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Учебно-методическое пособие

по техническому переводу

дисциплина «Иностранный язык (английский)»

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Место выполнения работы: ГБПОУ «НЕФТЕКУМСКИЙ РЕГИОНАЛЬНЫЙ ПОЛИТЕХНИЧЕСКИЙ КОЛЛЕДЖ», Ставропольский край, г. Нефтекумск, ул. 50-лет Пионерии, 2

Пояснительная записка.

Данное пособие предназначено для студентов средних специальных учебных заведений нефтегазового профиля.

Пособие разработано в соответствии с требованиями ФГОС по иностранному языку и на основе программы по английскому языку для учебных заведений данного профиля.

Цель пособия: обучение студентов нефтегазовых специальностей чтению и переводу текстов профессиональной направленности, умению извлекать из них профессионально значимую информацию. Для достижения поставленных целей в пособии предусмотрена регулярная учебная деятельность по созданию словаря активной лексики, включающего наиболее употребляемые для данной специальности термины и слова общетехнического значения. Кроме того, пособие содержит упражнения для закрепления грамматических явлений, лексического минимума и развития коммуникативной компетенции. Тексты пособия взяты из современной научно-технической литературы, журнала «Oil and Gas Eurasia» и подобраны так, что они знакомят студентов с тематикой их будущей специальности.

Пособие состоит из 18 уроков и рассчитано на 36 часов.

Contents:

Technical translation.
Lesson 1. Lecture.

Перевод - деятельность по интерпретации смысла текста на одном языке (исходном языке [ИЯ]) и созданию нового, эквивалентного текста на другом языке (переводящем языке [ПЯ]).

Целью перевода является установление отношений эквивалентности между исходным и переводным текстом (для того, чтобы оба текста несли в себе одинаковый смысл).

Есть существенные различия между письменным переводом (англ. translation), который заключается в письменном переносе смысла из одного языка в другой, и устным переводом (англ. interpreting), состоящем в переносе смысла в устной форме или в форме жестов (в случае языка знаков) из одного языка в другой.

В процессе перевода, вне зависимости от его формы (устной или письменной), можно выделить следующие этапы:

1. Декодирование или понимание (чтение, слушание) текста на исходном языке (ИЯ).
2. Непосредственно перевод.
3. Кодирование (запись, произнесение) полученного текста на переводящем языке (ПЯ)

Несмотря на самые разные препятствия, которые переводчику приходится преодолевать, удачным считается тот перевод, который соответствует двум критериям:

- Точность или достоверность. Характеризуется тем, насколько точно перевод передает смысл исходного текста; делает ли он это, прибавляя или вычитая что-либо из смысла, усиливая или ослабляя какие-либо элементы смысла.
- Прозрачность. Здесь речь идет о мере, в которой перевод воспринимается носителем языка не как перевод, а как оригинальный текст на переводящем языке, соответствующий грамматическим, синтаксическим и идиоматическим нормам языка.

Перевод, который соответствует первому критерию, можно назвать «верным переводом»; перевод, отвечающий второму критерию, характеризуется как идиоматический перевод.

Технический перевод – перевод, используемый для обмена специальной научно-технической информацией между людьми, говорящими на разных языках. При упрощенном подходе под техническим переводом понимают перевод технических текстов. В основе технического перевода лежит формально – логический (коллективный) стиль, который характеризуется точностью, не эмоциональностью и безличностью.

В зависимости от форм (способов) обработки исходного текста переводчиком выделяются различные виды технического перевода:

- Полный письменный перевод (основная форма технического перевода)
- Реферативный перевод
- Аннотационный перевод (Аннотация (от лат. Annotatio– замечание) – краткая характеристика издания: рукописи, статьи или книги. Аннотация показывает отличительные особенности и достоинства издаваемого произведения, помогает

читателям сориентироваться в их выборе. Аннотация дает ответ на вопрос: «О чем говорится в первичном документе»?

- Перевод заголовков
- Устный технический перевод.

Рабочие источники информации, используемые переводчиком, призваны помочь ему произвести перевод высокого качества.

Рабочие источники информации подразделяют на:

- Общие источники информации
- Специальные источники информации.

Общие источники информации:

I. Словари общего назначения
   А. Двуязычные словари
   1. Двуязычные неспециальные словари
   2. Двуязычные фразеологические словари
   Б. Одноязычные словари
   1. Толковые словари
   а. Толковые словари русского языка. Толковые словари иностранного языка
   б. Словари иностранных слов
   2. Вспомогательные словари
   а. Словари синонимов
   б. Словари анонимов
   в. Орфографические словари
   3. Энциклопедические словари общего назначения
II. Общие энциклопедии

Специальные источники информации:

I. Специальные словари
   А. Двуязычные специальные словари
   1. Политехнические словари
   2. Отраслевые словари
   3. Вспомогательные словари (напр., словари сокращений)
   Б. Одноязычные специальные словари (напр., “Краткий политехнический словарь”)
II. Специальные энциклопедии
   А. Политехнические энциклопедии
   Б. Отраслевые энциклопедии
III. Справочники
IV. Специальная литература
V. Прочие источники информации
   А. Предшествующий опыт
   Б. Консультации со специалистами

Lesson 2. History of the Earth

Translate the text and then retell it

The earth is thought to have formed about 4.6 billion years ago out of a cloud of cosmic dust. As the planet was drawn together by its own gravity, the heat of compression and its radioactive elements caused it to become molten. The heaviest components, mostly Iron and Nickel, sank to the Earth's centre and become the core. Lighter minerals formed a thick molten mantle. Other minerals rich in Aluminium, Silicon, Magnesium and other light elements solidified into a thin rocky crust. The surface of this young planet was extremely inhospitable. Molten rock (Magma) erupted through fissures and volcanoes, as did the gases and water vapour that formed the early atmosphere. As the surface cooled, water vapour condensed and fell in torrential rainstorms and the first oceans were formed. Over time, the Earth's crust has grown thicker and more stable. It is viewed by Geologists as an assembly of plates. These plates are continually moving and changing shape. In some places they slide past one another, in other places they pull apart or collide. The theory that explains this process is called Plate Tectonics.

Lesson 3. Drilling

Translate the text and answer the questions:

Drilling is one of those jobs where a man has to work his way up. Even if a leg in the mousehole, for example, and may be a hazard to the other members of the crew. What might happen, for instance, if he opened the wrong valve or misunderstood an urgent instruction? On some rigs, the first step up the ladder is the job of roustabout. A roustabout does semiskilled labour such as scraping rust, hosing down, painting, carrying cans of dope, unloading materials and supplies, etc. Having worked for a time as a roustabout, a man might be ready for the job of roughneck. Among a roughneck’s duties are such things as operating the cathead, handling the slips and tongs, standing pipe back in the derrick, assisting in mixing the slush, and so on. Like a roustabout, a roughneck may have to be told what to do. In general, though, roughnecks know their job well enough to get on with it for the minimum number of spoken instructions. It's noisy

around the kelly bushing , and events frequently take place too fast for verbal orders to be given. Much of the time, roughnecks are expected to know automatically what must be done.

Next, between the positions of roughneck and driller, is the job of derrickman. The derrickman works from about 60 ft. to 90 ft. above the rig floor, near the top of the derrick, where he attaches or detaches the elevators when pipe or casing is run into or pulled out of the hole. The height at which he works depends on the length of the sections of pipe, casing or tubing that have

to be handled. These may be in doubles, thribbles, or fourbles. The derrickman also cleans, oils, greases, inspects and repairs the pulley blocks and cables which are used to raise and lower sections of pipe and casing. When he isn't busy on his platform up in the derrick, the derrickman usually has special responsibility for the slush pumps and tanks. Rigs operate around the clock. The period from 8 a.m. to 4 p.m. is the daylight tour, 4 p.m. to 12 midnight is the afternoon tour, and 12 midnight to 8 a.m. is referred to as «graveyard tour». Offshore crews usually work twelve hour tours.

Answer the following questions.

1. Which is closer to the RKB, the rathole or the mousehole? Why?
2. A derrick man must have excellent balance. Why? The platform that he uses is called «monkeyboard». For what reason?
3. Why might it be hazardous to the crew to have a green worker on the rig floor?
4. Define a thribble.

Find the English equivalents for these words and word combinations in the text:

1. большинство нефтяных компаний
2. бригада
3. бурение
4. верховой работает на высоте
5. в круглосуточном режиме
6. любой новичок
7. носить бочки со смазкой
8. проложить себе дорогу
9. работа, не требующая высокой квалификации
10. разгружать различные материалы
11. соединение или отсоединение подъемников
12. соскребать ржавчину
13. сфера деятельности
14. техническое образование
15. разнорабочий

Say whether the following sentences are true or false. Correct the false ones.

1. Macaroni is tubing of OD less than about 23/8 in.

2. A fourble is a section of casing, pipe or tubing consisting of four singles screwed together.

3. The central hole in the kelly bushing is square.

4. If pipe threads aren't properly doped the connections will stick.

5. If a crew is working an 8 hour tour and for some reason they have to work 101/2 hours, they will late be paid 21/2 hours' overtime.

Lesson 4. Well drilling.

Topical vocabulary.

Read, translate and learn words

Bore hole	Ore
Extraction	Well drilling
Exploration	Tricone rock bit
Underground	Oil rig
To approach	Water table
Masonry	Pit
To dig	Shaft

Translate the text and answer the questions in written form

Well drilling.

Well drilling is the process of drilling a hole in the ground for the extraction of a natural resource such as ground water, natural gas, or petroleum. Drilling for the exploration of the nature of the material underground (for instance in search of metallic ore) is best described as borehole drilling, or «drilling».

The earliest wells were water wells. Shallow pits were dug by hand in regions where the water table approached the surface, possibly with masonry walls lining the interior to prevent collapse. Long drill shafts are utilized in modern drilling techniques. They produce holes much narrower and deeper than are produced by digging. Well drilling is done either manually or mechanically. The nature of required equipment varies from extremely simple and cheap to very sophisticated.

1. What is well drilling?
2. What natural recourses do you know?
3. What is borehole drilling?
4. Where were shallow pits dug?
5. Where are long drill shafts utilized?
6. What holes do they produce?
7. How is well drilling done?

7**Match the English and Russian equivalents:**

Borehole	Уровень грунтовых вод

Masonry	Бурение скважин
Dig	Шарошечное буровое долото
Ore	Буровая установка, нефтяная вышка
Well drilling	Буровая скважина
Tricone rock bit	Каменная кладка
Oil rig	Копать
Water table	Руда
Pit	Высевающий вал
Shaft	Яма

1. Find Passive Voice constructions. Is it Present Passive or Past Passive?
2. Translate the sentences with Passive Voice constructions in writing.
3. What do you know about drilling? Tell about well drilling using the vocabulary.

Lesson 5. Electro drilling.

Topical vocabulary.

Read, translate and learn words

Swivel
Bottom hole motor
Fluid
Drill pipe
Deep
To drill
Turbodrilling
Advantage
Circulating fluid
Fluid pressure

Translate the text and answer the questions in written form:

Electrodrillng

An electrical swivel is fixed under the swivel, to transmit electric power to the bottom hole motor. The fluid is circulated through the drill pipes. In the USSR dozens of wells 2,000-3,000 m deep were drilled by electro drills.

Electro drilling has technical and economic advantages over both, rotary and turbo drilling:

1. Energy is transmitted to the bottom of the hole regardless of either the depth of the well or quantity and quality of the circulating fluid.
7. 2. Since the drill pipes do not rotate and fluid pressure is not high, the life of pipes is considerably increased and, hence, steel consumption per one meter of drilling is decreased. High pressure pumps are not required.

3. Automation of the process is simplified; feeding of the bit is mechanized: a bottom hole inclinometers fixed over the drill makes it possible to measure constantly inclination of the well.
4. Application of both heavy mud and air for well circulation is possible.
How is an electrical swivel fixed?

1. What was drilled by electro drills?
2. What does electro drilling mean?
3. What advantages has electro drilling?

True or False? (Put the answer at the end of the sentences)

1. An electrical swivel is fixed under the swivel, to transmit electric power to the bottom hole motor.
2. The fluid is circulated through the open hole.
3. In the USSR dozens of wells 1000 in deep were drilled by electro drills.
4. Electro drilling hasn't technical and economic advantages over rotary and turbo drilling.
5. Since the drill pipes do not rotate and fluid pressure is not high.
6. High pressure pumps are not required.

Choose the right answer.

1. An electrical swivel is fixed under …

a) the swivel b) the shaft c) the aquifer

2. The fluid is circulated through …

a) the bottom hole motor b) the drill pipes c) oil well

3. In the USSR dozens of well 2000-3000 m. deep were drilled by …

a) electro drills b) rotary c) turbo drilling

Tell about Electro drilling using the vocabulary.

Lesson 6. Drilling deep: results and prospects.

Topical vocabulary.

Read, translate and learn words

7.

Development	A bit
Field	Equipment
Volume	Pressure
Level	Mud

Deep	To fish tools
To obtain	Screw
To discover	Current
To occupy	To washout
To indicate	To encounter
To improve	Hydrogen
To accompany	Sulphide
To research	Deposit

Translate the text and answer the questions:

Drilling deep: results and prospects.

The development of major fields such as the Tuymaza, Romashkino, Samotlor and others has made it possible to increase oil production in Russia over the last 30 years with relatively low volumes of drilling. However, virtually all the major fields have now reached maximum production levels, and a fall in oil production has already been observed in some of them; maintaining the required level of production therefore requires a more rapid increase in the volume of drilling undertaken, and, primarily, in the volume of deep exploratory drilling.

The practical results of deep and super-deep drilling, which began about 30 years ago in the countries of the CIS. support this assertion. The conventional distinction is that deep wells are wells between 4,000 and 6,000 m deep, while super-deep wells are those over 6,000 m deep. Deep and super-deep drilling has been carried out and is continuing mainly in the Northern Caucasus, the Trans-Caucasus, Western Ukraine, the Dnepr-Donetsk and Pre-Caspian basins and in Central Asia. Over 80 oil, oil-gas-condensate and gas fields have been discovered in deep-seated horizons (those over 4.5 km deep). The best results have been obtained in the Tersk-Caspian down warp, in the anticlinal zones of the flank. Deep-lying pools have been discovered in the Northern Caucasus by the Andreyevskaya well (5 683 to 5,800 m), the Pravoberezhnaya well (5,344 to 5,447 m), the Gudermes well (5,233 to 5,368 m), in the West and East Kuban down warp (5,275 m) and in the Dnepr-Donetsk basin (4,580 to 5,625 m). In Azerbaijan over 20 oil and gas pools have been identified at depths of over 4.5 km. The largest oil and gas fields discovered in recent years are in the north-western flank of the Pre-Caspian basin, at depths of 4,600 to 5,150 m and more.

On average deep drilling makes up a little over 2 per cent of the total metrage drilled in Russia. However, over 16 per cent of the rig-months, and almost one-fifth of all the drilling teams in the industry, are occupied on deep drilling. All of this indicates that there is a need to improve performance in deep drilling.

International experience of deep and super-deep drilling indicates that development and improvement of such drilling has always been accompanied by many serious problems. It was the requirements of deep drilling that prompted serious research into areas such as improvement of bit quality (GN, GNU, GAU, Stratopaks, etc.), improvement of conditions of cleaning the bottom hole zone (the hydraulic monitor effect), development of drilling equipment and methods with differential pressure in the well formation system, development of new drilling mud systems and equipment for cleaning drilling mud of cuttings, study of how overpressure arises and development of equipment for measuring, monitoring and predicting it, design of improved and powerful drilling rigs and drilling and fishing tools, etc.

It is well known that most of the oil and gas wells drilled in the world are drilled by rotary drilling. However, in the CIS on average only 30 per cent of wells are drilled by this method, with 70 per cent of all drilling being done with down hole hydraulic motors (turbo drills, screw motors).

Nevertheless, the current situation in the CIS is that all deep and super-deep wells, both exploratory and production wells, are drilled by the rotary method; this includes those in which overpressure, high temperatures, zones of caving and washout, lost circulation and oil, gas and water ingress are encountered, those where there is hydrogen sulphide and a thick series of chemogenic deposits, and those with complex tectonics. This is because this method is the most versatile of all the types of rotation drilling

The conditions of deep drilling in all regions of the CIS are exceptionally complex, owing to the widespread occurrence of overpressure zones, salt-bearing rocks, zones with various complications, often of opposite types (zones of fluid ingress alternating with lost circulation zones), high temperatures, and often a fracture pressure that is very close to the formation pressure. The accuracy with which these pressures are measured and predicted, by direct and indirect methods, and the pressure in the well is controlled, are two of the most important criterions.

Answer the following questions

1. What has made it possible to increase oil production in Russia?
2. What problems are there in oil production?
3. What are the practical results of deep and super-deep drilling?
4. What difference is between deep and super-deep drilling?
5. Why are the most of the oil and gas wells drilled by rotary drilling?
6. What method is the most versatile of all the types of rotation drilling?
7. Why are the conditions of deep drilling very difficult?

Match the English and Russian equivalents:

Development	Открывать
Level	Разработка
To maintain	Объем
Deposit	Исследовать
Volume	Глубокий
Deep	Улучшать
To discover	Уровень
To occupy	Залежь
To improve	Поддерживать
To research	Занимать

What problems are there by deep drilling? Translate into English.

7. 1) Зоны высокого давления

_____

2) Соленосные пласты

_____

3) Зоны с попаданием жидкости

_____

4) Зоны с потерей циркуляции

_____

5) Зоны высоких температур

_____

Can you add anything yourself?

6) _____

7) _____

Lesson 7. The Rig

Read, translate and learn words

boreholes	*in the petroleum industry, the words «borehole», «hole», «well» and «oil well» usually mean the same thing.*
rotary	*turning like a wheel.*
rotates	*turns around and around like a wheel.*
crushes	*breaks up into small pieces, using great power.*
cuttings	*the pieces of rock drilled by the bit.*
fluid	*anything that flows. Liquids, gases and melted substances* are *all fluids.*
hollow	*having an empty space on the inside. Drill pipe is hollow, so that mud can pass through it.*
hexagonal	*having six angles and six sides.*
floormen	*workers on a rig*
dull	*not sharp; worn out; gone. If the bit is gone, it must be changed.*
driller	*the person in charge of the drilling.*

Translate the text and answer the questions

7. Oil is contained in rocks under the ground and in rocks under the sea. To find it, oilmen have to drill boreholes. The equipment for drilling these holes is the drilling rig. Most rigs work on the rotary system. A bit rotates at the end of a pipe. As the bit rotates, it cuts and crushes the rock at the bottom of the hole. The cuttings are carried to the surface by a

special fluid. This fluid is called «mud». Mud is a mixture of clay, water and chemicals. Mud is not only used for carrying the cuttings up to the surface. It is also used for keeping the bit cool. The mud is pumped down through the bit string.

It comes back up again through the annulus. The mud engineer or «mud man» is in charge of the mud. For example, he tells the floorman how to mix the mud at the mud tanks.

It is often necessary to pull the string out of the hole. There are different reasons for this. Perhaps, for example, the drill bit is dull. If the bit is dull, it must be changed. To do this, the driller and the floorman must trip the pipe. They must pull the string out, change the bit, and then run the string back into the hole. Tripping the pipe is also called «making a round trip». Round trips are expensive. Oilmen make them only if they must.

Answer the following questions.

1. What is the driller's job? (He is …)
2. How long is a single? How long is a joint?
3. As the bit rotates, what tow things does it do?
4. In the petroleum industry, what is mud?
5. What is the string made up of?
6. What is the name of the space between the drill pipe and the sides of the borehole? (The space is called…)
7. Who mixes the mud? Where is the mud mixed?
8. Oilmen make round trips only if they must. Why?
9. What is bentonite? What does it consist of?
10. Why is the drill pipe hollow?

Find the English equivalents for these words and word combinations in the text:

1. буровая вышка
2. скважина
3. долото
4. крошит и режет породу
5. полые трубки
6. шестигранная форма
7. роторный стол
8. буровой раствор
9. произвести замену трубы
10. дорогостоящая процедура

Mark the correct sentences with the letter T and the false ones with the letter F.

1. Oil is contained in rocks under rivers. ____
2. Most rigs work on the rotary system. ____
3. The cuttings are carried to the surface by rotary. ____
4. Mud is a mixture of clay, water and chemicals. ____
5. At the bottom of the string there is a pipe, 30 ft. long. ____
6. The rotary table turns the string. ____
7. Mud is used for keeping the bit cool. ____

Complete the paragraph below using the given words and expressions: cuttings, fluid, shale shaker, rotary, mud tanks, annulus, crushes.

The _____bit cuts and _____the rock at the bottom of the hole.

Drilling _____carries the _____from the bottom of the hole, up the_____to the surface.

The cuttings are separated from the mud at the _____ and the clean mud then returns to the _____.

Make the sentences using the Present Continuous tense.

1. Driller/examine/bit — e.g. Driller is examining the bit.
2. Floorman/mix/clay and chemicals.
3. Drilling crew/trip/pipe out of hole.
4. Mud man/check/drilling fluid.
5. Supply boat/deliver/bentonite.
6. Roughneck/move back/single.

Lesson 8. Synopsis and annotation.

Памятка по составлению реферата текста

1. Указать фамилию автора и название реферируемой работы, а также название источника (сборника, журнала, газеты и т.п.)
2. Пронумеровать абзацы текста
3. Просмотреть текст и определить его ведущую идею
4. Определить подтемы каждого абзаца (составляя логический план текста)
5. Обдумать план и при необходимости перегруппировать пункты плана, объединив по темам

6. Выбрать из каждого абзаца ключевые слова и словосочетания, записав их рядом с подтемой

7. Составить текст реферата на материале смысловых рядов (ключевых слов и словосочетаний), используя простые предложения и типовые выражения-клише (статья посвящена, автор считает, в статье подчеркивается, и т.п.)

8. Отредактировать текст реферата

The plan of the synopsis.

1. The Title
   a) I've read the text (article, story) entitled…
   b) I'd like to tell you about the text (article, story) entitled…
   c) I want to tell you about the text (article, story) entitled…
2. The Source
   This is an article (story, text) published in the newspaper (magazine, book)…
3. The Author
   The author of the text is …, a famous writer (journalist, scientist)
4. The Idea
   The main idea of the text (article, story) is to show (to prove, to underline, to convince)…
5. The Subject
   a) The text is about…
   b) The text describes (gives information about…)
6. The Content
   a) The text (story, article) stars with the fact (with the description of, with the characteristic of)…
   b) Then the author describes …
   c) After than the author touches upon the problem of…
   d) Next the author deals with the fact (the problem)…
   e) Besides the author stresses that…
   f) Finally the author comes to the conclusion that…
7. Your Attitude
   a) My attitude to the article (story, text) is contradictory (complicated, simple) .
   b) On the one hand I agree that…
   c) On the other hand I can't agree that…
   d) I've learned a lot of interesting (important, new) facts (information, things) from the text. It makes us think of…
   e) It gives us food for thoughts. It proves the idea (the story, the point of view, the opinion) …
   f) It can help us in self-education (in solving our problems). I'd like to cote the author (to make a quotation).
8. You Advice
   So in my opinion it is (not) worth reading.

7.

Памятка по составлению аннотации

- Записать заглавие аннотируемой работы с указанием автора и источника (год, месяц, номер издания)
- Пронумеровать абзацы текста
- Определить ведущую тему
- Определить под темы абзацев
- Дать описание пунктов плана, используя ключевые слова и выражения, а также типовые предложения-клише (статья содержит описание, основная мысль текста, и т.д.)
- Сделать заключение о значимости материала и полученных автором результатах
- Определить текст аннотации

The plan of the annotation.

The subject of the text is …

The text deals with…

It is pointed out that…

It is obvious that…

To sum it up…

Lesson 9. Fishing Jobs

Study the following vocabulary before reading.

item	*each thing in a group or list of things.*
latching on to	*getting hold of.*
hoisting up	*raising into position using rope or wire.*
bore	*the inside diameter of a pipe or tube.*
diameter	*the length of a straight line through the center of an object.*
therefore	*for this reason; because of this.*
grip	*hold with force.*
Inner	*situated farther in. The opposite of «inner» is «outer».*
Bit	*cutters the teeth of the bit are in the bit cutters.*
Hardfaced	*having the outer surfaces made of very hard metal.*
springloaded	*closing quickly, powered by sprigs.*

is broken out *is unscrewed and separated.*

the rathole *is a shallow hole near a corner of the rig floor. The kelly stands in the rathole when it isn't needed.*

Stands *stands are 90 ft. sections of drill pipe. A stand is made up of three joints or singles, all joined together.*

are stood back *are placed on end; are stood back.*

toolpusher *the person in charge of all operations on the rig. A toolpusher can tell a driller what to do. Some oilmen also use the word «toolpush».*

Translate the text and answer the questions:

Fishing Jobs

Sometimes, items of drilling equipment get lost in the borehole. When an item of equipment is lost in the hole, it's called a «fish». A lost item is also called «junk». Drilling cannot continue until the fish or the junk is recovered from the hole. To recover the lost item, a fishing job is necessary. Special fishing tools are used for latching on to the fish and hoisting it up to the surface. There are many types of fishing tools. For example, there is a type of fishing tool called a «junk basket», there is another type called a «spear». Fishing tools are different. The spear is used for recovering the casing. The spear enters the bore of the lost pipe. The diameter of the spear, therefore, must be smaller than the diameter of the pipe in the hole. When the spear enters the pipe, its teeth push out and grips the inner sides of the pipe tightly. That is usually possible to hoist the fish out of the borehole. The junk basket is used for latching on to the smaller pieces of junk. It's used for recovering the bit cutters, for example. The bottom part of the basket is a shoe with hard faced teeth. The shoe has a hole in its center. The fish is forced through the hole and enters the barrel of the basket. Spring loaded fingers prevent the fish from dropping out of the

barrel and falling back into the well. Before a fishing job can begin, the string must be tripped out of the hole. First the kelly is broken out and is set in the rat hole. Then the string is broken out in stands and the stands are stood back on the rig floor. When all of stands are stood back, the fishing can begin. The toolpusher takes charge of the fishing operation.

Answer the following questions.

1. Why is junk basket hollow?
2. Why are there many types of fishing tools?
3. What is the toolpusher's job?
4. Where is the rathole? What is it used for?
5. What is a spear for? What's a junk basket for?

6. How does a spear hold a lost piece of pipe?

7. Before a fishing job can begin, the string must be tripped out of the hole. Why?

8. A string is 3,960 feet long. How many stands is it made up of? How many singles is it made up of?

9. What is the difference between «diameter» and «bore»?

10. The string is tripped out of the hole in stands, not in singles. What is the reason for this?

Find English equivalents for these words and word combinations in the text:

1. аварийное оборудование
2. бурильное оборудование
3. ведущая бурильная труба
4. колокол, колонна бурильных труб
5. ловильные работы
6. нора
7. скважина
8. свечи
9. труболовка

Choose the words and expressions to complete the paragraph below: in charge of, junk, toolpusher, item, run back in, fished, tools, lost, tripped.

When an _____ of drilling equipment is_____ in the hole, it must be_____ out. The person usually _____ the fishing operation is the_____ . The string is _____ out of the borehole and fishing _____are run in. After the _____ recovered, the string is _____ and drilling can begin again.

Look at this example below and make the sentences in the same way. Choose the right words.

Junk is (lose/lost/losing) equipment in the hole.

Junk is lost equipment in the hole.

1. A stand is made up of three singles, all (joint/joining/joined) together.
2. Would you mind (to repeat/repeating/repeat) that, please?
3. Spears are smaller in diameter (from/than/to) the bore of the drill pipe.
4. The rathole is (in/on/at) a corner (to/from/of) the rig floor.
5. Most derricks are (between/to/of) 100 and 136 ft. (deep/long/high).

Lesson 10. Cementing Jobs

Study the following vocabulary before reading.

Elevators *latches that secure the drill pipe. Attached to the traveling*
Block *which raises and lowers the pipe from the hole.*
Centralizers *spring steel guides that are attached to casing to keep it centered in the hole.*
Scratcher *a device fastened to casing which removes the mud cake from the hole to condition it for cementing. It is made of stiff wire.*
Wall cake *the solid material deposited along the wall of the hole resulting from filtration of the fluid part of the mud into the formation*
Slurry *suspension of cement in water, oil, or mixture of both.*
Waiting on cement operations *the time needed after the casing has been cemented to suspend and allow time for the cement to set or harden in the well bore.*

Translate the text and answer the questions

Cementing Jobs

At predetermined times, the drill pipe is removed and the casing crew moves in to do its work. The first string of casing they run is called surface casing. Running casing into the hole is very similar to running drill pipe, except that the casing diameter is much larger and requires special elevators, tongs and slips to fit it. Also centralizers and scratchers are often installed on the outside of the casing before it is lowered into the hole. Centralizers keep the casing centered in the hole. Scratchers remove the wall cake formed by the drilling mud and allow the cement bond better to the formation. After the casing string is run, the next task is to cement the casing in place. For this reason, bulk cement and handling equipment is moved out to the rig, making it possible to mix large quantities of cement at the site. The cementing crew mixes the dry cement with water, using a recirculating mixer, to make slurry (very thin, watery cement). Special pumps pick up the cement slurry and send it up to a valve called a cementing head (also called a plug container) mounted on the topmost joint of casing that is hanging in the mast or derrick a little above the rig floor. Just before the cement slurry arrives, a rubber plug (called the bottom plug) is released from the cementing head and precedes the slurry down the inside of the casing until it stops or «seats» in the float collar, but continued pressure from the cement pumps opens a passageway through the bottom plug (by rupturing the diaphragm). So, the slurry passes through the bottom plug downwards and starts up the annulus gradually filling it up. A top plug is similar to the bottom plug but it is solid. It is released with the last portion of the cement slurry and some

displacement fluid (usually drilling mud or water) moves it downwards. Meanwhile, most of the slurry flows out of the casing and into the annular space. By the time the top plug seats or «bumps» the bottom plug in the float collar the cement is only in the casing below the float collar and the annulus. After the cement is run, a waiting time is needed to allow the slurry to harden. This period of time is referred to as waiting on cement (WOC). After the cement hardens, tests may be run to ensure a good cement job.

Answer the following questions.

1. What kinds of jobs are needed after the well is complete?
2. Who does the cementing job?
3. What equipment and materials are used to perform cementing?
4. What is a «cementing head» and what is its purpose?
5. Why must the bottom plug have a diaphragm?
6. Why must the top plug be solid?
7. What might signal the cementing pump operator to shut down the pumps?
8. Can displacement fluid be mud?
9. What is WOC?
10. What is the other task for the rig crew after the WOC and tests?

Find in the text English equivalents for these words and word combinations:

1. погрузочно-разгрузочное оборудование
2. рециркулирующая цементомешалка
3. самая верхняя труба
4. отверстие
5. цементировочная головка
6. продавочная жидкость
7. закрыть
8. предшествовать
9. упорное кольцо

Mark the correct sentences with the letter T and the false ones with the letter F.

1. The rig crew is not competent enough to assist in cementing jobs.
2. There is special transport equipment to handle cement in bulk.
3. To mix dry cement with water a blender is used.
4. Slurry is a fluid for cementing the well.
5. A plug container is a part of a cementing head.

6. A plug container has two types of plugs.
7. Pumping continues till the cement slurry fills the annular space.
8. The top plug is absolutely similar to the bottom plug.
9. Drilling is resumed as soon as WOC is over.
10. Waiting on cement is allotted to allow the slurry to harden.

Complete the paragraph below using given words and expressions: cement crew, pressure tested, to set, WOC, bit, nipples up.

_____ casing, the casing and _____ run and cement a string of casing. After the _____ and tests indicate that the job is good, the rig crew attaches or_____ the blowout preventer (BOP) stack to the top of the casing. The BOP stack is _____ , and drilling is resumed with a smaller_____ that fits inside the surface casing.

Lesson 12. How to Get a Job

- **Translate the text and answer the questions:**

So you're thinking about a field job in the oil industry. If you haven't been involved in the oil patch before, you probably have no idea how vast it is, or where to start your job search. Many sites will try to convince you that you can get a job on an offshore rig making $10,000 a month without any experience or training at all, and while this is possible, it's not at all likely. Actually, it can be tough to find a job in any field of the oil industry without some experience or training.

First, you should realize that the oil industry isn't just drilling rigs, pumpjacks, and gas stations. The oil industry is a lot like the military in that it employs people in nearly every profession. There are positions such as roughneck, that are very specific to the oil industry; but there are also welders, medics, chemists, biologists, environmentalists, cooks, computer programmers, engineers, and a thousand more positions that are absolutely essential to the industry. You don't have to have experience specifically in the oil industry in order to have relevant experience. The oil patch is a little bit different from most other industries. You'll soon lose the idea of a weekend as you now know it... The patch runs seven days a week, and in many cases, 24 hours a day. You'll be expected to work every day in all weather conditions, for weeks or even months at a time. The oil industry is also very production oriented; you'll make more money welding in the oil patch than in another industry, but you'll work longer and harder for that bigger paycheck.

There are a few prerequisites if you want a field job in the oil patch: You must be in reasonably good physical condition, and be able to lift at least 50 lbs. regularly.

For most positions, you must have a valid driver's license. You must have suitable clothing for extended outdoor work and in most cases, hard toed safety boots. You should not have any medical condition which would make it unsafe for you to operate machinery.

You don't need to live in the city where your employer is located, but in most cases you will have to provide your own transportation to and from your home from the employer's location you live a long way from any areas with oil and gas activity, you will have a very difficult time finding an entry level job in this industry. You must be willing and able to work hard for long hours. This industry is all about production, and if you don't produce, you're not an asset to the company. Much of the work in the oil industry is very physically demanding, especially in the entry level positions. There is no upper age limit, but you should be willing and able to work hard for long hours, lift 50 lbs. regularly, and be in relatively good physical condition. If you have back or other health problems that prevent strenuous activity, you may want to reconsider this line of work. Most companies require employees to be at least 18 years old. A recent hearing test and/or medical evaluation may be required. You should know that while you can make a lot of money in a month in the oil patch, you can also make no money in a month. Most oilfield work isn't very stable, and you'll occasionally find yourself laid off on short notice due to a shortage of work... and called back on even shorter notice. Many people in Canada work in the oil industry during the winter while it's busy, then take the spring and summer off, or work on oilfield summer jobs.

How to write a job application.

- 1. Writing in black ink on white unlined paper looks professional.
- 2. Put your address, telephone number and date in the top right - hand corner and the name of a person you are applying to on the left. Write the company name and address below.
- 3. Don't type your letter, because employers do prefer to see your handwriting.
- 4. Leave a line between paragraphs.
- 5. First paragraph - a polite one - explaining why you are writing.
- 6. Describe yourself like a product on sale. List your skills and personal qualities like high motivation, enthusiasm and adaptability.

7.

- 7. If you have qualifications, list them briefly.
- 8. Flattery is important, so explain why it is the only firm you want to work for.

- 9. Ask for an interview.
- 10. Thank the reader for their time and remind them you are waiting for a reply.
- 11. Sign your letter at the bottom left and print your name clearly below.

Your Curriculum Vitae

Notes:

- 1. Always type it on unlined white paper, preferably a single sheet.
- 2. After your name, address and telephone (fax) number, put your health record if you have one.
- 3. Note down education. Put any qualification if you have.
- 4. Detail your recent job. Give dates and describe your duties.
- 5. List hobbies, interests.
- 6. End by saying that two referees are available on request - not naming them leaves you free to choose the best ones for particular jobs.
- 7. Never send a photo - copied letter - it looks like you don't care.

Some hints on how to behave during an interview

- Pay attention to the way you are dressed. Mind your hairstyle.
- Be ready to speak about yourself. Organize your thoughts logically, have self - confidence, never distort facts.
- You must be ready to answer some unexpected questions, like: «What are your weak points?"
- Be ready for practical tests.
- Never be late. Be yourself. Try to overcome your nervousness.
- Much attention should be paid to eye contact.
- Now think - what kind of person you are.

Lesson 13. Schlumberger

Topical vocabulary.

Read, translate and learn words

Oil well
Detection
Deposit
Provider
Petroleum
Exploration
Joint venture
Breakthrough
Reservoir
Processing
Interpretation
Cased wells
Perforation
Exploration
Borehole
Cased hole
Casing
Fluid sampling
Pipe recovery
Oil recovery

- **Translate the text and answer the questions:**

Schlumberger Info

Schlumberger was founded in France in 1927 by two brothers. They invented the revolutionary electrical wireline logging technique for oil wells. It dramatically improved the detection and evaluation of oil and gas deposits.

The company continued to invest in technology research, development of services. As a result, in 1996 Schlumberger became a full provider of technology services to the global petroleum exploration and production industry.

Schlumberger also created Indigo Pool. It is the leading Internet portal for the exchange of oil and gas assets. In addition, Schlumberger formed the WesternGeco joint venture with Baker Huglies and created an industry leader in global seismic services.

Schlumberger had its origins in breakthrough technology.

Now, Schlumberger is a well-known leader in the energetic industry. The company consists of the primary business segments: Schlumberger Oilfield Services. Western Geco and other.

Schlumberger Oilfield Services consists of two product groups Reservoir Evaluation &

Development and Schlumberger Information Solutions.

Reservoir Evaluation & Development consists of the following service segments (product lines):

- Western Geco (WG)
- Reservoir Evaluation Wireline (REW)
- Drilling and Measurement (D&M)
- Well Services (WS)
- Well Completion and Productivity (WGP)
- Integrated Project Management (IPM)

- Western Geco evaluates reservoirs using advanced technologies and special equipment. It provides seismic acquisition, seismic reservoir imaging, processing and interpretation.

- REW evaluates reservoirs in operated and cased wells, does the well perforation and the exploitation. Wireline provides borehole imaging, borehole seismic, cased-hole formation, cement and casing-corrosion evaluation, sidewall coring and fluid sampling, open hole formation evaluation, perforating, pipe recovery, production logging.

- D&M provides different drilling services such as directional drilling, measurement while drilling and logging while drilling.

- WS deals with well cementing, core tubing drilling and well stimulation.

- WCP provides engineering solutions to increase oil recovery. The зёглсеэ are the following: artificial lift systems, drillstem testing, reservoir monitoring and control, sand-control hardware, slickline operations, subsea well control, subsurface safety systems

- IPM provides the best management of oil and gas projects. IPM can maximize your production rates and recovery factors, increasing your return on investment. It deals with facilities operation and maintenance, production services and engineering, project management, multipurpose service vessels, reservoir evaluation and optimization, well construction and intervention.

Schlumberger is well-known for its research centers which develop new technologies.

Schlumberger is also famous for its training system.

1. When was Schlumberger founded?
2. What did two brothers in rent?
3. When did Schlumberger become a full provider of technology services?
4. What did Schlumberger form?
5. How many business segments are there in the company?
6. Is Schlumberger famous for its training system?

7.

- **Match the English and Russian equivalents:**

Oil well
Deposit
Detection
Provider
Breakthrough
Processing
Origin
Petroleum
Oil recovery
Casing

Добыча нефти
Обсадные трубы
Залежь
Поставщик
Прорыв
Обработка
Обнаружение
Нефтяной
Происхождение
Нефтяная скважина

- **Insert missing words:**

1. Schlumberger was founded in … by two brothers.
2. Schlumberger had its origin in … technology.
3. Schlumberger is a well-known leader in the … industry.
4. The company consists of … .
5. Schlumberger is also famous for its … system.

- **Tell about the company «Schlumberger» using the vocabulary.**

Lesson 14. Lukoil - a model for the future.

Topical vocabulary.

Read, translate and learn words

7. To produce
Production
Subsidiary
Property
Deterioration
Stage

Total	Select
To operate	Pump
To explore	Perforation
Exploratory	Filter
Team	Support
Crude	Derrick
To recover	Breakthrough

- **Translate the text and answer the questions:**

Lukoil - a model for the future.

THE LUKOIL concern is a voluntary association of enterprises which retain their economic independence. This is the first structure to remove the monopoly on production, processing and sale of oil and petroleum Russian organizational-economic system of management.

The concern is made up of the Langepasneftegaz, Urayneftegaz and Kogalymneftegaz Petroleum Producing Associations, the Mazhey, Volgograd and Novoufimskiy Oil Refineries, the Permnefteorgsintez Association and the joint venture Urals.

The aim of bringing together in the concern these independent production associations, oil refineries and the system for sale of oil and petroleum products is to conduct unified economic policy that will promote stabilization and the integrated development of the enterprises within the concern. Under the transition to market relations, this aim will be achieved by a gradual transition to selffinancing status, and by reducing the shortfall of state capital investment targeted at filling state orders, and investment in the development of the concern’s industrial-economic complex.

In terms of the size of their contribution to the authorized capital, the main founders of Lukoil were the oil-producing enterprises. The factors influencing the oil-producing industry today include geological and engineering conditions of oil production which are objectively increasingly difficult, a fall in the profitability of wells, a shortfall in the provision of materials and equipment, an economy that does not reflect the true state of affairs in the industry and, finally, an enormous number of unresolved problems in the social sphere. The oil refining enterprises are in need of major overhaul and reconstruction, since their fixed assets are 60 to 80 per cent The state`s economic police in relation to the industry was derived from the subsidy model of management (based on an exceptionally low price for oil), with a strict orientation towards end results (achieving the planned target by whatever means),

regulation of enterprises' industrial-economic activity, systems for supply of materials and equipment such as state funding, limiting electricity supply, etc. This in its turn distorted the industry's real potential for developing production using its own resources. It is quite clear that the main obstacle to meeting the state order and further increasing production capacity, both in production and in refining, is the shortfall in state investment.

There is only one way out of the situation that has arisen - the state must alter radically its economic policy in the industry. First of all during the transition period, it must bring the price for oil up to the real price necessary to ensure profitable activity. It is very important to create legislation for the oil industry that will regulate not only oil production, but also oil consumption, setting a clear state policy on oil saving in all spheres of the economy, including increasing the efficiency of automotive and air transport, the petrochemical industry, fuel consumption, etc. State policy is now taking its first steps towards creating the economic and organizational conditions under which the level of economic independence of enterprises and associations will alter within the framework of centralised management; in particular, the level of oil production earmarked for state needs is defined as a percentage of actual production, the price for oil produced over and above state needs is defined as an agreed price, and sale of oil at agreed prices is permitted within the established quotas and licences, etc.

This allows oil-producing enterprises in the industry and Lukoil to reduce the shortfall in state investment targeted at increasing oil production, and to move towards self- financing.

Answer the following questions.

1. What is the Lukoil concern?
2. Who is the company president?
3. What companies is the concern made up?
3. What is the aim of this concern?
4. How will be this aim achieved?
5. What were the main founders of Lukoil?
6. What problems are there in oil-production?
7. What are the ways of solving of these problems?

- **Match the English and Russian equivalents:**

To produce	Целый
Property	Сырой
Total	Прорыв
To operate	Производить

Exploration	Собственность
Team	Исследование
Crude	Бригада
To recover	Поддержка
Support	Управлять
Breakthrough	Вернуть

Insert missing words:

1. The Lukoil concern is a … association of enterprises.
2. The concern is made up of ….
3. This aim will be achieved by ….
4. The oil refining enterprises are in need of ….
5. It is very important to create legislation for ….

- **Tell about the company Lukoil using the vocabulary.**

Lesson 15. Continental shelf

Topical vocabulary.

Read, translate and learn words

Initial	Wildcat
Hydrocarbon	Contour
Unfavorable	Complexity
To satisfy	Damage
Essential	Logging
Long-term	Stimulation
Effort	Casing
To establish	Capacity
Raw-material	Source
Average	Digital

- **Translate the text and answer the questions:**

7. Continental shelf.

Initial potential resources of hydrocarbons on the continental shelf of Russia (area: about 6 million square kilometres, or a fifth of the global continental shelf) are estimated at 70bn

tonnes (518bn bbls), or more than 20 per cent of world offshore reserves. However, the exploration maturity of these resources is only 2 per cent, first because practically all the resources are concentrated in the Arctic and Far East seas with unfavourable natural and climatic conditions, and second because large onshore oil reserves, being less laborious to develop, have so far satisfied the requirements of the national economy regarding oil and gas.

Domestic offshore oil production is generally regarded as an essential reserve in any long-term development programme for the industry. In the coming 10 to 15 years it will not play a decisive role for the industry, but an exceptionally high success rate and the effectiveness of geological exploration can be said to justify further efforts and investments in order to establish the basis for increased oil production in the future. Addition to hydrocarbon reserves is at the rate of 2 to 3 thousand tonnes per metre (5 to 7 thousand barrels per foot), which is greater by a factor of 10 than the average rate for other countries.

The raw-material base created in East Siberia today is able to support an annual production at a level of 7m tonnes (140,000 bbl/day) in the Arctic seas and 6m tonnes (120,000 bbl/day) off Sakhalin.

Answer the following questions.

How are initial potential resources of hydrocarbons on the continental shelf of Russia estimated?

Where are all the resources concentrated?

Where is domestic offshore oil production regarded?

What is addition to hydrocarbon reserves?

Where is the main target of oil and gas exploration?

How are high prospects of reserve growth in Russia associated?

Why has Russia a large potential for addition to its reserves?

What is one further way to ensure reserve growth in Russia?

- **Translate into English**

1. Первоначальные потенциальные ресурсы углеводородов на континентальном шельфе России оцениваются в 70 миллиардов тонн, или более 20% мировых оффшорных запасов.
2. Отечественная добыча оффшорной нефти обычно рассматривается как насущный резерв в любой долгосрочной программе развития промышленности.
3. Сырьевая база, созданная в Восточной Сибири, способна поддерживать ежегодную добычу на уровне 7 млн. тонн в морях северного Ледовитого океана и 6 млн. тонн у острова Сахалин.

- **Insert the missing words**:

1. High prospect of reserve growth in Russia are associated with … horizons.
2. Worldwide oil and gas reserves at … of more than 3 km are 11 and 21 percent.
3. Initial potential resources of hydrocarbons on the continental shelf of Russia are estimated at …
4. However, the exploration maturity of these resources is only …
5. Addition to hydrocarbon reserves is at … tones per meter.

- **Write the synopsis of the text.**

Lesson 16. Out from under.

Topical vocabulary.

Read, translate and learn words

To associate	To explore
Equipment	Support
Enterprise	Capable
To decline	To increase
Considerable	To cause
Market	To decide
To develop	Goal
To satisfy	Wealth

- **Translate the text and answer the questions:**

Out from under.

The oil and gas industry of the Russian Federation (this includes production of oil and extraction of associated gas) is a highly organized sector of the economy which itself has many sub-sectors, It explores for new oil and gas fields, drills wells, installs production equipment, extracts oil and gas, produces and maintains rigs and equipment, and creates infrastructure. The industry has set up and runs a single system of trunk pipelines. The regions are interconnected and this enables them to work together to explore for new fields located in distant, sparsely populated areas.

7. The sector has in effect ten sub - sectors. This deal with geophysical work, drilling, installation of production equipment extraction of oil and gas, the maintenance of rigs, transport, logistical support, and social and cultural support. This unified structure is based on

the oil and gas production associations which comprise production directorates, drilling directorates, logistical support bases and other enterprises and organizations related to oil and gas production.

Answer the following questions.

1. What is the oil and gas industry of Russia?
2. What does it explore?
3. Why can the regions work together?
4. How many sub-sectors has the sector?
5. What do these sub-sectors deal?
6. What is this unified structure based on?

- **Match the English and Russian equivalents**:

To decide	Увеличивать
To develop	Отклонять
To explore	Решать
Support	Развивать
Capable	Поддержка
To decline	Исследовать
To increase	Способный

- **Insert missing words:**

1. The oil and gas industry of Russian includes …. of oil and gas.
2. It explores for …. fields.
3. The industry has set up and runs a single system of ….. pipelines.
4. The sector has in effect ….. sub-sectors.
5. This unified structure is based on …. associations.

- **Write the synopsis of this text.**

Lesson 17. Questions for the exam

7 семестр

1. Лексическая тема «Основные особенности и навыки технического перевода»
2. Лексическая тема «История Земли»
7.
3. Лексическая тема «Бурение»
4. Лексическая тема «Бурение скважин»

5. Синопсис и аннотация
6. Инфинитивные обороты
7. Времена группы Indefinite страдательного залога
8. Согласование времен
9. Сослагательное и повелительное наклонение
10. Безличные предложения

8 семестр

1. Лексическая тема «Как получить работу»
2. Лексическая тема «Мировые нефтяные компании »
3. Лексическая тема «Составление и оформление документов»
4. Лексическая тема «Профессиональный этикет»
5. Эмфатические конструкции
6. Независимый причастный оборот
7. Времена группы Indefinite страдательного залога

Lesson 18. Tasks for the test

Ex. 1 Choose the connectors from B to join the sentences from A, and C.

A	B	C
1. Successful exploration is based on geological and geophysical information. 2. Most geologists believe oil to be of organic origin. 3. The chemical composition of petroleum is principally hydrocarbons. 4. Sedimentary basins are a prime aim for the oil hunters. 5. A cap rock is an impermeable layer. 7. 6. A successful wildcat is a	and although while so as but however then because	1. Only drilling can prove the presence of oil. 2. It originates from decomposition of marine animals and plants. 3. A few sulphur-, nitrogen-, and oxygen- containing compounds are also present. 4. Sedimentary rocks are porous and permeable to hold hydrocarbons. 5. It stops migration of oil in a reservoir.

discovery well. 7. To get oil and gas out of the ground is not easy. 8. The natural oil flow stops. 9. Pipelines are the main means of oil transportation. 10. Oil is a mixture of hydrocarbon.		6. An unsuccessful one is a dry hole. 7.Sophisticated techniques and equipment must be used 8. Artificial means of oil recovery are to be used. 9. Tankers, barges and others are of no less importance. 10. Refineries are to separate oil into various hydrocarbon fractions.

Ex. 2 Say it in one word.

1. Slow leaking through

					g	

2. To collect and keep for future use

		o		

3. Deficiency or condition of not having enough

	h						

4. Money received during a given period; interest from investment

			o		

5. A hole drilled for mineral oil

		l	

6. A material for producing heat or energy

			l

7. A layer of solid matter often hurried in the earth

d						

7.
8. To free from other substances

	e			

9. To make a hole in hard substances

			l	

10. To say what may happen

f							

11 .of little depth

s						

12. Any thing or place from which something comes or is obtained

s					

13. Wish by people ready to buy, use something

d					

14. To lay or put down

						t

7.