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JUSTIFICATION OF THE CHOICE OF EFFECTIVE SOURCES OF LOW-GRADE HEAT FOR THE WORK OF HEAT PUMP UNITS IN HEATING AND HOT WATER TO RURAL INFRASTRUCTURE

Annotation

In the article the analysis of options for the estimated heat pumps in combination with various low-grade heat sources, discloses the advantages and disadvantages of different schemes together, grounded and proposed an effective combination of their work, given the dual-circuit solar line.

Keywords: heat pumps, low-grade heat sources, the heating system, hot water supply, secondary thermal resources, the experimental dual-circuit solar line.

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USE OF OLD GEOLOGICAL AND GEOPHYSICAL DATA FOR REVALUATION OF OIL AND GAS POTENTIAL AND THERMAL METHODS FOR ENHANCED OIL RECOVERY

Annotation

According to Statistical reviews /1/ the majority of petroleum deposits of Kazakhstan are concentrated within the Pre-Caspian sedimentary Basin. The area under the study administratively located in Aktobe region, which is one of large, but lightly explored oil and gas bearing areas, locating more than 20 oil and gas fields, as well as number of potential structures both in pre-salt and post-salt complexes of sediments. Some of those - Zhanazhol, Kenkiyak, Alibekmola, Kozhasai Urikhtau, East Akzhar, North Truva discovered oil within subsalt succession, when other explored and approved reserves are concentrated in the post-salt complex for which are typical medium and small size deposits. The level of study of post-salt complex of area is extremely uneven, which is conditioned by peculiarities of its exploration history.

Keywords: geological, geophysical, revaluation, oil and gas, thermal methods, oil recovery, fields, basin, Aktobe region, pre-salt, post-salt, deposits, seismic method, drilling, Pre-Caspian, hydrocarbon.

Generally, history of exploration of the Pre-Caspian Sedimentary Basin could be conventionally divided into 2 stages.

- At the first stage, from thirties to sixties of the last Century, oil exploration works within the Pre-Caspian were directed to oil and gas exploration of shallow Mesozoic complex of sediments. The main objects for study were the structures, located mainly in Jurassic and Cretaceous succession. Exploration of hydrocarbon deposits within Upper Permian and Triassic succession was, due to a significant increase of cost and lack of technology, extremely low. From 1959 to 1966 post-salt Kenkiyak, Akzhar, Kumsay, Kopa, Karatyube, Kokzhide, Karaganda and other oil fields have been discovered within the East Pre-Caspian. Even though, the effectiveness of exploration works was relatively low.
- The second stage covering the seventies to nineties and characterized by the fact that exploration works were aimed to discovering large deposits in the post-salt sediments. At this stage Upper Permian and Triassic complexes, in comparison with major deposits in the subsalt complexes were regarded as small and unprofitable for development.

• Thus, the planned works both at the first and second stages were focused on exposure of deposits related to Upper Permian and Triassic oil bearing strata and works for these sedimentary complex were carried out in limited volumes.

Low degree of study of Upper Permian and Triassic sediments by seismic methods and, especially, by drilling, was noted by many authors /2-6/. Exploration works within this part of section were usually ceased after one or two drillings with negative results. But most of the researchers who carried out oil exploration works in the salt dome tectonic environment indicate that at exploration of salt-dome structures, consisting of several blocks, drilling of one or two wells is not enough. The fact that this complex have widespread development, increased thickness and established productivity, including discoveries of recent years confirms this statement and the potential of the Upper Permian and Triassic complexes should be valued highly enough, and should not be confined to only already known fields. This point of view confirmed by recent discoveries of Saigak, Bashenkol and other oil fields.

As an example, the result of seismic interpretation and mapping the structure within the lower Triassic thickness presented in this Article. Old seismic data, acquired in mid 80-s of last Century, were reprocessed with modern technologies and used for further analysis.

The nature of reflections at different areas of presented below seismic line differ both on number of reflections and on extent and intensity of reflected waves axes, and illustrates heterogeneity of the studied geological succession. The quality of the seismic data is worsening significantly in the areas of salt domes arches and their slopes, due to existence of Mesozoic faults, orientation of lines related to salt bodies and, in some cases due to surface conditions (Fig. 1). The most dynamically expressed horizon in post-salt strata, along with reflecting horizons III and V, is the horizon D - bottom Triassic.

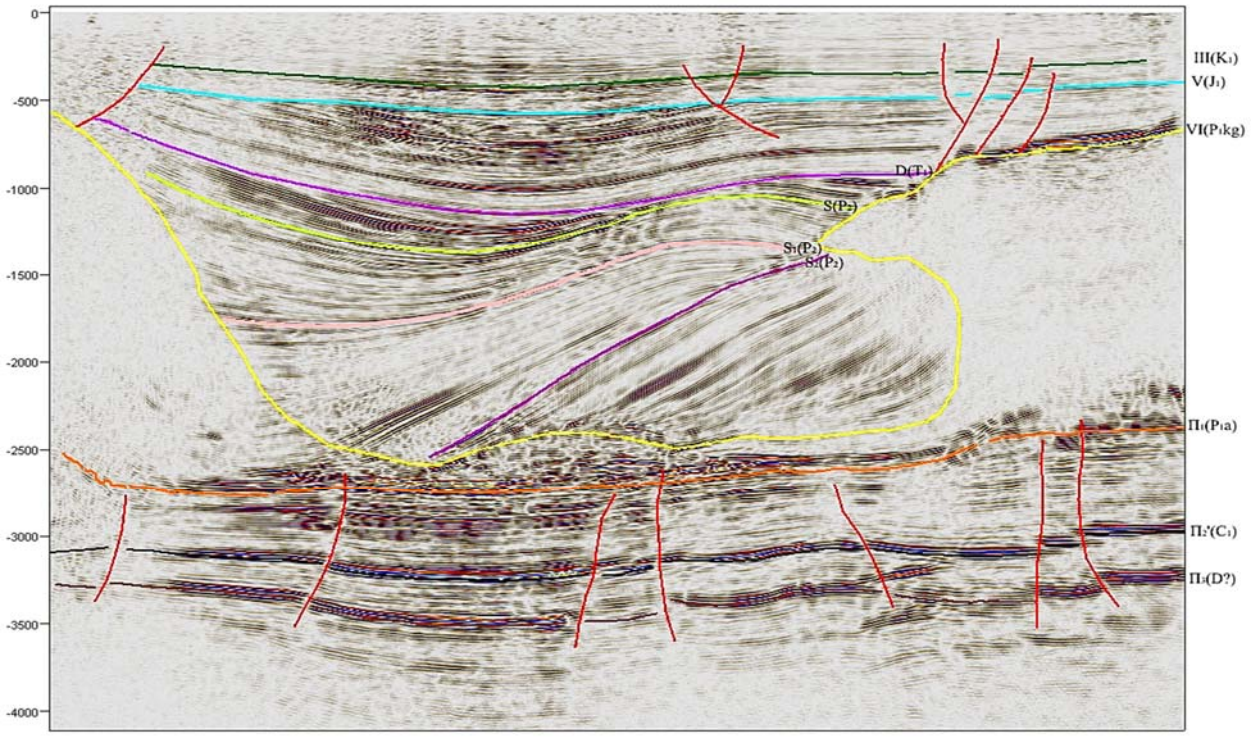

Fig. 1.Time seismic line 868803_275

Upper Permian deposits lie with sharp angular unconformity to the enclosing Mesozoic and pre-salt deposits. Intense reflection from inner upper Permian horizons P2_S1, P2_S2, P2_S3 are traced in intradome zones, and the bottom of Upper Permian strata underlayed by sulphate-terrigenous Kungurian salt, the top of which is reflecting horizon VI.

Reflections are easily recognized on the seismic sections, however, at approaching toward salt domes the seismic record has the interference character due to the overlapping of these waves with lateral waves recorded from the steep slopes of the salt bodies.

Noted above elements were used for identification of horizons with the geological environment and geological and geophysical interpretation done within the area. Upon results of interpretation several structures have been identified within Upper Permian and Triassic succession, main elements of which are adjoining to salt domes, existence of one or more faults that limit the structure, and sharp angular unconformity of the Upper Permian deposits underlying the Triassic strata (Fig. 1).

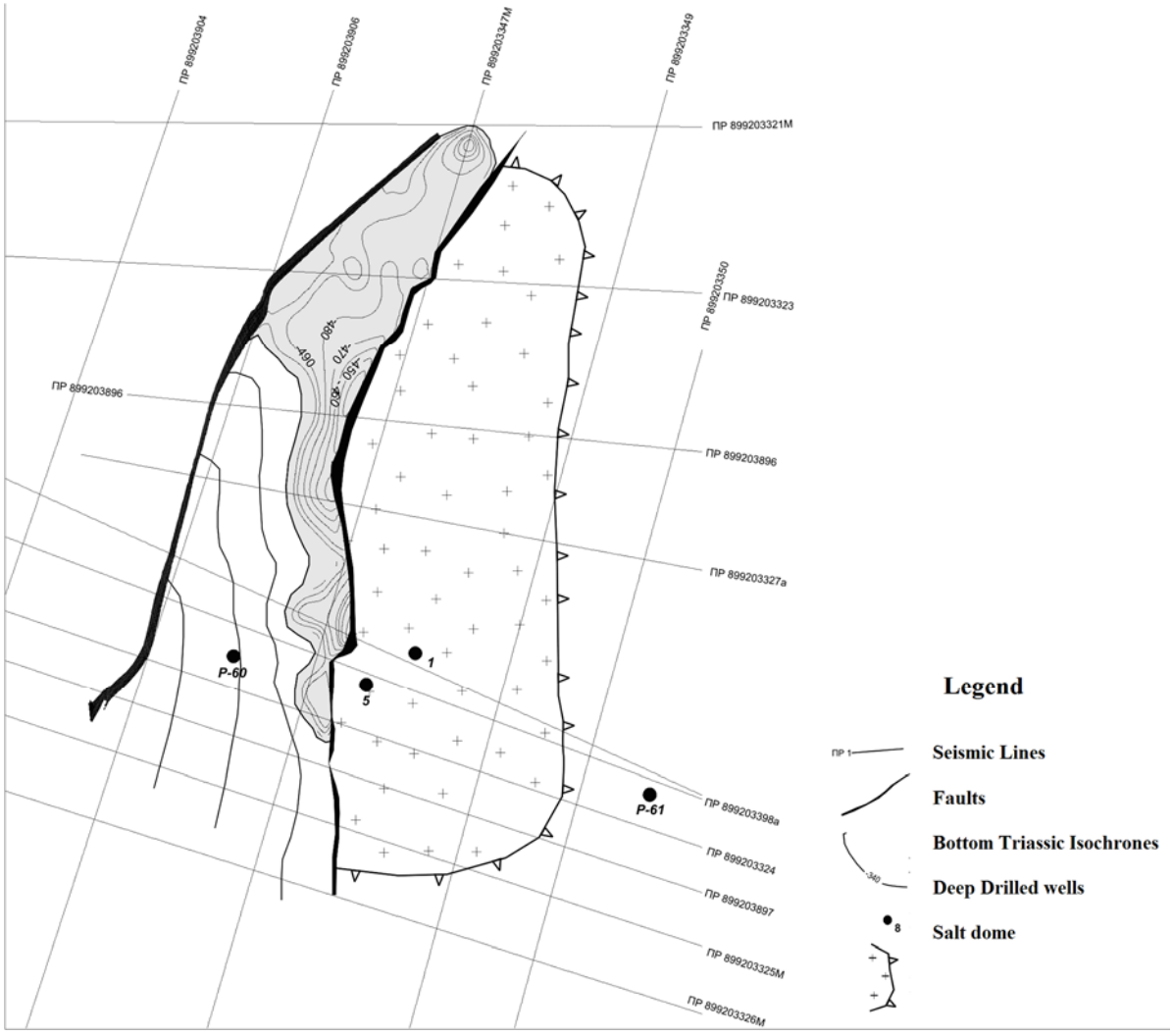

Fig. 2. Structure map of the bottom Lower Triassic sediments

Geological and tectonic structure of the area under the study indicates possible presence of sites, structural-tectonic conditions of which in the Upper Permian and Triassic complexes are similar to known Oil fields. Example of such type of structure shown on the Figure 2. Estimated size of this, and other similar structures, identified by old, sparse line seismic are relatively small, however, these sites could be an interest due to possible existence of multiple targets within Palaeozoic and Mesozoic successions.

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ИСПОЛЬЗОВАНИЕ СТАРЫХ ГЕОЛОГИЧЕСКИХ И ГЕОФИЗИЧЕСКИХ ДАННЫХ ДЛЯ ПЕРЕОЦЕНКИ НЕФТЕГАЗОНОСНОСТИ И ТЕПЛОВЫХ МЕТОДОВ ДЛЯ УВЕЛИЧЕНИЯ НЕФТЕОТДАЧИ

Аннотация

Согласно статистическим обзорам / 1 / большинство нефтяных месторождений Казахстана сосредоточены в Прикаспийском осадочном бассейне. Исследования показывают, что основная площадь этих месторождений расположена в Актюбинской области, которая является одной из больших и частично исследованных нефтегазоносных областей, присутствуют около 20 местонахождений нефти и газа, а также потенциальные структуры как в надсолевом и подсолевом комплексах отложений. Такие как - Жанажол, Кенкияк, Алибекмола, Кожасай Урихтау, Восточный Акжар, Северная Трува обнаружили нефть в пределах последовательности подсолевых отложений, когда другие разведанные и утвержденные запасы сосредоточены в надсолевых отложениях, которые типичны, как для средних так и для малых месторождений. Уровень изучения подсолевого комплекса области крайне неравномерно, что обусловлено особенностями истории разведочных работ.

Ключевые слова: геологический, геофизический, переоценка, нефть и газ, тепловые методы, нефтеотдача, месторождение, бассейн, Актюбинский регион, надсолевой, подсолевой, отложение, сейсмический метод, бурение, Прикаспийский, углеводород.

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МҰНАЙ ЖӘНЕ ГАЗ ҚАБАТТАРЫН ҚАЙТА БАҒАЛАУ ЖӘНЕ ҚАБАТТАРДЫҢ МҰНАЙ БЕРГІШТІГІН ЖЫЛУЛЫҚ ӘДІСТЕРМЕН АРТТЫРУ ҮШІН ЕСКІ ГЕОЛОГИЯЛЫҚ ЖӘНЕ ГЕОФИЗИКАЛЫҚ ДЕРЕКТЕРДІ ПАЙДАЛАНУ

Аңдатпа

Статистикалық зерттеулерге қарағанда / 1 / Қазақстанның мұнай кен орындарының негізгі бөлігі Каспий шөгінді бассейнінде шоғырланған. Зерттеу жұмыстары көрсеткендей, бұл кен орындардың негізгі орыны- ең үлкен, және жартылай зерттелген мұнай газ аумагы,

Ақтөбе обылысына жатады. Бұл обылыста 20-ға жуық мұнай және газ елді мекендер, сондай-ақ тұзүсті және тұзасты шөгінділері бар. Айта кететін болсақ, Жаңажол, Кеңқияқ, Әлібекмола, Қожасай-Ұрықтау, Шығыс Ақжар, Солтүстік Трува сияқты кен орындарда тұзасты шөгінділерінен мұнай табылған. Ал әдетте, табылған және расталған мұнай қорлары тұзүсті шөгінділерінен алынады, бұл көрініс орта және кіші мұнай кенорындарына тән. Барлау тарихының ерекшеліктеріне байланысты, тұзасты облысының зерттеу деңгейі біркелкі емес болып табылады.

Кілт сөздер: геологиялық, геофизикалық, қайта бағалау, мұнай және газ, жылу әдістері, мұнай бергәштәк, кенорын, бассейн, Ақтөбе аумағы, тұзасты, тұзүсті, шөгінді, сейсмикалық әдңс, бұрғылау, Каспий аумаға, көмірсутегі.

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SCIENTIFIC TECHNICAL SOLUTION UPON FAST ACTING AUTOMATICALLY LOAD BACKUP OF ELECTRICAL SUPPLY

Abstract

There is given the mainly reasons violation of reliability electric power supply of principal consumers are the short circuits in diagrams of external and internal of electric power supply. We provided the need of using algorithms which makes it possible to identify emergency situations in correct way.

Key words: electrical supply system, automatic load transfer, voltage depression, dynamical stability, electrical services.

Introduction

In that situation the solution of reliability electric power supply problems are lay on consumers of electricity. Especially the last true for solution own tasks industrial companies with complex technological of processes. And also industrial companies that widely uses the tools of automatics. Among them specializing in the extraction and processing of oil and gas, metallurgical, main railway electrified transport systems, water utilities, wastewater and others.

The short circuit have a hold over these enterprises as for work a high voltage electric motors, low voltage electric motors of various electric device control elements of electrical systems and devices of managements of electric technical process. The finally happened ten times per year and leads to a signification of economical damage. Even if there are duration is several hundred milliseconds.

Main part

Traditionally in electricity grids for struggle breaks of electric power supply uses the device of automatically turning ABP (Automatic backup (transfer) power). As starting in this devices typically uses of the minimally voltage elements.

Despite there is need to get the power supply for electricity consumers as fast as possible, it is required to introduce a deliberate slowing action of an automatic load transfer trigger. The referred above is produced to prevent the excessive action of ALT trigger. Such actions occur at SG in adjacent parts of a network and at the action of AR devices feeding lines.

Thus, it is required to produce a deceleration time longer than the maximum delay of RP in adjacent areas of the network, or more time than the time delay of AR devices.

As a result of the time delay of the ALT device action may be reached for several seconds.

This amount of time delays of ALT actions is unacceptable. In the task formulation of the continuity preserving of industrial enterprises complex processes, for instance: synchronous