

Основываясь на вышеизложенном, терминологическую группу *High pressure floating production facilities* мы переводим как *плавающий напорный трубопровод*, а не *напорный плавающий трубопровод*, поскольку прилагательное *напорный* обозначает более устойчивый признак.

Обобщая всё вышесказанное, отметим, что при переводе текстов нефтегазовой сферы необходимо обратить внимание на стилистико-грамматические особенности текстов данного стиля, а также на широкое распространение аббревиатур. При переводе терминов употребляется прием описательного перевода, перевод с помощью родительного падежа, транслитерация, транскрибирование, калькирование и перевод с использованием разных предлогов. Исследование особенностей лексико-грамматических переводческих трансформаций и использования их при переводе с английского языка на русский приобретает особое значение на современном этапе научно-технического прогресса.

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## **FEATURES OF LEXICAL AND GRAMMATICAL TRANSFORMATIONS IN TRANSLATION OF OIL AND GAS TEXTS**

The article reviews the aspects of translation of oil and gas texts for the purpose of using transformations in oil and gas texts translation. The author presents methods and types of translation specific for oil and gas texts. The relevance of this work lies in the linguistic and translational research of lexical and grammatical peculiarities of translation transformations and their use when translating from English into Russian. It acquires a special importance due to the need for a comprehensive study of the language of science and technology at the present stage of technological progress. The object of this study is the use of transformations in the translation of oil and gas texts. The subject of the research is lexical and grammatical transformations.

**Keywords:** *translation, transformation, oil and gas, scientific and technical literature.*

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## **CONCEPT OF EQUIVALENCE IN RUSSIAN AND ENGLISH TEXTS OF PETROLEUM INDUSTRY**

The article deals with the concept of equivalence in Russian and English texts of petroleum industry, its specific nature and main characteristics as well as various types of equivalence and its key features. Equivalence is studied by a considerable number of scientists, for that reason, different views and theories of the investigated concept are revealed. The problem of technical translation is of great importance nowadays, therefore common difficulties that a translator faces are identified in the article. Moreover, the author of the article formulates ways and recommendations on petroleum text translation.

**Keywords:** *equivalence, petroleum industry, technical translation, adequacy, types of equivalence, scientific style, levels of equivalence.*

Nowadays petroleum industry has a prime importance. Among the current global energy challenges oil and gas equally continue to be a key factor. Taking into account economic globalization, the development of technologies, selection of reasonable alternatives in designing, appropriate equipment and operation of field development, technical translation in the petroleum industry is necessary aspect to be used and analysed. Studied in different ways it is of great importance. In terms of professional engagement with foreign petroleum equipment/ technolo-

gies/service suppliers require qualitative, high-level, technically adequate translation of the documentation, reports of proceedings at meetings, scientific articles, special literature, correspondence etc.

Considering the translation of specific field on a particular stylistic level in a particular subject, there is a number of controversial issues. One of them is the question of whose translation is better - translation made by a professional translator educated as a philologist who has no deep expertise, or a specialist, who is well versed in the subject and has a certain level of the original and the target languages [1]. The same text will be translated differently. Translator-linguist will translate the text, trying to decipher the enclosed ideal meaning, the author's vision of the real object. This lack of knowledge and competence in the subject of the specific translated text may affect the incorrect ratio of any ideas, concepts, principles, algorithms of a device, and so on. The specialist will also seek to describe the subject by virtue of their professional knowledge about it. And in this case it is much more likely that information the author wants to say about the subject will be replaced with ideal meaning. Such ideal meaning will be created by a specialist- translator based on his own understanding of the subject [1]. However, it is difficult to answer the question, whose translation is better. Anyway, the concepts of equivalence, adequacy of relativity and subjectivity of translation have a significant reflection on their individual work.

It is important to note that whoever translates, it is necessary to be extremely careful and cautious with the translation. The essential difference of the petroleum industry from many other sectors of the economy is that the substances traded in technological processes are explosive, flammable and often toxic. It means that under certain conditions these substances may cause injury to personnel and other people in the vicinity, lead to loss of life, material loss and environmental pollution. The severity of the consequences that may occur as a result of an accident or incident at the facilities of the oil and gas industry requires impeccable precision and accuracy in translation. Any errors or inaccuracies in the translation and information not addressed in the future in the mode of operation of hazardous production facilities can cause catastrophic consequences. Therefore, the translation of texts on the subject of oil and gas has strict requirements.

Scientific and technical text in oil and gas industry can be easily recognized by the abundance of the text terminology, lexical structures, abbreviations related to this area. In the course of translation it is essential to convey the meaning and content of the original means of another language adequately and accurately to keep its expressive and stylistic features.

In order to determine the degree of content correspondence accurately, that is to define similarity to the text, comparison of the original text with its translation, such concepts as the adequacy and equivalence were introduced.

The purpose of this paper is to examine the specific nature of equivalence in terms of scientific and technical translation applied in the oil and gas industry as well as common translation difficulties and problems. Studied languages are Russian and English.

The objectives of the paper:

- 1) to determine the qualities of English and Russian scientific style;
- 2) to analyze and compare various views on the concept of «equivalence» ;
- 3) to identify features of different types of equivalence and give examples of the articles;
- 4) to summarize the main difficulties of scientific and technical texts translation in petroleum sphere and to propose their solution.

The objects of research are scientific and technical articles in Russian and English.

The theoretical significance of this study is that it summarizes the experience gained in this area and enhances understanding of the scientific and technical texts translation possibility in the industry.

The practical significance of the study lies in the fact that the study of materials can be used in translation practice.

Equivalence, adequacy, accuracy, language loyalty and other concepts are connected with the theory of translation. First of all, the term «adequacy» means the special category.

Its coexistence with the category of equivalence is not only permissible but reasonable. However, for them to exist within a single theory, their concept area should be clearly differentiated. In any case, for the initial differentiation of adequacy and equivalence conceptual spheres it is possible to conclude that in translation the equivalent information is not always adequate, and adequate aspects are not always equivalent [2].

The view on the adequacy and equivalence coincides, to a certain extent, with the interpretation of the differences between them suggested by A. Schweizer. This researcher noted differences between the categories. Assuming that both categories are evaluative and normative, he saw the first difference between them; the equivalence aims at the results of translation, the text translation relevance to the special parameters of the original, while the adequacy is associated with the conditions of interlinguistic communication act development. «In other words, if the equivalence answers the question of whether the final text is relevant to the original, the adequacy answers the question of whether the translation, as a process, corresponds to the given communicative conditions» [2]. The second difference is that the equivalence implies the fullest transfer of «communicative function invariant» of the original, while the adequacy is a kind of compromise, which the translator accepts, sacrificing the equivalence to solve the main problem. This main task is to preserve functional dominants of source text in translation. In other words, the adequacy is not of the maximum but the optimum character. Schweitzer believed that the category of adequacy is derived directly from the translation practice, as in real life the translator does not always have a possibility to fully convey the entire system of meanings from original work.

There are many theories and approaches to the concept of translation equivalence. Many linguists, such as J. Vinay, J. Darbelnet, R. Jakobson, E. Nida, M. Baker, P. Newmark and others, deal with the issue and conduct research.

In this paper theories appropriate to scientific and technical articles in the oil and gas industry are presented.

According to the Komissarov's semantic theory translation is essentially equivalent to the disclosure of the relationship between the content of the original and translation. It is known that source text (ST) and target text (TT) are not identical, never being complete, exactly the same due to various factors, including cultural, historical, sociological, etc. According to this approach there are types and degree of equivalence.

Equivalence is a relation of «equal value» between an ST segment and a TT segment and can be established on any linguistic level from form to function [3].

There are two main trends: normative and descriptive. Normative view determines what the translator has to do to produce an equivalent translation; what he/she has to definitely preserve, or can sacrifice from the original text. Descriptive view highlights, how translators create equivalence, what they have preserved or sacrificed on the basis of the numerous translating facts analysis.

Some theoretical views were considered and applied in practise.

J. Catford (1965) makes a distinction between «formal correspondence» and «textual equivalent». J. Catford has defined formal correspondence as identity of function of correspondent items in two linguistic systems. Formal correspondent is any target language (TL) category which may be said to occupy, as nearly as possible, the «same» place in the economy of the TL as the given source language (SL) category occupies in the SL.

Textual equivalence is any TL form which is observed to be equivalent of a given SL form. SL and TL texts or items are translational equivalents when they are interchangeable in a given situation. The main criterion for text equivalence is the identity of contextually relevant features [4].

J. Catford presents a discrepancy of equivalent meanings in the source and target texts. He has analysed the composition of English sentence and its Russian translation «Я пришла». It could be marked by five elementary meanings in English phrase:

1. The speaker – «I» is opposed to «he, we» and others;
2. Arrival – «arrive» instead of «leave, depart»;
3. The prior event is linked to the current situation – «have arrived» is opposed to «arrive»;
4. The event that has already happened and not something that will happen («have arrived» and not «will arrive»);
5. «The current situation is present» – «have arrived» and «not had arrived».

Six elementary meanings are found out in Russian sentence. Only three of them are the same in English.

1. The speaker – «I» is opposed to «he, we» and others;
2. Feminine gender – «пришла» and not «пришел»;
3. Arrival – «arrive» instead of «leave»;
4. «On foot» – «пришла» and not «приехала»;
5. Event happened in the past – «пришла» and not «прихожу»;
6. Completed event – «пришла» instead of «приходила».

Translation equivalence means neither formal correspondence nor equality of meanings. The condition of meaning change in the situation can be found during empirical analysis. Common meanings present a group of different characteristics as complex contextual features. Equivalence appears when correspondence is in evidence between different features in source and target languages.

With regard to equivalence, Eugene Nida (1964) maintains that there are two basic types of equivalence: formal equivalence and dynamic equivalence. It is not the identity of situationally relevant features that is the main criterion for equivalence, but rather the identity of the receiver's reaction.

Formal equivalence is used when the translator attributes priority to the SL text, and tries to render the SL text as faithfully as possible, not only in its content but also in its form including grammatical units, consistency in word usage, meanings in terms of the source context.

The grammatical units should be precisely rendered. Verbs are translated into verbs, and nouns into nouns. The boundaries of the sentences remain unchanged. Punctuation, paragraphing stay the same as well [4].

It can be simple short sentences with results, showing some adequacy, or sentences with the development of certain terminology.

*The content of bitumen varies from 0.084 to 0.371 %. The maximum number of bitumen was determined for a sample of Lake Shunet, minimum – Lake Black.*

*Содержание битумоида изменяется от 0,084 до 0,371 %. Максимальное количество битумоида было определено для образца озера Шунет, минимальное – озеро Черное.*

Dynamic equivalence is made to convey the source text message in the target text as naturally as possible. E. Nida tended to use the term so that «the response of the receptor» could be mostly semantic. The target reader took the meaning of the text in such a way that the source reader would have taken the source text to mean the same thing. It led to critical accusations that this was just sense-for-sense translation in new guise. However, if «response» is taken in its full extension, dynamic equivalence could include not only what Aristotle (in the Rhetoric) calls logos (meaning and structure) but also ethos (the reader's assumption about the text's authority) and pathos (how the reader feels about the text). A *natural translation* involves two principal areas of adaptation, namely, grammar and lexi-

con [5]. In general the grammatical modifications can be made more readily, since many grammatical changes are determined by the obligatory structures of the receptor language. That is to say, one is obliged to make such changes as shifting word order, using verbs in place of nouns, and substituting nouns for pronouns. The lexical structure of the source message is less readily adjusted to the semantic requirements of the receptor language, for instead of obvious rules to be followed, there are numerous alternative possibilities. There are in general three lexical levels to be considered: 1) terms for which there are readily available parallels, e. g. river, tree, stone, knife, etc.; 2) terms which identify culturally different objects, but with somewhat similar functions, e. g. book, which in English means an object with pages bound together into a unit, but which, in New Testament times, meant a long parchment or papyrus rolled up in the form of a scroll; and 3) terms which identify cultural specificity, e.g. synagogue, homer, ephah, cherubim. Usually the first set of terms involves no problem. In the second set of terms several confusions can arise; hence one must either use another term which reflects the form of the referent, though not the equivalent function, or which identifies the equivalent function at the expense of formal identity. In translating terms of the third class certain «foreign associations» can rarely be avoided. No translation that attempts to bridge a wide cultural gap can hope to eliminate all traces of the foreign setting.

In addition to being appropriate to the receptor language and culture, a *natural translation* must be in accordance with the context of the particular message. The problems are thus not restricted to gross grammatical and lexical features, but may also involve such detailed matters as intonation and sentence rhythm [5].

A third element in the naturalness of a dynamic equivalent translation is the extent to which the message is relevant for the receptor-language audience. This appropriateness must be judged on the basis of the experience level and the capacity for decoding, if one is to aim at any real dynamic equivalence. Translation should produce the same effect in the receptor readers as the original piece did in the source language audience.

The main purpose is to highlight the central idea and aim of the statement.

*The study of special geochemical characteristics and regularities of organic matter formation in water bodies, particularly in bottom sediments, is relevant due to the active influence of anthropogenic factors on ecological systems associated with the oil and gas field development, the work of industrial and municipal enterprises, the growth of urbanized areas.*

*Исследование геохимических особенностей и закономерностей формирования состава органического вещества в водоемах является актуальным вследствие активного влияния антропогенного фактора на экологические системы, связанного с разработкой нефтяных и газовых месторождений, работой промышленных и коммунальных предприятий, ростом урбанизированных территорий.*

German translation researcher Otto Kade points out 4 types of equivalences (examples are represented from the Russian language):

- total equivalence: a SL unit has a permanent equivalent in the TL (e. g., terms, institutional names);
- optional equivalence: a given SL unit has several equivalents in the target language (e.g., in Russian: давление, in English: *stressing, pressure, pulse, applied trust etc.*);
- approximate equivalence: the meaning of a SL unit is divided between two TL equivalents (e.g., in Russian добыча, in English: *mining, exploitation, lifting*);
- zero equivalence: the SL unit does not have a TL equivalent (e. g., *kick резкое изменение давления бурового раствора*).

The Komissarov's theory of equivalent levels established that model of translation based on the assumption that the equivalence relations are determined between similar levels of original and translated texts. Komissarov's five levels of translation correspond to five different levels of equivalence [6]:

1. equivalence on the level of the communicative goal (the lowest degree of semantic similarity with the original text);

2. equivalence on the level of (the identification) of the situation (higher degree of similarity, even though it is not so evident at first sight);

3. equivalence on the level of message / method of the situation description with higher degree of similarity: it is not only the communicative goal and the situation that are identical, but also the way in which the situation is described);

4. equivalence on the level of utterance /of syntactic meanings (besides the communicative goal, the situation described, and the manner of describing the situation, the grammatical structures are also partly identical, i.e. their differences are only due to the differences between the systems of the two languages;

5. equivalence on the level of linguistic signs / of word semantics (the maximum possible similarity).

In summary, all classifications present certain degree or gradations between word for word translation and liberal translation, free interpretation.

There are some recommendations for the use of scientific and technical translation. What are the main rules to convert a text from English into Russian and visa versa? What parts are changed, what should be stayed the same?

#### Grammatical features

1. Strict word order is recommended to be observed.

Subject + Predicate + Indirect Object +Direct Object + Adverbial Modifier of Manner + Adverbial Modifier of Place + Adverbial Modifier of Time

Для отражения вклада наземного и водорослевого материала в органическое вещество был рассчитан индекс TAR.

*Index TAR was calculated to reflect the contribution of terrestrial and algal material in the organic matter.*

## 2. Emphatic constructions

*Valuable as this approach is, it is still necessary to take stock of the validity of the result.*

**Как ни полезен** этот метод, по-прежнему необходимо проверять на достоверность результат.

*That the fuel in a real situation is finite and depletable is completely unacknowledged by the ISO temperature – time history.*

**То, что** в реальных условиях топливо занимает конечный объем и расходуется, совершенно не учитывается предлагаемой ISO зависимостью температуры от времени.

*Possible modes of failure are undue deformation, leakage or fracture, and it is to this last aspect that most current attention is being directed.*

Разрушение может проявляться в форме чрезмерной деформации, утечки или разрыва, и **именно** последнему мы уделяем сейчас наибольшее внимание.

## 3. Attributive phrases

Russian attributes in the form of compound word (adverb+participle) are rendered by the infinitive in English

*Volatile treatment permitted the formation of difficult to remove deposits.*

*Обработка летучими не мешала образованию трудноудаляемых отложений.*

Determination of a quantity can become an attribute in Russian

*Such data could be related to that for combustion gases from low Btu gas from coal.*

*Эти данные можно было бы сопоставить с данными для газовых продуктов сгорания низкокалорийного газа, получаемого из угля.*

## 4. The use of singular and plural forms

There are some differences in the use of singular and plural forms in English and Russian. Some phrases in plural in English are equivalent to singular form in Russian and vice versa.

*The loss is over seven percent. Потери составили больше 7 процентов.*

*Practical applications Практическое применение*

*In some respects В некотором отношении*

*Source of error Источник ошибок*

*Machinery Машины*

*Constant study Непрерывающиеся исследования*

## Stylistic features

1. The literal translation is not valid. It is undesirable to translate word for word. Respectively, translation occupies an intermediate place. Depending on the situation it tends to one or another pole of equivalence. The absence of literal translation is especially brightly reflected in features of different pieces of texts in scientific and technical articles.

2. Russian long sentences should be divided in English.

Аккумулируя загрязнения, которые поступают в водоем на протяжении продолжительного периода, донные отложения являются индикатором экологического состояния территории, своеобразным интегральным показателем уровня загрязненности.

*They [sediments] accumulate contaminants that get in the water bodies for a long period. Therefore bottom sediments are an indicator of the ecological state as well as a special integral criterion of the contamination level.*

3. The number of clauses and attributive phrases involved in the translation can be reduced and replaced with infinitive construction.

Чтобы воспользоваться достижениями передовой техники, нужно разработать новые двигатели в обоих диапазонах мощности.

*To capitalize on more advanced technology would involve the development of new engines in both power rangers.*

4. Verbal noun should be changed into verb or gerund in English

It is desirable **to develop** a new kind of oil-paper insulation system, with higher dielectric strength and smaller volume compared with conventional insulation systems, in order **to reduce** the volume and mass of high-voltage power transformers and **improve** their long-term operational reliability.

Целесообразно **создание** нового вида системы изоляции с использованием промасленной бумаги, с более высокой диэлектрической прочностью и меньшим объемом по сравнению с обычными системами изоляции, с целью **уменьшения** объема и массы силовых трансформаторов высокого напряжения и **улучшения** их долгосрочной эксплуатационной надежности.

5. Following nouns one after another in genitive case OF

Способ распределения данных

The manner of distribution of data

Better: The manner in which the data are distributed

Оценка экологического состояния озер Хакасии (Западная Сибирь) по составу органического вещества донных отложений

The assessment of ecological state of lakes of Khakassia (Western Siberia) in composition of organic matter of bottom sediments.

Better: Lakes environmental assessment in organic matter composition of bottom sediments, Khakassia, Western Siberia.

6. Russian text compression

Изменение состава нефтей Западной Сибири и Германии после воздействия нефтewытесняющей композицией.

Oil composition variation after oil-displacing agent treatment (in oil fields of West Siberia and Germany).

Изучено влияние нефтewытесняющей композиции НИИКА на изменение состава и физико-химических свойств нефтей Германии и западной Сибири. Показано, что термическое воздействие в присутствии композиции оказало влияние на вязкость нефтей, на содержание смолисто-асфальтеновых веществ, алканов и биароматических углеводородов.

The effect of oil-displacing agent NINKA on the oil composition and physico-chemical properties was investigated. This agent affected oil viscosity and the compositional content of resin-asphaltene, alkanes and biaromatic hydrocarbons.

Idiomatic features

Table 1. Examples of idiomatic difference in scientific and technical articles

Russian	English
Картина практически не меняется	The general pattern continues
Не связано никакими условиями	Is open ended
Рассматривать подробнее	Bring to a sharper focus
Усиливать что-либо	Add a new dimension to something

In conclusion, it should be noted that a translator constantly faces a problem of translation accuracy degree. Both source and target texts should be analysed upon equivalence and adequacy. The practical significance of the equivalence is clear. It may provide scientifically sound criteria for translation criticism (equivalence appears in various degrees, and translations on the market cannot always be regarded as communicatively equivalent to the original texts). It is important that a thought of an article creator is perceived similarly by recipients. Meaning and sense built in every unit such as word, phrase or sentence should be reflected to greatest possible extent according to the aims of producer. The invariant of translation may be presented if the contents of the original text are preserved as well as its sense, its functional adequacy, its meaning and its information structure.

It is almost impossible to transmit information from one language to another without loss to achieve a total equivalence. Though technical translation seems to have a great amount of terms that can show how precisely the text is translated. However, a lot of factors influence on process of translation.

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