license type, validity period, and holder information.



# CUSTOMERS



# LETTERS OF REFERENCE

**АКТИВ**  
в рамках ТОО «Узгеосервис»

ООО «Узгеосервис» является надежным партнером ТОО «Азот» и вносит вклад в развитие нефтегазового сектора Республики Узбекистан.

В течение года ТОО «Узгеосервис» оказало квалифицированную помощь в выполнении работ по обслуживанию оборудования и поддержанию надежности и устойчивости систем с применением инновационных технологий и передовых инженерных решений.

Директор  
ТОО «Узгеосервис» ЖЭС  
Калиев Н.К.

**Результативность работы ТОО «Узгеосервис»**

ТОО «Узгеосервис» имеет богатый опыт работы по обслуживанию оборудования на объектах нефтегазового сектора Республики Узбекистан.

Полностью обеспечено обслуживание и ремонт оборудования на объектах ТОО «Узгеосервис» в соответствии с требованиями заказчика.

Благодаря качественному обслуживанию и своевременному ремонту оборудования ТОО «Узгеосервис» удалось избежать серьезных производственных потерь.

Сотрудники ТОО «Узгеосервис» отличились высокой профессиональностью, ответственностью и качеством исполнения поставленных производственных задач.

Директор  
ТОО «Узгеосервис» ЖЭС  
Калиев Н.К.

**ЖАВАБИШВИШТИК СИРАТИСИ**  
ТОМАРИШИДИН СИРАТИСИНИ ТАЪМИНЛАШ

**«КазРосГеофизика»**

ТОО «Узгеосервис» имеет богатый опыт работы по обслуживанию оборудования на объектах нефтегазового сектора Республики Узбекистан.

Полностью обеспечено обслуживание и ремонт оборудования на объектах ТОО «Узгеосервис» в соответствии с требованиями заказчика.

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Директор  
ТОО «Узгеосервис» ЖЭС  
Калиев Н.К.

**Amangeldy Gas**

ТОО «Узгеосервис» является надежным партнером ТОО «Амангелды Газ» по оказанию профессиональных и комплексных услуг систем работы на месторождении Рифофан Канликти.

ТОО «Узгеосервис» оказало оперативную квалифицированную помощь в выполнении работ по обслуживанию оборудования и поддержанию надежности и устойчивости систем с применением инновационных технологий и передовых инженерных решений.

Сотрудники ТОО «Узгеосервис» отличились высокой профессиональностью, ответственностью и качеством исполнения поставленных производственных задач.

Директор  
ТОО «Узгеосервис» ЖЭС  
Калиев Н.К.

**КАЗАХ СЕГ ИМУЩЕСТВА**  
Жеңілдік және қорғаныс  
Қазақстан газ перерабатывающий завод  
Төтенше және ықпалды өкілдерінің кеңесі

ТОО «Узгеосервис» является надежным партнером ТОО «КазСег Имушества» по оказанию профессиональных и комплексных услуг систем работы на месторождении Рифофан Канликти.

ТОО «Узгеосервис» оказало оперативную квалифицированную помощь в выполнении работ по обслуживанию оборудования и поддержанию надежности и устойчивости систем с применением инновационных технологий и передовых инженерных решений.

Сотрудники ТОО «Узгеосервис» отличились высокой профессиональностью, ответственностью и качеством исполнения поставленных производственных задач.

Директор  
ТОО «Узгеосервис» ЖЭС  
Калиев Н.К.

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