Министерство науки и высшего образования
Российской Федерации

Федеральное государственное бюджетное образовательное
учреждение высшего образования

«Воронежский государственный технический университет»

И. Ю. Лавриненко, В. В. Козлова

АНГЛИЙСКИЙ ЯЗЫК

для студентов специальности «Нефтегазовое дело»

Учебное пособие

Воронеж 2020

УДК 802.0:665 (075.4)
ББК 81. 432.1:33.361я74
Л135

Рецензенты:

кафедра теории и практики английского языка Московского государственного областного университета (зав. кафедрой канд. филол. наук, доцент Е. И. Абрамова);
С. Ю. Бурякова, канд. филол. наук, доцент кафедры французской филологии Воронежского государственного университета

Лавриненко, И. Ю.

Л135 **Английский язык для студентов специальности «Нефтегазовое дело»**: учебное пособие / И. Ю. Лавриненко, В. В. Козлова; ФГБОУ ВО «Воронежский государственный технический университет». – Воронеж, Изд-во ВГТУ, 2020. – 80 с.

ISBN 978-5-7731-0891-7

Пособие состоит из 10 уроков, в каждом из которых студентам предлагается комплекс упражнений и заданий на отработку механизмов автоматизированного использования специализированной терминологии на английском языке для осуществления общения в сфере нефтегазовой отрасли. Большое внимание уделяется формированию и совершенствованию навыков монологического высказывания в рамках пройденного материала, умению восприятия и понимания на слух аутентичной речи по темам пособия. Материал уроков посвящен таким областям нефтегазовой отрасли, как структура нефтегазовой промышленности, применение нефти и газа, их свойства, особенности процессов их добычи, производства и переработки и др.

Пособие предназначено для обучения английскому языку студентов 1-го курса направления 21.03.01 «Нефтегазовое дело».

Табл. 4. Библиогр.: 18 назв.

УДК 802.0:665 (075.4)
ББК 81. 432.1:33.361я74

Печатается по решению редакционно-издательского совета Воронежского государственного технического университета

ISBN 978-5-7731-0891-7

CONTENTS

ВВЕДЕНИЕ

На сегодняшний день нефтегазовое производство является одной из ведущих областей промышленности в мире. С ростом потребления нефе- и газопродуктов крупным добывающим компаниям требуется больше квалифицированных специалистов. К сфере нефтегазовой отрасли относятся много международных компаний, привлекающих для работы персонал из разных стран мира.

Становится очевидным, что с учетом современных темпов и условий развития нефтегазовой отрасли одним из ключевых требований к работающему в ней современному специалисту выступает не только владение профессиональными компетенциями, связанными с нефте- и газопроизводством, но и знание иностранного языка, в роли которого выступает английский язык, как язык международного общения.

Знание специализированной терминологии нефтегазовой отрасли и умение применять их в процессе общения со специалистами в профессиональной среде – это необходимый компонент образования для всех обучающихся, планирующих построить успешную карьеру в нефтегазовой отрасли.

Авторы данного пособия ставили своей задачей рассмотреть основные темы, связанные с нефтегазовой отраслью, с целью помочь обучающимся сформировать необходимые навыки и умения для осуществления общения на английском языке в профессиональной среде.

В качестве основного обучающего материала предлагаются аутентичные тексты по таким темам, как применение нефти и газа, их свойства, процесс нефтегазодобычи, строение нефтяной вышки, её жизненный цикл, специалисты нефтегазовой отрасли, вопросы экологической безопасности, правила безопасности на рабочем месте и др.

Весь корпус представленных текстов разделен на 10 уроков, каждый из которых содержит профессионально ориентированный аутентичный текст и комплекс упражнений к нему.

В начале каждого урока обучающимся предлагается несколько вопросов для обсуждения будущей темы, а также перечень вводных фраз, рассчитанных на помощь учащимся в построении монологического высказывания по заданной теме.

Для облегчения понимания содержания текста каждый урок пособия сопровождается терминологическим словарем с указанием перевода и транскрипции термина для его корректного произношения.

За каждым текстом следует комплекс упражнений, рассчитанных на знакомство с отдельными терминами нефтегазовой отрасли, их усвоение и запоминание, а также их употребление в речи, понимание содержания аутентичного текста. В каждом уроке предлагается творческое задание, выполнение которого способствует более глубокому проникновению в тематику урока, приводит к поиску нового материала, его самостоятельной обработке и презентации уча-

щимися собственного видения поставленной задачи в форме монологического высказывания.

Каждый урок включает видео задание, в процессе выполнения которого обучающиеся просматривают видеоматериал по тематике урока и выполняют упражнения к нему, позволяющие проконтролировать степень понимания видеоматериала, а также сформировать и усовершенствовать навыки языковой догадки.

В пособии представлено два блока упражнений на повторение пройденного материала: Revision 1 (повторение Lessons 1-5) и Revision 2 (повторение Lessons 6-10), в рамках которых проверяется степень усвоения учащимися терминологии, а также содержания тематик уроков.

В пособии содержатся четыре Приложения: список неправильных глаголов, перечень основных компонентов резюме на английском языке и упражнения на их запоминание, фразы, необходимые для написания аннотации к тексту на английском языке, а также глоссарий, в котором содержатся основные термины с транскрипцией и вариантами перевода.

Lesson 1

THE APPLICATION OF OIL AND GAS

Task 1. a) Look at the list of products made of oil. Match the product with the branch of industry where they are produced. Some products may go to more than one category.
b) Which of them you would never associate with oil production? Can you add some more products to the list?

Fuel, petroleum, kerosene, diesel oil, plastics, asphalt, black oil, toys, packaging, accessories, cosmetics, fabrics, fertilizers, detergents, paint, furniture, kitchenware, footwear, clothes, special kind of protein, pills (aspirin).

Products	Branch of Industry
	1. Fuel industry
	2. Space industry
	3. Chemical industry
	4. Building Materials industry
	5. Food industry
	6. Textile industry
	7. Porcelain industry
	8. Medical industry

https://www.rbc.ru/economics/27/11/2012/5704002e9a7947fcbd442f1b

Task 2. Answer the following questions. Use the following phrases: *As far as I know, In my opinion, To my mind, etc.*
1. What can you say about the role of oil and gas industry in the world?
2. What other industries is oil and gas industry connected with?

Task 3. Read the text below. Before reading look at the words below, they will help you understand the text:
1) sipping [ˈsɪpɪŋ] – просачивание, выход небольшого количества жидкости
2) waterproof [ˈwɔːtərpruːf] – водонепроницаемый
3) medicating [ˈmɛdɪkeɪttɪŋ] – лечение при помощи лекарств
4) petroleum [pəˈtroʊliəm] – нефть
5) increase [ɪnˈkriːs] – увеличить

6) oil patch [patʃ] - нефтяная промышленность
7) exploration [eksplə'reɪʃn] – исследование, изыскание
8) extraction [ɪk'strakʃ(ə)n] – добыча
9) refining [rɪ'faɪnɪŋ] – очистка
10) pipeline ['paɪplaɪn] – трубопровод
11) complex mixtures [mɪkstʃəz] - сложные соединения
12) fuel ['fju:əl] – топливо
13) share [ʃɛ:] – доля, часть
14) volatile ['vɒlətʌɪl] – изменчивый
15) upstream [ˌʌp'stri:m] – нефтедобывающий сектор
16) midstream [mɪd'stri:m] – сектор транспортировки и хранения нефтепродуктов
17) downstream [ˌdaʊn'stri:m] – нефтеперерабатывающий сектор
18) hydrocarbon [ˌhʌɪdrə(ʊ)'kɑ:b(ə)n] - углеводород

Oil and Gas Industry

The oil industry started off more than five thousand years ago. Oil sipping up from the ground was used to make the boats waterproof in the Middle East and also used as medicating as well as for painting different things.

A lot depends on the price of the oil. It has been observed that whenever the oil prices increase the price of various products also increases.

The oil industry accounts for a large amount of the consumption of energy.

The petroleum industry, also known as the oil industry or the oil patch, includes the global processes of exploration, extraction, refining, transporting (often by oil tankers and pipelines), and marketing of petroleum products.

Petroleum products are materials derived from crude oil (petroleum). They are complex mixtures. The majority of petroleum is converted to petroleum products, which includes several classes of fuels.

Refineries can produce different shares of petroleum products. The largest share of oil products is used in various grades of fuel oil and gasoline. These fuels include or can be blended to give gasoline, jet fuel, diesel fuel, heating oil, and heavier fuel oils. Heavier (less volatile) fractions can also be used to produce asphalt, tar, paraffin wax, lubricating and other heavy oils. Refineries also produce other chemicals, some of which are used in chemical processes to produce plastics and other useful materials.

The extreme monetary value of oil and its products has led to it being known as "black gold". The industry is usually divided into three major components: upstream, midstream, and downstream.

Natural gas is a non-renewable hydrocarbon used as a source of energy for heating, cooking, and electricity generation. It is also used as a fuel for vehicles and as a chemical feedstock in the manufacture of plastics and other commercially important organic chemicals.

Petroleum and gas is vital to many industries, and is necessary for the maintenance of industrial civilization in its current configuration, making it a critical concern for many nations.

Sources: Economy Watch, URL: https://www.economywatch.com/world-industries/oil (время обращения - 13.07.2020).
Wikipedia, URL: https://en.wikipedia.org/wiki/Petroleum_industry (время обращения - 13.07.2020).
Wikipedia, URL: https://en.wikipedia.org/wiki/Petroleum_product (время обращения - 13.07.2020).
Wikipedia, URL: https://en.wikipedia.org/wiki/Natural_gas (время обращения - 13.07.2020).

Task 4. Match the Russian and English equivalents:

1) oil prices	a) смола, деготь
2) consumption of energy	b) топливная нефть, жидкое топливо
3) petroleum products	c) пластмассы
4) fuel oil	d) печное топливо
5) jet fuel	e) цены на топливо
6) heating oil	f) топливо для реактивных двигателей
7) tar	g) нефтепродукты
8) electricity generation	h) смазочное масло
9) plastics	i) потребление энергии
10) lubricating oil	j) производство электричества

Task 5. Organize these words in to the groups:

Types of petroleum products	*Stages of oil extraction*	*Components of oil industry*

upstream, fuel oil, exploration, gasoline, jet fuel, midstream, marketing, downstream, extraction, refining, diesel fuel, transporting, heating oil.

Task 6. Fill in the gaps with the phrases below. There are two extra phrases that you don`t need to use:

electricity generation, downstream, vital to many industries, diesel fuel, organic chemicals, oil prices, hydrocarbon.

1. Petroleum industry is divided into three sectors: upstream, midstream, and … .
2. When … increase the price of various products also increases.
3. Natural gas is used as a source of … .
4. … are chemical compounds that contain carbon and its derivatives.
5. … is refined from crude oil at petroleum refineries and is used in machinery.

Task 7. Match the sentences as True or False. Prove your choice.

1. In old days oil was used not for heating but for other reasons.

2. When the oil prices increase, process for other products decrease.
3. Petroleum products include several classes of fuels.
4. Gasoline, jet fuel and diesel fuel are heavy oil.
5. Oil industry is divided into four major components.
6. Natural gas is used in chemical industry.

Task 8. Answer the following questions:
1. How old is oil industry?
2. How does oil effect global economy?
3. What processes are included in oil industry?
4. What are examples of fuels?
5. What are heavier fractions of fuel?
6. What are major components of oil industry?
7. How is oil used?
8. How is natural gas used?

Task 9. Put the prompts below in the order these ideas are mentioned in the text:
1. The influence of oil on the world economy
2. Use of natural gas
3. Interesting historical accounts about oil
4. Major components of oil industry
5. Application of petroleum
6. The importance of natural gas and oil
7. The processes in oil industry

Task 10. Speak about oil and gas industry.

PROJECT TIPS

Make the presentation about the most popular oil prospecting companies in the world.

Video Materials

a) You are going to watch the video about application of oil.
Before watching make sure you know the words below:
creation - создание
facility - приспособление
refinery – очистительная установка

gallon – галлон (мера объёма в английской системе мер, соответствующая от 3,79 до 4,55 литра)
liquefied - сжиженный
liquid – жидкость, жидкий
rubber - резина
tyre - шина
coating - покрытие
packaged food – фасованная пищевая продукция
canned food – консервированная пищевая продукция
consumption - потребление

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=57oP8GhY9zc

c) After watching (watching twice) answer the questions below:
1. What takes place in oil refineries?
2. In what products is crude oil used?
3. Where is petroleum used?

Lesson 2

WHAT IS OIL?

Task 1. Answer the following questions, using the phrases: *I am not quite sure, but…, As far as I can say, …., Probably, … , etc.*:
1. What comes to your mind when you hear the word 'oil'?
2. What associations do you have?
3. What are the main properties of oil?

Task 2. Match the halves of these sentences.

	a) petroleum or crude oil
1. Gas and oil are trapped at	b) marine organisms and organic matter
2. Oil and gas is formed from	c) reservoirs
3. Producing oil	d) causes environmental changes
	e) "oil windows"
	f) doesn`t cause environmental changes

Task 3. Read the text below and check your answers for Task 2.

The words below will help you understand the text:

1) compose [kəmˈpəʊz] - состоять
2) hydrogen [ˈhaɪdrədʒ(ə)n] - водород
3) carbon [ˈkɑːb(ə)n] - углерод
4) trace elements [treɪs] - микроэлементы
5) sulphur [ˈsəlfər] - сера
6) sedimentary rock [sedɪˈmentrɪ] – осадочная порода
7) undergo [ʌndəˈgəʊ] – испытывать, переносить
8) convert [kənˈvɜːt] - преобразовывать
9) range of temperatures [reɪn(d)ʒ] - пределы колебания температур;
10) well sampling [ˈsɑːmpəlɪŋ] – взятие пробы из скважины
11) reservoir [ˈrezəvwɑ] - залежи нефти
12) subsurface mapping [ˈsʌbsɜːfɪs] - подземное картирование
13) pump up [pʌmp] - выкачивать
14) recover [rɪˈkʌvə] - восстанавливать
15) refinery [rɪˈfaɪn(ə)rɪ] – нефтеперерабатывающий завод
16) challenge [ˈtʃælɪn(d)ʒ] - задача
17) land-disturbance [dɪˈstɜːb(ə)ns] - разрушение земель
18) vary [ˈveərɪ] – меняться
19) caprock [kæp rok]- перекрывающая порода
20) otherwise [ʌðəwaɪz] - иначе

What is Oil?

Oil, otherwise known as ‘petroleum or crude oil’, is a thick black liquid composed primarily of hydrogen and carbon. Oil also contains trace elements of sulphur, nitrogen and oxygen.

Today’s oil deposits were formed millions of years ago, when dead marine organisms sunk to the bottom of the ocean and were buried under deposits of sedimentary rock. Subject to intense heat and pressure, these organisms underwent a transformation in which they were converted to oil over millions of years. This process is similar to the process of natural gas formation, however oil forms under a limited range of temperatures while natural gas forms under a wider range ones. This limited range of temperatures is called the ‘oil window’.

Oil is found in specific underground rocks called reservoirs. The rocks have tiny spaces in them that allow them to hold water, natural gas and/or oil. Impermeable rocks called cap rocks surround the reservoir and trap oil in its place.

Through exploratory activities such as seismic, well sampling, and subsurface mapping, geoscientists locate sites for oil drilling.

Oil is extracted from the reservoir by drilling a well and pumping it up the well. Once recovered, oil is transported by pipeline, ship, rail, or truck to a refinery.

The production and use of oil also come with many social and environmental challenges. Producing oil causes land-disturbance sometimes in environmentally sensitive areas, although this varies greatly depending on the production techniques used.
Sources: Studentenergy, URL: https://www.studentenergy.org/topics/oil (время обращения - 18.07. 2020).

Task 4. Match English and Russian equivalents:

1) otherwise	a) сложная задача
2) sedimentary	b) промежутки, полости
3) pressure	c) грузовой автомобиль
4) spaces	d) осадочный
5) rail	e) трубопровод
6) challenge	f) иными словами, иначе
7) truck	g) железнодорожный путь
8) pipeline	h) давление

Task 5. Find the odd word out, explain your choice:
a) oil, fuel, petroleum, liquid;
b) well, rock, space, reservoir;
c) nitrogen, refinery, sulphur, oxygen.

Task 6. Fill in the gaps with the words below. There are three extra words you don`t need to use:
Deposits, pressure, heat, mapping, formation, underground, hold, seismic.
1. Under the influence of … and … marine organisms are converted to oil.
2. 1 barrel …s around 3, 85 liters of liquid.
3. Oil, gas, sulphur are … that are found in underwater layers of the earth.
4. The … of oil and gas depends on the temperature.
5. Geodesists locate the areas of … activities on the maps.

Task 7. Match the sentences as True or False. Prove your choice.
1. The influence of production of oil into the environment can`t be controlled.
2. Cap rocks help to hold oil in reservoirs.
3. Oil is composed of only hydrogen, sulphur and carbon.
4. Millions of years are needed for formation of oil and natural gas.
5. When the oil is refined it is transported into the recovery.

Task 8. Fill in the gaps with the information from the text:
1. Oil forms under a limited …. .
2. Tiny spaces in rocks allow to hold ….
3. Geoscientists locate sites for oil drilling through …. .
4. Oil is extracted from the reservoir by … .
5. Sometimes producing oil causes … .

Task 9. Answer the following questions:
1. What are the key components of oil?

2. How is oil formed?
3. What is the difference between oil formation and natural gas formation?
4. What is called “oil window”?
5. How is oil trapped in reservoirs?
6. What exploratory activities are there?
7. What happens when oil is extracted from the ground?
8. What influence does production and use of oil exert on the environment?

Task 10. Speak about oil.

PROJECT TIPS

Think of the most unusual/non-trivial ways of oil use. Present this information to the class.

Video Materials

a) You are going to watch the video about fossil fuels. Before watching make sure you know the words below:
ancient - древний
swamp – болото
decompose – разлагаться
organic matter – органическая материя
fern – папоротник
expose to heat – подвергаться воздействию тепла
energy density – плотность энергии
application – применение
variety – многообразие
environmental issues – вопросы окружающей среды
carbon dioxide – углекислый газ
renewable - обновляемый

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=zaXBVYr9Ij0

c) Watch the video again and fill in the gaps in the sentences below:
1. There are three major type of fossil fuels: …., … and …. .
2. Fossil fuels are considered …. resources because …
3. Fossil fuels are also the largest emissions of …. .

d) After watching (watching twice) answer the questions below:
1. How long ago was fossil fuel formed?

2. What factors influence the formation of fossil fuels?
3. What is the application of fossil fuels?

Lesson 3

WHAT IS NATURAL GAS?

Task 1. Answer the following questions, using the phrases: *I am not quite sure, but…, As far as I can say, …., Probably, … , etc.*:

1. Where do you use gas in your everyday life?
2. What qualities does gas have? (Choose from the options below):
dangerous, flammable, coloured, colourless, hard, ordorless, light.

Task 2. Match the sentences below as true or false. Read the text below and choose your answers:

1. Gas is more dangerous than fossil fuels.
2. Gas is found in rocks.
3. Oil and gas are transported together.

Task 3. Read the text below and check your answers for Task 2.
The words below will help you understand the text:

1) underground rocks [ˌʌndəˈgraʊnd]- подземные породы
2) pore [pɔ:] – пора, скважина
3) impermeable [ɪmˈpə:mɪəb(ə)l] - непроницаемый
4) caprock - перекрывающая порода
5) conventional natural gas [conventional ˈnatʃ(ə)r(ə)l] – обычный природный газ
6) shale gas [ʃeɪl]- сланцевый газ
7) tight gas [tʌɪt] - газ в плотных породах
8) sour gas [ˈsaʊə] - сернистый нефтяной газ
9) coalbed [kəʊlbed] – угольный пласт
10) gathering lines [ˈgað(ə)rɪŋ] - сборные трубопроводы
11) removal [rɪˈmu:v(ə)l] -удаление
12) feeder [ˈfi:də] – суфляр газа
13) rotten egg [ˈrɒt(ə)n] – тухлое яйцо
14) feedstock [ˈfi:dstɒk] – сырье для промышленности
15) associated gas [əˈsəʊʃieɪtɪd] — нефтяной газ, попутный газ

What is Natural Gas?

Natural gas is primarily methane (CH4) with smaller quantities of other hydrocarbons. It was formed millions of years ago when dead marine organisms sunk to the bottom of the ocean and were buried under deposits of sedimentary rock.

Natural gas is found in underground rocks called reservoirs. The rocks have tiny spaces in them (called pores) that allow them to hold water, natural gas and/or oil. The natural gas is trapped underground by impermeable rock (called caprock), and stays there until it is extracted.

Conventional natural gas can be extracted through drilling wells. Unconventional forms of natural gas like shale gas, tight gas, sour gas, coalbed methane and gas hydrates have specific extraction techniques. Natural gas can also be found in reservoirs with oil and is called associated gas.

There are two general types of natural gas, defined by their methane content, that reflect differences in the formation processes: biogenic gas (± 95% methane), or "dry" gas, which was formed by bacterial decay at shallow depth and thermogenic gas (<95% methane), or "wet" gas, which is a lower quality gas formed at high temperatures.

Natural gas is sent through small pipelines called gathering lines to processing plants. Processing involves four main processes to remove the various impurities: Oil and Condensate Removal, Water Removal, Separation of Natural Gas Liquids, Sulfur and Carbon Dioxide Removal. Gas is then transported through pipelines called feeders to distribution centers or stored.

Because natural gas is colorless, odorless, and tasteless, natural gas companies add mercaptan to natural gas to give it a distinct and unpleasant odor to help detect leaks in natural gas pipelines. Mercaptan is a harmless chemical that smells like rotten eggs.

When natural gas is burned, there are fewer greenhouse gas emissions and air pollutants when compared to other fossil fuels.

Natural gas is mostly used for domestic or industrial heating and to generate electricity. It can also be compressed and used to fuel vehicles and as a feedstock for fertilizers, hydrogen fuel cells and other chemical processes.

Source: Studentenergy, URL: https://www.studentenergy.org/topics/natural-gas (время обращения - 22.07.2020).

Source: U.S. Energy Information Administration, URL: https://www.eia.gov/energyexplained/natural-gas/ (время обращения – 20.07.2020).

Task 4. Match English and Russian equivalents:

1) smaller quantities	a) содержание метана
2) extraction technique	b) дизельный автомобиль
3) methane content	c) сборные трубопроводы
4) bacterial decay	d) атмосферные загрязнения
5) gathering line	e) меньшее количество
6) air pollutants	f) бактериальный распад

7) generate electricity	g) техника извлечения
8) fuel vehicle	h) вырабатывать электричество

Task 5. Find synonyms from the text to the following words:
Cars, applied, smell, pipeline, common, originally, sea, small, factories.

Task 6. Fill in the gaps with the following phrases and words. There are three words you don`t need to use.
Feeder, smell, gas liquid, removal, domestic, carbon dioxide, gas emissions, fossil fuels, processes.

1. The … of the various impurities is an important part of gas processing.
2. Sulfur and … are the two substances that present in natural gas in underground rocks.
3. … and coal are the most widespread sources of … heating.
4. Mercaptan is used to make gas … .
5. Pipelines or … transport gas to the distribution centers.

Task 7. Fill in the gaps in the sentences using the information from the text:
1. "Dry" gas was formed by … at shallow depth.
2. Natural gas was formed when marine organisms sunk under deposits of … .
3. The main characteristics of gas are the following: it is … , tasteless and odorless.

Task 8. Put the prompts below in the order they correspond to the contents of the text:
a) processing of natural gas
b) natural gas reservoirs.
c) properties of natural gas.
d) when and how natural gas is formed.
e) the use of natural gas.
f) conventional and unconventional natural gas extraction.
g) the influence of natural gas to the environment.
h) two types of natural gas.

Task 9. Answer the following questions:
1. When is the gas formed?
2. What does natural gas consist of?
3. Where is gas stored before it is extracted?
4. What are unconventional forms of natural gas?
5. What are the general types of natural gas?
6. What is called "processing"? What does it involve?
7. How is it possible to detect the links of natural gas?
8. How is natural gas used?

Task 10. Speak about natural gas.

PROJECT TIPS

Think of the safety technique that should be applied when using gas a) at plants; b) at home. Report to the class.

Video Materials

a) You are going to watch the Part 1 of the video about natural gas. Before watching make sure you know the words below:

crucial – важный
coal seams – угольный пласт
increase – увеличиваться
bound (past from bind) – связывать
non-invasive - непроникающий
data – данные
geological - геологический
depth – глубина
peat - торф

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=V8EHHW-3N5Y (timing: up to 3:18)

c) Watch the video again and fill in the gaps in the sentences below:

1. The layers of peat were transformed into … .
2. Before the extraction of gas we first undergo … phases.
3. The first step is to build a general picture of the … … of the land.

d) After watching (watching twice) answer the questions below:
1. How is natural gas used?
2. What are the two ways gas is stored underground?
3. What should be considered before gas extraction?

Lesson 4

OIL AND GAS EXTRACTION

Task 1. Answer the following questions, using the phrases: I believe, I suppose, As far as I can say….:

1. What stages do you think are presented in the process of oil and gas extraction?
2. How long do you think it takes?
3. What is the most difficult in oil and gas extraction process?

Task 2. Read the text below and check your answers for Task 1.

The words below will help you understand the text:

1) exploration [ɛksplə'reɪʃ(ə)n] – разведка, изыскательские работы
2) appraisal [ə'preɪz(ə)l] – экспертиза, оценка
3) chamber ['tʃeɪmbə] - скважина
4) measure ['mɛʒə] - измерять
5) viable ['vʌɪəb(ə)l] – жизнеспособный
6) probable reserve [rɪ'zɜ:vz] – вероятный запас
7) unprovable reserve [rɪ'zɜ:vz] – предположительный запас
8) economically feasible ['fi:zɪb(ə)l] – экономически оправданный
9) deem [di:m] – полагать, думать
10) tap – зд. добывать, качать
11) dig - копать
12) inject [ɪn'dʒɛkt] – вводить, впрыскивать
13) recovery [rɪ'kʌv(ə)ri] – восстановление
14) removal [rɪ'mu:v(ə)l] – удаление, устранение
15) abandonment [ə'bandənm(ə)nt] – оставление, заброшенность
16) offshore [ɒf'ʃɔ:(r)] – в открытом море
17) onshore ['ɒnʃɔ:] – прибрежный, береговой
18) vary ['veəri] – изменять, варьироваться

The Process of Oil and Gas Extraction

The process of getting oil and gas out of the ground begins with exploration and appraisal. Oil and gas are found under the ground in reservoirs that are sealed but connected to other chambers of oil and gas underground. When a reserve of oil is

found, the company will often produce a description of the quality of the oil and the estimated amount measured either by volume (barrels) or by weight (tons). The company may also classify some of the contents as proven reserves. Proven reserves are oil finds that are considered commercially viable—that is, the company is at least 90 percent certain that it would make money getting petroleum out of the ground and taking it to market. If oil is held in a probable reserve, then the company thinks there is at least a 50 percent chance of recovering the oil. Unprovable or possible reserves are those with a 10 percent to 50 percent probability of profitable extraction. The word resource is used to refer to all fields within a country, including those that may not be economically feasible to extract.

Once the reservoir is deemed commercially viable and the company has been granted legal authorization to tap it, the company will often begin digging test wells. These wells will give more information about viability and can indicate what type of equipment is best for production.

Production, the next phase after exploration and appraisal, is the process of getting the oil and gas out of the ground. This can occur in three different ways. Primary recovery efforts are when the oil will flow to the surface under its own pressure. When water or gas are injected into the reservoir to lift the oil, recovery is considered secondary. Tertiary, or enhanced, removal happens when chemicals are put into the well.

The production rates of wells vary greatly depending on the geology and technology used. Rates are usually measured in barrels per day. The lifecycle of a typical well will have a build-up period, peak, and then decline.

The final phase of an oil project is decommissioning and abandonment. This phase requires closing the reservoir, removing equipment, and restoring the environment to its previous state. The cost of extraction varies greatly depending on the type of oil and its location. Generally offshore oil is much more costly to extract than onshore oil.

Source: Natural Resource Governance Institute. NRGI Reader. April 2015, URL: https://resourcegovernance.org/sites/default/files/nrgi_Oil-and-Gas-Industry.pdf (время обращения - 23.07.2020).

Task 3. Match the English and Russian equivalents:

1) equipment	a) оценка
2) build-up	b) восстановление
3) location	c) накопление, наращивание
4) extraction	d) оборудование
5) vary	e) извлечение
6) appraisal	f) скважина
7) chamber	g) меняться
8) recovery	h) расположение

Task 4. Find the antonyms from the text to the words below:

Onshore, over, probable, finish, same, out, decline, start, opening, unusual.

Task 5. a) Make the derivatives out of the following stems:
Equip – … *(noun)*, **recover -** … *(noun)*, **abandon –** … *(noun)*, **explore –** … *(noun)*, **prove –** … *(noun)*, **produce –** … *(noun),* **describe –** … *(noun).*

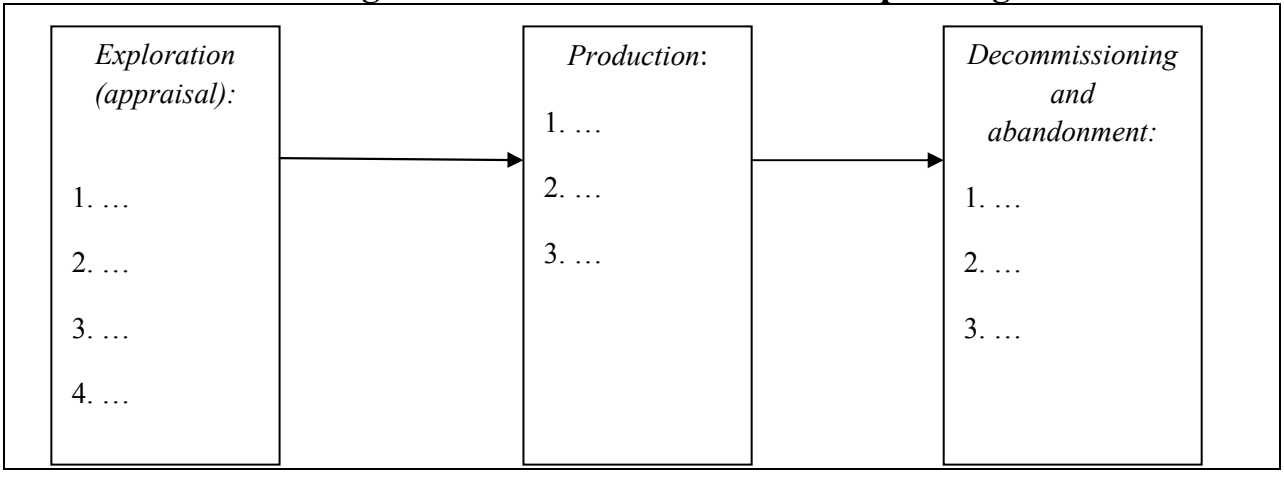
b) Fill in the gaps with the build-up derivatives:
1. … is the final phase of oil extraction.
2. The type of … used for oil extraction depends on the viability of the well.
3. … reserve is the one that has less than 50% chance of repeated profitable extraction.
4. There is a chance of …. if oil is held in probable reserve.
5. The … of oil and its quantity is produced when oil is found.
6. The phase of getting oil and gas out of the ground is called … .
7. The first stage of getting oil from the ground is … .

Task 6. Match the halves of the sentences so that they make sense.

1. Oil reservoirs are sealed	a) considered commercially viable
2. Proven reserves are	b) start when reservoir is commercially viable
3. Possible reserves are	c) but connected to other chambers
4. Digging test wells	d) oil flows under its own pressure
5. The recovery is primary when	e) less than 50 percent probability of profitable extraction

Task 7. Match the sentences below as True or False. Prove your choice.
1**.** If a company is 90 percent sure that the oil reservoir is profitable it is called probable reserve.
2. Test wells give more information about viability and the choice of equipment.
3. Production stage includes 5 possible stages.
4. The process of offshore extraction is more expensive than the onshore one.
5. The process of extraction starts with abandonment.

Task 8. Match the stages of oil extraction to the corresponding activities:



Oil and gas are found, equipment is removed, people inject oil or gas under the ground, environment is restored, oil and gas are sealed in reservoirs, reservoir is closed, reservoirs are classified, quality and amount of oil are estimated, people put chemicals in a well, oil is taken from the ground.

Task 9. Answer the following questions:
1. What are the main stages of oil production?
2. What happened when the oil is found under the ground?
3. What is the difference between proven reserves, probable reserves and possible reserves?
4. Why are test wells produces?
5. How does production occur?
6. What do production rates depend on?
7. What stages do the lifecycle of a typical well have?
8. What does abandonment stage include?

Task 10. Speak about the process of oil and gas extraction.

PROJECT TIPS

Think of the way the process of oil and gas extraction can be optimized. Think of technology and equipment that can be used to implement it. Report to the class.

Video Materials

a) You are going to watch the Part 2 of the video about natural gas. Before watching make sure you know the words below:
consideration – внимание, рассмотрение
land holder - землевладелец
agreement - соглашение
drill head – буровая головка
lubricating liquid – смазочная жидкость
surface casing – обсадная колонка
encounter – встречаться, сталкиваться

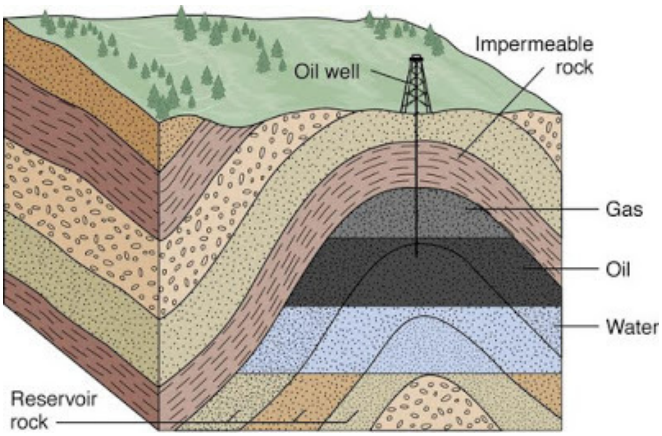
b) Follow the link and watch the video:
https://www.youtube.com/watch?v=V8EHHW-3N5Y (timing: from 3:18 to5: 58).

c) Watch the video again and fill in the gaps in the sentences below:
1. We start by … a surface hole.
2. When we drill deeper we encounter … levels of … .
3. The lubricating liquid contains … and … .

d) After watching (watching twice) answer the questions below:
1. What should be done before the agreement for oil extraction is reached?
2. What happens when the drill head is moved down?
3. Why is lubricating liquid used?
4. How is pressure controlled in the process of drilling?
5. Why is surface casing needed?
6. What is the role of cement in the process of oil extraction?
7. What techniques are used to extract gas?

Lesson 5

OIL AND GAS RESERVOIRS



Task 1. Answer the following questions using the expressions below:
I am not sure, but… . Is far as I know, … . In my opinion, … .
1. What layers does oil and gas reservoir have? How deep do you think the oil reservoir is?
2. How does it happen that oil and gas are kept separates from the other bulk of earth?
3. What else do you know about oil and gas reservoir construction?

Task 2. Read the text below and check your answers for Task 1.
The words below will help you understand the text:

1) accumulate [əˈkjuːmjʊleɪt] - накапливать
2) cavity [ˈkavɪti] – впадина, полость
3) conventional [kənˈvɛnʃ(ə)n(ə)l] – привычный, традиционный
4) kerogen - кероген
5) seal [siːl] - запечатывать
6) migrate [mʌɪˈgreɪt] - перемещаться
7) dense [dɛns] - плотный
8) density [ˈdɛnsɪti] - плотность
9) groundwater [ˈgraʊn(d)wɔːtə] – грунтовая вода
10) grain [greɪn] – гран, зерно
11) dissolve [dɪˈzɒlv] - растворять
12) sediment grain - осадочные породы
13) anticlines – антиклинали (выпуклый изгиб слоев горных пород)

14) cap rock – покрывающая порода

Oil and Gas Reservoir

An oil and gas reservoir is a formation of rock in which oil and natural gas has accumulated. The oil and gas are collected in small pore spaces of rock. They are trapped within the reservoir by overlying impermeable layers of rock. Typical reservoirs are not "pools" or "lakes" of oil beneath the surface, as there are no vast open cavities that contain oil. Oil and gas reservoirs can also be referred to as "hydrocarbon reservoirs".

The picture above represents an anticline oil and gas reservoir.

Conventional hydrocarbon reservoirs consist of three main parts: the source rock, the reservoir rock, and the cap rock (see the picture). The source rock is the rock that contains the kerogen that the oil and gas forms from. The reservoir rock is the porous, permeable rock layer that holds the oil and gas. The cap rock seals the top and sides so that the hydrocarbons are trapped in the reservoir, while water often seals the bottom.

For a reservoir to exist, oil and gas from the source rock must migrate into the reservoir rock, which takes millions of years. This migration occurs because oil and gas are less dense than water. This difference in density causes the oil and gas to rise towards the surface so that they are above groundwater with the gas settling above the oil because of its lighter densities.

Reservoir rocks need to be both porous and permeable. This means that there are small pockets of space within the rock where oil or gas can settle and small channels connecting these pockets to allow the oil or gas to flow out of this rock easily when it is drilled. These spaces between grains can develop as the formation of rock occurs or afterwards, usually as a result of groundwater passing through the rock and dissolving some of the cement between sediment grains.

The rock must be formed or deformed in such a way to create a trap for the oil and gas. Anticlines are the most common formation shape for this to occur. Anticlines are of a rough "A" shape, with the cap rock making the sides of the "A". The fossil fuels are accumulated in the peak of the "A" and the bottom is sealed (usually with water), preventing the oil and gas from seeping out and escaping.

Source: Energy Education, URL: https://energyeducation.ca/encyclopedia/Oil_and_gas_reservoir (время обращения - 26.07.2020).

Task 3. Match the English and Russian equivalents:

1) pore spaces	a) непроницаемый слой
2) trap	b) открытые полости
3) impermeable layer	c) меньшая плотность
4) open cavities	d) пористые пространства
5) lighter densityy	e) дно, нижняя часть
6) small channel	f) небольшой канал

7) bottom	g) выливаться
8) seeping out	h) запирать, закупоривать

Task 4. What chemical substances are mentioned in the text (there are 5 of them)?

Task 5. Fill in the gaps with the words below, there are three words you don`t need to use:

source rock, bottom, escape, cap rock, seal, density, anticline, migration.

1. … is an impermeable layer of rock that prevent the fluid to escape from cavity.
2. … is a special rock that contains a lot of karogen and hydrocarbons.
3. … is formed from many layers of rock forming arch-shaped fold.
4. Oil and gas have less … than water.
5. The … of oil and gas form the reservoir.

Task 6. Prove the following ideas using the information from the text:

1. There are different kinds of rocks in hydrocarbon reservoir.
2. The cap rock holds hydrocarbons in the reservoir.
3. The gas is located above oil in the reservoir.
4. Reservoir rock contains small pockets of space.
5. Water and anticlines help to keep oil and gas in the reservoir.

Task 7. Answer the following questions:

1. How is oil and gas trapped in reservoirs?
2. What are oil and gas formed from?
3. What is the function of each layer of rock that forms conventional hydrocarbon reservoirs?
4. How does the migration of oil and gas occur?
5. How are spaces between rocks formed?
6. How is the trap of oil and gas in the rock formed?
7. Why oil and gas don`t escape from the trap?

Task 8. Read the information about what is Summary and the discourse markets in the Application 4. Correct the mistakes in the sentences below:

1. The text calls “Types of wells”.
2. It speaks the problem of ecological safety of wells.
3. Firstly, it speak about the geophones used for detecting possible oil deposits.
4. Secondly, it is said cement casing protects digging head from damage.
5. Thirdly, there are some information about workforce employed in oil extraction.
6. Also it is said measurements of the location are important.
7. The article taken from encyclopedia.
8. The article may interest people study oil and gas professionally.

Task 9. Read the summary for the text below. All the discourse markers are in the wrong places (mixed up). Put them correctly.

1) ***The most interesting to read*** the idea of the construction of oil reservoir. 2) ***After that***, it speaks about oil field and its structure. 3) ***The text may be taken*** it goes on speaking about what full exploitation means. 4) ***Firstly,*** there is some information about the infrastructure needed for the oil field functioning. It is a large scale infrastructure with a lot of drilling rigs and pump jacks. 5) ***Then,*** about the famous Arabian and American companies – leaders in oil extraction. In the end the author speaks about three sectors of oil production and describes what each sector deal with. The information about the facilities that is necessary for oil drilling was 6) ***the text concerns***, because it gives an idea that oil drilling is a complicated process and needs professional preparation. 7) ***It is interesting to read*** from some professional site about oil industry.

Task 10. Read the text *The Crust* **and the examples of summaries a), b) c) below. Choose the most appropriate one, explain your choice.**

The Crust

The crust of the Earth is everything we can see and study directly. The thinnest layer of the Earth, the crust still measures about 40 km on average, ranging from 5–70 km (~3–44 miles) in depth. But at the scale of the planet, that's less than the skin of an apple.

There are two types of crust: continental and oceanic crust. Oceanic crust can be found at the bottom of the oceans or below the continental crust; it is generally harder and deeper, consisting of denser rocks like basalt, while continental crust contains granite-type rocks and sediments. The continental crust is thicker on land.

The crust is not one rigid thing, but it's split into several tectonic plates. These tectonic plates are not stationary, but are in relative motion one from another. Depending on the relationship and geologic setting, there are three types of tectonic plate boundaries: convergent (moving one toward the other), divergent (moving away from the other) and transformant (moving laterally).

Source: ZMEScience, URL: https://www.zmescience.com/other/science-abc/layers-earth-structure/ (время обращения – 27.07.2020).

a) The article called *The Crust*. There is about earth and crust. It divided into the parts. Firstly, about thickness of crust. Secondly, about two types of crust. Thirdly, about tectonic plates. The article interesting. It is from the Internet maybe.

b) The article is titled *The Crust*. It outlines the idea of the earth`s crust and its structure. The article is divided into three parts.

First of all the thickness of the crust is given and is compared to the parameters of the planet. Secondly, the types of crust are described: the continental and the oceanic

ones. Their location and properties are given and compared, their contents is described. Finally the information about structure of the crust is presented: the plates it consists of, their types (convergent, divergent and transformant) and the difference between the types is stated. The article may be of interest to geologists or those profession is connected with the earth.

c) The article name *The Crust*. It is about the crust. Firstly, The crust of the Earth is everything we can see and study directly. Secondly, there are two types of crust: continental and oceanic crust. Oceanic crust can be found at the bottom of the oceans or below the continental crust. The continental crust is thicker on land. After that, the crust is not one rigid thing, but it's split into several tectonic plates. These tectonic plates are not stationary, but are in relative motion one from another. The article interesting for me.

Task 11. Write the summary to the text: Oil and Gas Reservoir.

Task 12. Speak about Oil and Gas Reservoir.

PROJECT TIPS

Think of the process of oil structure in specific geological areas (rocky earth, very mountainous areas, seismically dangerous zones, sandy districts, etc.). How is the oil and gas structure there different? Report to the class.

Video Materials

a) You are going to watch the video about displacement of oil between rocks. Before watching make sure you know the words below:

solid - твердый
sandstone - песчаник
grains of sand - песчинки
water wet rock – водонасыщенная порода
repel - отталкивать
oil wet rock – смоченная нефтью горная порода
expand – расширять**,** увеличивать
pathway – дорога**,** проходящий путь
residual oil – остаточная нефть
trap – блокировать**,** собирать

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=ZRB9In0CRrA

c) After watching (watching twice) answer the questions below:

1. What is pore-scale displacement?
2. Can all oil be extracted from the pores? Why/Why not?
3. What type of displacement is used in most reservoirs? Why?

Revision 1

Task 1. Match the English and Russian terms:

1) oil patch	a) очистка
2) exploration	b) нефтедобывающий сектор
3) refining	c) нефтяная промышленность
4) upstream	d) нефтеперерабатывающий сектор
5) downstream	e) исследование, изыскание
6) hydrogen	f) морской
7) well sampling	g) угольный пласт
8) marine	h) суфляр газа
9) caprock	i) зд. добывать, качать
10) coalbed	j) водород
11) feeder	k) в открытом море
12) tap	l) взятие суровых образцов
13) offshore	m) растворять
14) sediment grain	n) запечатывать
15) seal	o) перекрывающая порода
16) dissolve	p) осадочные породы

Task 2. Choose the proper variant:

1. Petroleum products are derived from … .
a) crude oil b) asphalt c) tar
2. Natural gas is a … hydrocarbon used as a source of energy.
a) renewable b) non-renewable c) current
3. Oil is composed of … .
a) specific underground rocks b) heat and pressure
c) hydrogen and carbon
4. …are called reservoirs.
a) refinery elements b) specific underground rocks c) offshore drills
5. Natural gas is transmitted to refineries through …
a) wells b) small pipelines c) drill bit
6. Mercaptan is added to natural gas to give it a distinctive ….
a) odor) smell c)taste
7. … reserves are the ones from which you can get petroleum and take in to market.

a) Unprovable b) Possible c) Proven
8. In the process of oil extraction first comes … , then – ….
a) exploration, production b) production, exploration,
c) decommissioning, appraisal.
9. During extraction of oil firstly it flows under its own pressure, then … are injected into reservoir.
a) water, gas of chemicals b) drilling liquid and cement
c) natural gas and carbon dioxide
10. Kerogen is stored in …
a) cap rock) b) reservoir rock c) source rock
11. … is less dense than ….
a) rocks, oxygen b) oil, water c) water, oil
12. A space in rock where oil or gas is stores is a … .
a) trap b) lake c) pool

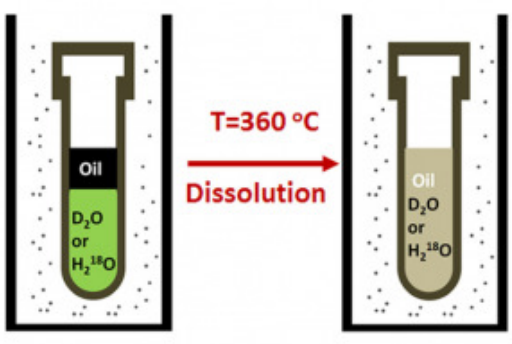
Task 3. Match the sentences below as True or False. Prove your choice.

1. Lighter fractions of oil are used for production of jet and diesel fuel and heavier crude oils.
2. Oil industry was originated in the era B.C.
3. Oil mostly contains hydrogen and carbon and some chemical admixtures.
4. Oil and gas are formed under various range of temperatures.
5. Oil extraction process is not harmful environmentally sensitive areas.
6. Natural gas and oil may be found in one reservoir.
7. Natural gas burning releases less harmful emissions than fossil fuels.
8. Quantity of oil is measures in cubic meters.
9. The reservoir rock seals the top of the reservoir.
10. The spaces inside the rock are usually formed by water which dissolves cement of the sediment.

Lesson 6

OIL WELL CORING

Task 1. Answer the following questions using the expressions below:
From my perspective…, From my point of view…, From my view point…, As far as I'm concerned…, Personally, I think….



1. What tools are used for drilling well?
2. What materials are extracted from the earth?

3. Is oil extraction always successful?

Task 2. Read and translate the following text paying attention to the words below:

1) complicated – сложный
2) complex – комплексный
3) dig - копать
4) pocket – нефтяной карман
5) oil well coring – взятие нефтепробы
6) sample – образец
7) core bit - колонковое долото
8) core barrel - цилиндр для захвата грунта при алмазном бурении
9) core catcher - кернорватель
10) undertake – происходить, осуществлять
11) tough – твердый, жесткий
12) diamond cutting device – алмазный бор
13) grip - захватывать
14) break away – откалываться
15) sidewall coring - отбор керна боковым грунтоносом
16) firing - выстреливание
17) steel cable – стальной кабель
18) makeup – состав, структура
19) foreign matter- инородный материал
20) estimate – оценивать

Oil Well Coring

Locating and drilling into oil and gas reservoirs can be a very complicated and dangerous procedure. And as mankind continues to use oil and gas, deeper and more complex wells must be dug to find more pockets of fossil fuels. Oil well coring is a procedure that provides invaluable information to drilling teams and oil and gas companies during the well drilling process.

Oil well coring is a procedure that is meant to remove a small amount of rock sample from within the oil well. This entails using a core bit to drill and remove a cylindrical sample of the rock. The core bit is used with a core barrel and core catcher to drill out a sample that is then brought up to the surface with the core barrel. The core bit has a hole in its center so when the coring procedure is undertaken it produces a small piece of rock.

Because the rock is so tough, the core bit, or drag bit in some cases, uses a PDC* or natural diamond cutting device to cut with. When the cylindrical sample is cut out, it needs to be safely removed from the well. The core catcher device

grips the bottom of the rock core. Tension is then applied to the drill-string, and this causes the rock core sample to break away from the rock beneath it. By holding the core sample, the core catcher serves to prevent it from falling away and being lost.

A procedure that has similar goals to coring is sidewall coring. This process differs from standard coring because sidewall coring aims to remove core samples from a hole that has already been drilled. This requires firing a hollow bullet into the sidewall rock formation of the drilled hole to create a core sample. The sample is then removed from the drilled hole with a steel cable. This method is typically used in soft rock formations. The produced samples range in size from 0.75 inches in diameter to 0.75 to 4 inches in length.

Core drilling is used to assess the productivity of oil well drilling. The coring procedure provides valuable information about the makeup of the rock being drilled. Oil well coring is also used during the exploration for oil and gas reservoirs. Obtained core samples hold valuable information. These samples are carefully washed to remove all foreign matter, and then analyzed and labeled. This gives a drilling team information about the depth at which certain rock formations occur at a specific drill hole. Also, oil and gas levels can be estimated based on coring samples.

PDC* - Polycrystalline Diamond Bits

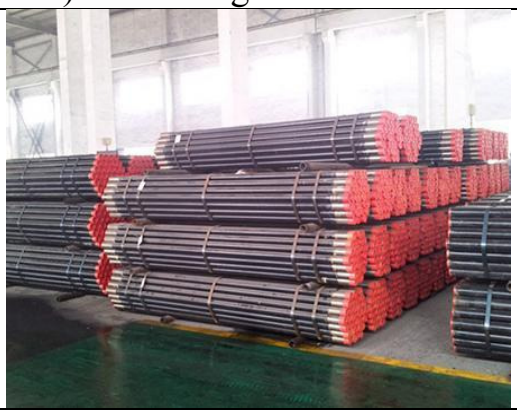
Source: Sciencing, URL: https://sciencing.com/info-7872027-oil-well-coring.html (время обращения - 10.05.20).

Task 3. Match English and Russian equivalents:

1) gas reservoirs	a) жесткий
2) mankind	b) ископаемое топливо
3) tough	c) залежи газа
4) fossil fuels	d) проба нефти
5) oil coring	e) люди, человечество
6) core catcher	f) кернорватель
7) drill-string	g) бурильная колонна, шлангокабель

Task 4. Guess what picture shows:

1) core barrel 2) core catcher 3) drill-string


A) ….. **B)…** **C) …**

Task 5. Fill in the gaps with the following words. There are three words that you don`t need to use:
Dig, grip, pockets, drilling, sample, rock, drag bit

1. In on-shore zones … of wells is not so complicated as on off-shore platforms.
2. Fishtail …. Is used to make holes in soft and friable ground (рыхлый грунт).
3. The pores in … serve as reservoirs for accumulation of oil and gas.
4. Oil and gas is accumulated in special reservoirs, spaces that are called … for fossil fuels.
5. The function of a core catcher is to … the part of special substance for analysis.

Task 6. Match the sentences as True or False:

1. Oil well coring provides important information to drilling teams.
2. Oil well coring is aimed at removing a big sample of rock.
3. The core bit has a hole inside.
4. The core catcher device grips the top of the rock core.
5. Coring and sidewall coring are the same processes.

Task 7. Answer the following questions:

1. Why mankind needs to dig deeper and more complex wells?
2. What is oil well coring?
3. What is the function of core bit?
4. What causes the rock core sample to break away from the rock?
5. What is so special about sidewall coring?
6. What happens to core samples obtained from the ground?
7. What information do core samples provide?

Task 8. Speak about Oil Rig Coring.

PROJECT TIPS

Well coring is taking out the sample of rock before oil extraction. What is going on when gas extraction is taking place? Is the process similar? Report to the class.

Video Materials

a) You are going to watch the video about oil well coring. Before watching make sure you know the words below:

rotary coring system - системы роторного бурения
bring back – вынимать, доставать
reservoir rock – пористая порода
core head – керновое буровое долото
core barrel – цилиндр для захвата грунта
log – разрез буровой скважины
inner – внутренний
outer – внешний
friction – трение
inner head – внутренняя головка
sideway coring – боковое взятие нефтепробы

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=7-a26cNmQPQ

c) After watching (watching several times) answer the questions below:
1. How many types of coring are there?
2. What is the difference between core head and drill bit?
3. What does core barrel consist of?
4. When is sideway coring used?
5. What is the function of inner core barrel?

Lesson 7

LIFE CYCLE OF OIL WELL

Task 1. Answer the following questions using the following expressions: *In my eyes …, I would say that …, My belief is that … , I have no doubt that ….*
1. What is a life cycle of a well? How many stages does it consist of?
2. If the oil well is inactive, why is it needed?

Task 2. Read the text below and check your answers for Task 1. The words below will help you understand the text:

1) facilities – приспособление, оборудование
2) exploration - исследование, разведка
3) abandoned - заброшенный
4) abandon - покидать
5) reclamation - восстановление
6) reclaimed - восстановленный
7) suspended well – законсервированная скважина
8) life span – жизненный цикл
9) orphaned - потерянный
10) orphan well - оставленная, но не заглушённая скважина
11) secure [sɪˈkjʊə] – сохранять, обезопасить
12) plug – заглушать, закупоривать
13) wellhead – устье скважины
14) remediate – исправлять, восстанавливать
15) reclaim - восстанавливать
16) requirement - требование
17) licensee - лицензиат
18) site – строительная площадка

Life Cycle of Oil Well

Every company that explores for and develops oil and natural gas resources is financially responsible for safely managing wells and associated facilities. This includes all stages of a well's life cycle: exploration, development and operation, abandonment and reclamation.

The average life span of an oil or natural gas well is 20 to 30 years. However, new technologies are being developed to find new ways to extend the life span.

There are six main classifications within the life cycle of an oil or natural gas well. A well may be Active, Inactive, Suspended, Abandoned, Orphaned or Reclaimed.

An oil or natural gas well is considered active when it is producing oil or natural gas. The well is inactive when it has not produced oil or natural gas in 12 months. This is usually a temporary situation – production can be expected to re-start.

A suspended well is not producing and has been safely secured, but may produce in the future. An abandoned well is permanently shut down, plugged, wellhead removed, and considered safe and secure by regulators. Upon well abandonment, the site is remediated and reclaimed. Companies assess the presence of soil contamination, produce a report detailing how contamination will be mitigated, and confirm the site has been remediated in accordance with provincial requirements.

Inactive, suspended and abandoned wells are managed by the well owner (licensee), who is responsible for abandonment and reclamation costs. An orphan well has no identifiable owner and has been suspended for some time.

When an oil or natural gas well is no longer productive, the operating company is required to remove equipment and reclaim the site. Operators remove tubing, fill the wellbore and casing with concrete, cut the casing off well below the surface, weld a cap onto the top and cover it with soil, returning the landscape to its natural state.

Source: CAPP, URL: https://www.capp.ca/explore/life-cycle-of-a-well/#:~:text=Well%20Classifications,classification%20and%20ends%20after%20reclamation (время обращения – 29.07.2020).

EnergyHQ, URL: https://energyhq.com/2017/08/from-inception-through-completion-the-life-cycle-of-a-well/ (время обращения – 09.03.2020).

Task 3. Match the English and Russian equivalents:

1) suspended well	a) нефтепровод
2) orphan well	b) высушенный
3) reclaimed	c) строительная площадка
4) mitigate	d) законсервированная скважина
5) abandoned	e) загрязнение почвы
6) site	f) оставленная, но не заглушённая скважина
7) soil contamination	g) заброшенная скважина
8) tubing	h) смягчать, уменьшать

Task 4. Fill in the gaps with the words below. There are three words you don`t need to use.

assess, remove, cover, develop, remediate, manage, produce, remove

1. To … site means to do a complex geological work to find some natural resources.
2. After measurement of the location our company will … the report to the land owner.
3. After the reclamation of oil well the company need to … all the equipment and facilities from the site.
4. Specialists … how much the earth is contaminated after oil well development.
5. Sometimes it is difficult to … the damage caused to the environment after oil well extraction.

Task 5. Match the halves of the sentences so that they make sense:

1. Companies produce a report	a) are managed by the licensee
2. Operators remove	b) in accordance with provincial requirements
3. Abandoned wells	c) is producing oil or natural gas
4. Active well	d) remove tubing, fill the wellbore will concrete
5. Inactive well	e) is out of production for more than 12 months

Task 6 Match the sentences below as True or False:

1. The approaches to extend the life of oil well are changing.
2. When oil and natural gas well hasn`t produced these resources for more than a year, it is active.

3. Inactive well can become productive again.
4. Orphaned well is the well that has a definite owner.
5. When the process of oil production is finished, the original state of the site is restored.

Task 7. Explain in what context are these terms used:
a). Active, Inactive, Suspended, Abandoned, Orphaned or Reclaimed
b). Safely managing of well
c). Life span

Task 8. Continue the sentences below using the information from the text. The beginning letter will help you to find correct word:
1. Companies a… the presence of soil contamination and see how the damage can be m … .
2. Well owner is responsible for s… managing of wells.
3. There are six c… within the life cycle.
4. When oil well is no productive, wellbore is cased with c….
5. When site is shut down, it is called a… .

Task 9. Answer the following questions:
1. What are the main stages of a life cycle of a well?
2. How many classifications of an oil and gas wells are there? What are they?
3. What is the difference between suspended and abandoned well?
4. When the oil well is not productive, what is the function of the operating company?
5. What activities are necessary to do to make the former oil well ecologically safe?

Task 10. Speak about the Life Cycle of a Well.

PROJECT TIPS

Explore the situation in the modern oil exploration market and find the examples of the wells that are at the stages of exploration, development (operation) or abandonment (reclamation). Report to the class.

Video Materials

a) You are going to watch the video about drilling of oil. Before watching make sure you know the words below:
casing – установка обсадных труб
productive - продуктивный
sump - отстойник

screen – ширма, экран
environmentally acceptable - безвредный для окружающей среды
fresh water - пресная вода
depression - впадина

b) Follow the link and watch the video (start from 2.20):
https://www.youtube.com/watch?v=0SmSNRTU1Vw

c) After watching (watching several times) answer the questions below:
1. What layers are drilled during oil extraction?
2. What technological solution is used to prevent mixing of substances of each layer?
3. What are sumps?
4. What happened to Californians wells in 1950-th? How has the situation changed with them now?

Lesson 8

OIL DRILLING CREW

Task 1. Answer the following questions using the following expressions: *The point is that..., As far as I know..., I suppose..., I believe...*

1. How big do you think the oil drilling crew is?
2. What professions connected with oil drilling do you know?
3. What position in a crew do you find the most attractive? Why?

Task 2. Read the text below and check your answers for Task 1. The words below will help you understand the text:

1) personnel [pəːsəˈnɛl] – персонал
2) crew [kruː] – бригада
3) rig site – буровая установка
4) roustabout [ˈraʊstəbaʊt] – подсобный рабочий
5) roughneck [ˈrʌfnɛk] - подсобный рабочий
6) floor hand – рабочий, вручную присоединяющий (отсоединяющий) бурильную трубу
7) lead tong operator [liːd] – оператор свинцового соединительного ключа
8) motormen [ˈməʊtəman] – машинист
9) derrickmen – верховой рабочий

10) toolpusher – буровой мастер
11) rigsite – буровая установка
12) thread [θrɛd] - нить, струна
13) trench [trɛn(t)ʃ] - впадина
14) equipment [ɪˈkwɪpm(ə)nt] – оборудование
15) trip [trɪp] - преграждать
16) preventive maintenance – профилактическое обслуживание
17) minor [ˈmʌɪnə] - незначительный
18) safety harness [ˈhɑːnəs] – страховочный ремень
19) monkeyboard – площадка верхового рабочего
20) experience [ɪkˈspɪərɪəns] - опыт
21) rotary table [ˈrəʊt(ə)ri] – оборудование для роторного бурения, вращающаяся площадка
22) control room – диспетчерская, аппаратная
23) gauge [geɪdʒ] - индикатор
24) lever [ˈliːvə] – рычаг
25) rheostats – реостат
26) pneumatic [njuːˈmatɪk] – пневматический, воздушный
27) senior [ˈsiːnɪə] – старший
28) advisor [ædˈvaɪzə] – консультант

Oil Drilling Crew

Personnel who operate the drilling rig are called crew. The crew typically consists of roustabouts, roughnecks, floor hands, lead tong operators, motormen, derrickmen, driller and toolpusher. Since drilling rigs operate around the clock, there are at least two or three crews.

A roustabout is any unskilled manual laborer on the rigsite. His responsibilities are ranging from cleaning up location to cleaning threads to digging trenches to scraping and painting rig components. Although roustabouts typically work long hard days, this type of work can lead to more steady employment on a rig crew.

Roughneck is usually a young member of a crew. He typically works under the direction of the driller. He makes or breaks connections as drillpipe is tripped in or out of the hole. On most drilling rigs, roughnecks are also responsible for maintaining and repairing much of the equipment found on the drill floor and derrick.

A floor hand, or member of the drilling crew who works under the direction of the driller to make or break connections as drillpipe is tripped in or out of the hole. On most drilling rigs this work is usually done by roughnecks.

Lead tong operators control the equipment that threads sections of drill casing into the wellbore.

Motorman is the member of the rig crew responsible for maintenance of the engines. While all members of the rig crew help with major repairs, the motorman does routine preventive maintenance and minor repairs.

Derrickman gets his name from the fact that he works on a platform attached to the derrick or mast, typically 85 ft (26 m) above the rig floor, during trips. On small land drilling crews, the derrickman is second in rank to the driller. In a typical trip out of the hole (TOH), the derrickman wears a special safety harness that enables him to lean out from the work platform (called the monkeyboard) to reach the drillpipe in the center of the derrick or mast, throw a line around the pipe and pull it back into its storage location (the fingerboards) until it is time to run the pipe back into the well. In terms of skill, physical exertion and perceived danger, a derrickman has one of the most demanding jobs on the rig crew.

The driller is responsible for the efficient operation of the rig site as well as the safety of the crew and typically has many years of rig site experience. While the driller must know how to perform each of the jobs on the rig, his or her role is to supervise the work and control the major rig systems. The driller operates the pumps, drawworks, and rotary table via the drillers console-a control room of gauges, control levers, rheostats, and other pneumatic, hydraulic and electronic instrumentation. The driller also operates the draw works brake using a long-handled lever. Hence, the driller is sometimes referred to as the person who is "on the brake."

The toolpusher is usually a senior, experienced individual who has worked his way up through the ranks of the drilling crew positions. His job is largely administrative, including ensuring that the rig has sufficient materials, spare parts and skilled personnel to continue efficient operations. The toolpusher also serves as a trusted advisor to many personnel on the rigsite.

Source: Schlumberger, URL: https://www.glossary.oilfield.slb.com/en/Terms/d/drilling_crew.aspx (время обращения - 31.07.2020).

Task 3. Match the English and Russian equivalents:

1) drilling rig	a) ручной
2) manual	b) соединение
3) employment	c) ствол скважины
4) connection	d) буровая вышка
5) wellbore	e) физическое напряжение
6) maintenance	f) работа, занятость
7) physical exertion	g) безопасность
8) safety	h) обслуживание

Task 4. Fill in the gaps with the words below. There are three words that you don`t need to use.

Wellbore, skilled personnel, driller, rig site, safety, draw works, connection, responsible.

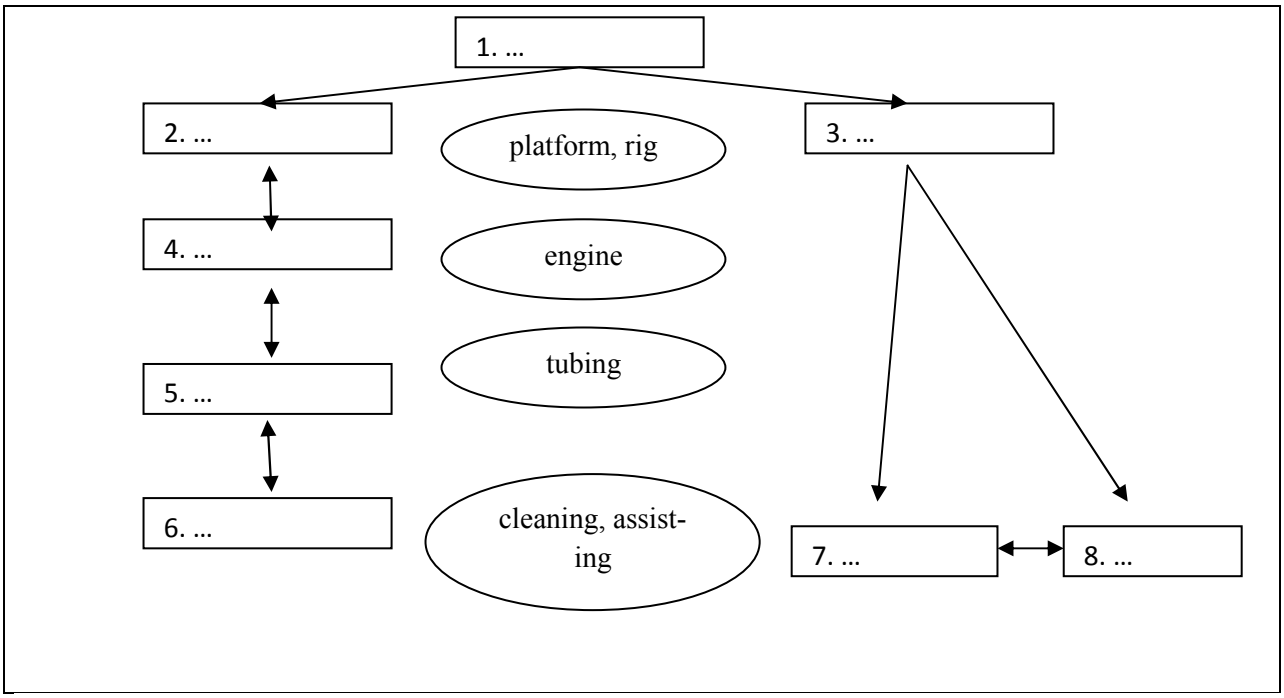
1. … is a long cylindrical hole in the ground where a system of tubes is inserted.

2. … is an equipment above the ground that looks like a pyramid consisting of tunes and holding equipment (casing and drilling tubes, engine, etc.).
3. Driller must keep the crew and equipment in … .
4. Motormen is also … for the work of engine.
5. Special personnel works on a rig to make or break …. of tubes.

Task 5. Match the positions of the crew members to their responsibilities:

1) roustabout	a) is connected with administrative aspect of work, he is the most serious member of the crew
2) toolpusher	b) Supervises the work on the rig (rotary table and the pumps)
3) driller	c) works on cleaning the location, threads and trenches on the rig.
4) derrickman	d) can lean out of the monkeyboard to reach the center of the drillpipe
5) lead tong operator	e) connects or disconnects the pipe under the supervision of a driller
6) floor hand	f) is responsible for everyday maintenance of the rig
7) motorman	g) controls the integrity of drill casing in the wellbore

Task 6. Put the names of the crew members in the position of their responsibilities and supervision: *lead tong operator, a floor hand, driller, roughneck, motorman, derrickman, toolpusher, roustabout:*



Task 7. Match the sentences below as True or False:
1. Drilling rigs operate 24 hours a day.

2. Derrickman is usually not very skilled team member.
3. Roughneck repairs equipment on the derrick.
4. Motormen deal with major repairs.
5. Toolpusher is responsible for all crew staff.

Task 8. Answer the following questions:

1. What specialists usually work in the drilling crew?
2. What is the difference between the responsibilities of roustabouts and roughnecks?
3. Who is responsible for connection or disconnection of drillpipe?
4. Who does minor and who does major repairs on the rig?
5. What are responsibilities of a derrickman?
6. What crew member is usually referred as the one “on the break”? Why?
7. What crew member is responsible for materials, equipment and personnel in general?

Task 9. Speak about the structure of a drilling crew.

PROJECT TIPS

Think of the position in the drilling crew that you find the most important or especially interesting. Think of the advantages or disadvantages of working in this position. Report to the class.

Video Materials

a) You are going to watch the video about drilling crew work. Before watching make sure you know the words below:

derrick operator – оператор буровой вышки
rotary drill up operator – оператор буровой установки
wellhead pump – насос скважины
service unit operator – оператор обслуживающего оборудования
stuck pump – засоры в трубах
shift – рабочая смена
height - высота
critical – важный, критичный
obstruction – препятствие, помеха
safety measures – меры безопасности
pressure - давление
density - плотность
conservation - сохранение

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=TcAIyaFdHzU

c) After watching (watching several times) answer the questions below:
1. What crew members provide liquid to run smoothly through the pipe?
2. What are the duties of a wellhead pumper?
3. What responsibilities of drill operator mentioned in the video?
4. What aspects are involved in the work of drill operator?
5. What workers deal with resolving troubles?
6. Who of the crew members must have a specific engineering education?
7. What members of the crew can also work in platforms in the ocean and on the building sites?

Lesson 9

SAFETY AT WORK

Task 1. Answer the following questions using the following expressions: In my opinion … As far as I know …, I'd suggest that…, Some people say that…, It is generally accepted that….

1. What dangers may occur when you work on an oil rig?
2. Why do you think accidents on oil and gas rigs happen?
3. What can be done to reduce the risks?

Task 2. Read the text below. The words below will help you understand it. Did you find some answers there from the task above?

1) hazardous job [ˈhazədəs] – опасные профессии
2) safety [ˈseɪfti] – безопасность
3) decrease [dɪˈkriːs] - уменьшение
4) CDC - Centers for Disease Control and Prevention - Федеральное агентство министерства здравоохранения США.
5) fall [fɔːl] – обвал
6) injury [ˈɪn(d)ʒ(ə)ri] – травма
7) maintain [meɪnˈteɪn] – поддерживать
8) keeping alert [ˈkiːpɪŋ əˈlə:t] – быть начеку, быть готовым
9) rules and regulations [ruːlz ænd ˌregjʊˈleɪʃənz] — правила и нормативы

10) walk the talk — поступать в соответствии с убеждениями; провозглашаемыми принципами
11) follow suit [ˈfɒləʊ suːt] - следовать требованиям
12) buy-in – зд. воспринимать всерьез, следовать правилу.
13) transferred [trænsˈfɜːd] – разъездной
14) mandatory orientation [|ˈmandət(ə)ri ˌɔːrɪənˈteɪʃ(ə)n] – обязательные правила
15) familiar [fəˈmɪlɪə] – знакомый, известный
16) superior [|suːˈpɪərɪə] – зд. управляющий
17) training [ˈtreɪnɪŋ] – обучение
18) PPE - personal protective equipment - индивидуальные средства защиты
19) hard hat [hæt] – защитная каска
20) steel-toed boots [stiːl təʊt] - сапоги со стальным носком
21) fire resistant [rɪˈzɪstənt] – огнестойкий
22) rule of thumb [θʌm] – правило, проверенное практикой
23) facilitate [fəˈsɪlɪteɪt] - способствовать, содействовать
24) camaraderie [|ˌkamәˈrɑːd(ə)ri] – дух товарищества
25) struck-by [strʌk bai] – мешающие на пути
26) signage [ˈ saɪnɪʤ] - вывеска, указатель
27) combat [ˈkɒmbat] – победить
28) conduct maintenance [kənˈdʌkt ˈmeɪnt(ə)nəns] – проводить техническое обслуживание
29) premature failure [ˈprɛmətʃə ˈfeɪljə] – преждевременная поломка
30) be pro-active [prəʊæktɪv] – занимать активную позицию, действовать на опережение.

Safety First, Job Second

Working on an offshore oil rig is a hazardous job even under the best conditions. That's why smart companies put such a strong emphasis on safety. Thanks to a growing "safety first, job second" culture, offshore oil rig fatality rates have decreased steadily over time, according to the CDC.

Still, whether it's the result of exposure to hazardous chemicals, falls, fires, explosions or contact with equipment, oil rig injuries and fatalities continue to occur. It's of utmost importance to consistently remind everyone on the rig — both employees and subcontractors — of maintaining a safe work environment, which includes following all safety rules and regulations and keeping alert to possible hazards.

Leadership who "walks the talk" is always helpful in setting a standard for safety. If management commits to safety, workers will follow suit. Workers won't buy-in, however, if they don't see policies and procedures being followed by their superiors.

All new and transferred rig workers should undergo a mandatory orientation, before being allowed on the rig floor. Such orientation helps employees and contractors become familiar with company and rig operational policies, expectations and

worksite rules, thus producing a safer work environment procedures being followed by their superiors.

Following orientation comes training. It includes instruction on the machinery and equipment in use as well as on safety procedures.

All sites require mandatory personal protective equipment (PPE), including safety glasses, hard hats, gloves, steel-toed boots, respirators and fire resistant clothing. A good rule of thumb: If you do not wear the right PPE, you are not allowed on site.

Safety training should always involve a human element. That means facilitating ways for workers to get to know one another. Doing so will build a sense of camaraderie, trust and mutual respect.

Keep floors, pathways and work areas clear of unnecessary items to prevent trips, falls and struck-by hazards. Also, clean up drilling fluids that may collect on the rig floor during pipe handling operations, and display signage that directs workers to emergency and safety equipment, to combat hazards quickly.

Conduct regular maintenance checks of machinery to prevent premature failure, which could present potential hazards, and then repair or replace damaged or inoperable parts and equipment quickly.

Don't wait for an injury or fatality to occur before you take action to prevent accidents; be pro-active instead.

Source: Keystone Energy Tools, URL: https://www.keystoneenergytools.com/safety-first-job-second-10-ways-keep-offshore-oil-rig-injury-fatality-free/#:~:text=Keep%20floors%2C%20pathways%20and%20work,equipment%2C%20to%20combat%20hazards%20quickly (время обращения – 04.08.2020).

Task 3. Match the English and Russian equivalents:

a) защитная одежда	1) expectation
b) предотвращать несчастные случаи	2) fire resistant clothing
c) субподрядчики	3) safety glasses
d) доверие	4) safety training
e) защитные очки	5) prevent accidents
f) обучение технике безопасности	6) subcontractors
g) ожидание	7) possible hazards
h) возможные угрозы	8) trust

Task 4. Find the odd word out in each line:

a) hard hats, bore holes, steel-toed boots, respirators;
b) falls, fires, explosions, hazards;
c) remind, pathways, maintain, require;
d) camaraderie, trust, fluids, mutual respect;
e) safety training, PPE, mandatory orientation, equipment, display signage.

Task 5. Fill in the gaps with the words in italics. There is one extra word that you don`t need to use:

conditions, hazardous chemicals, rig, rules and regulations, hazards, display signage, follow suit, facilitate

1. Working …should be safe for all levels of employment.
2. Oil … provides around … of oil every year.
3. To show safety routs in case of emergency the management must … on the walls of the edifices.
4. The superiors must … the safety training of their staff.
5. One of the most … hazards at work are fires, trips and falls.
6. Fracking uses much water and … that is harmful for the environment.
7. Camaraderie at work helps the staff …. of safety.

Task 6. Match the halves of the sentences so that they make sense:

1. Employees and subcontractors	a) help workers become familiar with worksite rules
2. Workers won`t follow the safety rules	b) knowing safety procedures in use
3. Mandatory orientations	c) if they don`t see that these are followed by their superiors.
4. Training means	d) and keep floors and pathways clear.
5. Clean up drilling fluids	e) must follow safety rules and regulations.

Task 7. Match the sentences as True or False. Prove your choice:

1. Working in the best conditions means that the work a safe.
2. Only employees must maintain safe work environment.
3. First come straining, then – orientation.
4. If you wear PPE you are allowed on a rig site.
5. Regular checks can present potential hazards.

Task 8. Answer the following questions:

1. Why do oil prospecting companies pay so much attention to safety?
2. What accidents may occur in offshore oil rig?
3. What do mandatory orientations provide?
4. What does training include?
5. What is PPE?
6. Why should workers on a building site know each other very well?
7. Why should you keep floor and pathway at workplace clear?
8. What is the meaning of signage at oil rigs?
9. What must be dome with inoperable equipment?
10. What does it mean to be pro-active?

Task 9. Look at these signs and match them with their meanings.

Таблица 1

Safety Signs

Picture of a sign	Meaning of a sign
a) 	**1. DANGER HAZADOURS CHEMICALS ON SITE**
b) 	**2. FOOT PROTECTION MUST BE WORN**
c) 	**3. CAUTION FORK LIFT TRUCKS**
d) 	**4. CAUTION MIND YOUR HEAD**
e) 	**5. SAFETY HELMETS MUST BE WORN IN THESE AREA**
f) 	**6. EAR PROTECTION ZONE EAR PROTECTION MUST BE WORN**
g) 	**7. EYE PROTECTION MUST BE WORN**

Окончание табл.1

h) 	**8. CAUTION MIND THE STEP**
i) 	**9. KEEP OUT**
j) 	**10. CAUTION RISK OF FIRE**

Task 10. a) Look at the examples of different instructions. Match the sentences according to the grammatical pattern.

1. Wear protective gloves and goggles when you work with flammable liquids.
2. Always wear protective gloves and goggles when you work with flammable liquids.
3. Protective gloves and goggles must be worn when you work with flammable liquids.

Pattern 1: Using Infinitive (e.g.: Wear uniform):

a)_____

Pattern 2: Use always/never to emphasize the rule (e.g. Always wear uniform):

b)_____

Pattern 3: Use modal verb (have to, must, can, should, etc.) to emphasize the importance of the rule (e.g. You must wear uniform):

c)_____

b) Below is the list of rules violations. Write your own instructions to avoid it. Look at the example below:

1. The pass ways on the rig are cluttered with used equipment.
2. The engine is not maintained regularly.
3. There are no standard overalls for workers.
4. The floors on the rig are slippery.
5. Some workers don`t wear hard hats.
6. Some of the crew uses the personal phone on the rig site.
7. Safety training drills are not regular.

Example: 1. *The pass ways on the rig are cluttered with used equipment. – Pass ways must always be clear of unnecessary objects.*

Source: Erich H. Glendinning, Norman Glendinning. Oxford English for Electrical and Mechanical Engineering , Oxford University Press, 1995, 189 p. p. 53.

PROJECT TIPS

Imagine that you are safety manager on an oil rig. Think of safety rules that must be applied on the rig and make a leaflet. Present it to the class.

Video Materials

a) You are going to watch the video about safety rules on a working place. Before watching make sure you know the words below:

occasion - случай
prohibited - запрещенный
light – зд. зажигалка
matches - спички
licensed area – лицензионный участок
long sleeve – с длинным рукавом
garbage – (American English) мусор
domain - территория
control room – диспетчерская, аппаратная
source of ignition – источник возгорания

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=CiaRNvJr6qc

c) After watching (watching several times) match the sentences below as True of False. Prove your choice.
1. You can carry personal mobile phone on the rig site.
2. Battery powered equipment are allowed on the rig site.
3. Signs show if PPE additional equipment should be worn.
4. Garbage must be collected in special containers.
5. You must keep the speed limit of 5 km/h on the domain.
6. All the accidents must be reported to the supervisor.

7. The safety rules and procedures must always be followed.

Lesson 10

OIL DRILLING AND THE ENVIRONMENT

Task 1. Answer the following questions using the following expressions: *It is thought that …, Personally, I think…, I'd say that… .*

1. What do you know about the influence of oil and gas prospecting on the environment? Think of water and rivers, air content, noise, pollution, people.
2. What do you think can reduce the influence of oil and gas industry on nature?
3. What do you know about alternative sources of energy?

Task 2. Read the text below. The words below will help you understand it. Did you find some answers there from the task above?

1) to fuel [tə ˈfjuːəl] – заправлять горючим
2) environment [ɪnˈvʌɪrənm(ə)nt] – окружающая среда
3) disturb [dɪˈstəːb] - беспокоить
4) harm [hɑːm] - вредить
5) mammal [ˈmam(ə)l] -млекопитающийся
6) hydraulic fracturing [hʌɪˈdrɔːlɪk ˈfræktʃərɪŋ] – гидравлическое дробление
7) rock strata [rɒk ˈstrɑːtə] - каменное напластование; породная толща
8) slimhole drilling rig – бурение из скважины малого диаметра
9) faulty [ˈfɔːlti] – имеющий недостатки
10) contaminate [kənˈtamɪneɪt] - загрязнять
11) spill [spɪl] – образование нефтяного пятна, пролив нефти
12) Rigs-to-Reefs program - программа превращения не эксплуатируемых нефтяных скважина в искусственные рифы.
13) topple [ˈtɒp(ə)l] - вырабатывать
14) recreational fishing – любительское рыболовство
15) opportunity - возможность
16) barnacle [ˈbɑːnək(ə)l] – балянус (морское животное)
17) leak [liːk] – утечка
18) sponge [spʌn(d)ʒ] – зоол. губка

The Influence of Oil and Gas Industry on the Environment

It is impossible to imagine our life nowadays without petroleum products. We use them to fuel airplanes, cars, and trucks; to heat homes; and to make products such as medicines and plastics. Although petroleum products make life easier, finding, producing, and moving crude oil may have negative effects on the environment.

Exploring and drilling for oil may disturb land and marine ecosystems. Seismic techniques used to explore for oil under the ocean floor may harm fish and marine mammals. Drilling an oil well on land often requires clearing an area of vegetation.

Hydraulic fracturing has some effects on the environment. Fracturing rock requires large amounts of water, and it uses potentially hazardous chemicals to release the oil from the rock strata. Faulty well construction or improper handling may result in leaks and spills of fracturing fluids.

However, technologies that significantly increase the efficiency of exploration and drilling activities also reduce effects on the environment. Satellites, global positioning systems, remote sensing devices, and 3-D and 4-D seismic technologies make it possible to discover oil reserves while drilling fewer exploratory wells. Mobile and smaller *slimhole* drilling rigs reduce the size of the area that drilling activities affect. The use of horizontal and directional drilling makes it possible for a single well to produce oil from a much larger area, which reduces the number of wells necessary to develop an oil resource.

Most oil spills are the result of accidents at oil wells or on the pipelines, ships, trains, and trucks that move oil from wells to refineries. Oil spills contaminate soil and water and may cause devastating explosions and fires. The federal government and industry are developing standards, regulations, and procedures to reduce the potential for accidents and spills and to clean up spills when they occur.

Oil wells are plugged when they become uneconomic, and the area around the well may be restored. Some old offshore oil rigs are tipped over and left on the sea floor in a Rigs-to-Reefs program. Within a year after a rig is toppled, barnacles, coral, sponges, clams, and other sea creatures cover the rig. These artificial reefs attract fish and other marine life, and they increase fish populations and recreational fishing and diving opportunities.

Alternatives to petroleum can include using other “cleaner” energy sources such as renewable energy, natural gas or biodiesel. Some of the alternatives have their strengths and limitations that might impact on the possibility of adopting them in the future.

Renewable energy alternatives also exist. These include solar energy, wind energy, geothermal and hydroelectricity as well as other sources. The production of renewable energy is projected to grow in nearly every region in the world.

Natural gas is also seen as a potential alternative to oil. Natural gas is much cleaner than oil in terms of emissions. However natural gas has its limitation in terms of mass production.

Source: EIA, U.S. Energy Information Administration, URL: https://www.eia.gov/energyexplained/oil-and-petroleum-products/oil-and-the-environment.php#:~:text=Exploring%20and%20drilling%20for%20oil,clearing%20an%20area%20of%20vegetation (время обращения – 03.08.2020).

Task 3. Match the English and Russian equivalents:

1) environment	a) морские животные
2) marine ecosystem	b) исследовательская деятельность
3) amounts of water	c) обновляемая энергия
4) exploration activities	d) грузовик
5) truck	e) морская экосистема
6) plugged wells	f) объемы воды
7) sea creatures	g) закрытые скважины
8) renewable energy	h) окружающая среда

Task 4. Fill in the gaps with the words in italics. There are three extra words that you don`t need to use:

sources, devastating explosion offshore oil rigs, drilling activities, potential alternative, fracturing, spills, mass production,

1. … can be caused when natural gas seeps to the drilling rig.
2. Scientific research is carries out worldwide to find alternative … of energy.
3. Natural gas is one of the … to oil products.
4. The discovery of oil in the Far East led to … of resin and celluloid.
5. All … must be regulated by the administration of the location of the rig.

Task 5. Match the environmental problem and solution. More than one solution is sometimes possible:

Problem	*Solution*
1. Land and marine ecosystems disturbance	a. Clean up spills
2. Fires, explosions	b. Use of satellites, global positioning systems, remote sensing devices, and 3-D and 4-D seismic technologies
3. Drilling many number of wells	c. Use renewable energy, natural gas or biodiesel
4. Oil spills	d. Develop standards and regulations
5. Vegetation and animals suffer from the dirt	e. Tipping over old offshore oil rigs

Task 6. Match the sentences as True or False. Prove your choice.

1. Upstream and downstream industries have negative effect on nature.
2. When oil is released from the earth much water and harmful substances are used.

3. Fewer exploratory rigs are better for the environment.
4. Drilling rigs of a bigger diameter reduce the size of the area under drilling.
5. Many oil spills are formed accidently.
6. Reef-to-Rigs program concerns on-shore oil rigs.
7. Alternative sources of energy can fully substitute oil and gas that contaminate the earth.
8. Natural gas is a good alternative to oil.

Task 7. Match the halves of the sentences:

1. Finding, producing and moving crude oil	a) much water and some hazardous chemicals
2. Fracturing rocks needs	b) reduce the number of exploratory wells.
3. Satellite, remote sense devices	c) have negative impact on the environment
4. Ships, trains, and trucks that	d) renewable energy, natural gas or biodiesel
5. Cleaner sources of energy are	e) move oil from wells to refineries

Task 8. Answer the following questions:
1. What are leaks and spills caused by?
2. What effects does oil industry have on the waters of our planet?
3. What technology is used to discover oil reservoirs?
4. Why is horizontal and vertical drilling used?
5. What is done that can reduce the number of oil spills and to clean up the area of oil contamination?
6. What happens with uneconomic oil wells?
7. Why are artificial rigs created?
8. What "cleaner" energy sources are there?
9. What renewable sources of energy are mentioned in the text?
10. What is cleaner: natural gas or oil?

Task 9. Speak about the impact of oil and gas industry on the environment.

PROJECT TIPS

Find some extra information about Rigs-to-Reefs program. Do you know any similar projects? Report to the class.

Video Materials

a) You are going to watch the video about fracking process and its influence on the environment. Before watching make sure you know the words below:

fracking [fracking] – фрекинг, гидроразрыв пласта
hydraulic fracturing [hʌɪˈdrɔːlɪk ˈfræktʃərɪŋ] - гидравлический разрыв пласта
extract [ˈekstrækt] - извлекать
complicated [ˈkɒmplɪkeɪtɪd] - сложный
profitable [ˈprɒfɪtəb(ə)l] -выгодный
shaft [ʃɑːft] - смена
high performance pumps [pəˈfɔːm(ə)ns] – насосы высокой производительности
penetrate [ˈpɛnɪtreɪt] - проникать
dissolve [dɪˈzɒlv] - растворять
exhausted [ɪgˈzɔːstɪd] -
chemical agents [ˈkɛmɪk(ə)l ˈeɪdʒənts] – отравляющие вещества
greenhouse gases [ˈgriːnhaʊs ˈgæsɪz] - парниковые газы

b) Follow the link and watch the video:
https://www.youtube.com/watch?v=Uti2niW2BRA

c) After watching (watching several times) match the sentences below as True of False. Prove your choice.
1. Hydraulic fracturing and fracking are the same things.
2. Fracking was started from 1950-s.
3. Usually 6 millions liters of water are used in the process of fracking.
4. Water used in fracking dissolves minerals and disactivates harmful bacteria.
5. After fracking water is cleaned in refineries.

d) Answer the questions below:
1. How long has the techniques of fracturing been applied?
2. Why is the popularity of fracturing been so popular recently?
3. How is fracking used?
4. What prevents cracks from closing?
5. What are the risks of fracking?
6. What is the composition of chemicals used in fracking?
7. What technology is better for environment: fracking or classical extraction technology?

Revision 2

Task 1. Match the English and Russian terms:

1) oil well coring	a) жизненный цикл
2) rock sample	b) кернорватель
3) core bit	c) взятие нефтепробы
4) core barrel	d) бурильная бригада
5) sidewall coring	e) восстановление
6) core catcher	f) загрязнение почвы
7) drilling team	g) колонковое долото
8) reclamation	h) утечка
9) life span	i) подсобный рабочий
10) wellhead	j) образец грунта
11) soil contamination	k) отбор керна боковым грунтоносом
12) roughneck	l) верховой рабочий
13) floor hand	m) цилиндр для захвата грунта
14) derrickman	n) опасные виды работ
15) leaks	o) рабочий, вручную присоединяющий буриль-ную установку
16) hazardous job	p) устье скважины

Task 2. Choose the proper variant:

1. During …. a small sample of rock is removed from the oil well.
a) breaking b) coring c) catching
2. To remove a single sample of rock … is used.
a) core bit b) sidewall c) soft rock
3. Sample of rock is washed to … .
a) prevent it from falling b) drill string
c) to remove foreign matter
4. … is the well that is used to produce oil.
a) Active well b) Suspended well c) Abandoned well
5. When oil is not productive, they weld … onto a top.
a) regulations b) soil c) a cap
6. … is responsible for cleaning the rig floor.
a) Rousabout b) Floor hand c) Lead tong operator
7. … is supervised by the driller.
a) rousabout b) roughneck c) lead tong operator
8. Improper handling of wells may result in … .
a) leaks and spills b) much water release c) gas production
9. Artificial reefs …. .

a) pollute the environment b) increase the population of fish c) are natural sources of energy
10. Solar and wind energy and hydroelectricity are ….
a) chemical sources of energy b) nonrenewable sources of energy
c) renewable sources of energy
11. The working conditions on rigs have become … over the time.
a) safer b) less safe c) more hazardous
12. All the workers on the oilrig must ….
a) undergo mandatory regulation b) keep pathways clean
c) be professional drillers

Task 3. Match the sentences below as True or False. Prove your choice.

1. During coring a small piece of rock is tken from the hole in a core bit.
2. Sidewell coring uses the same hall as the usual coring.
3. Today the lifespan of an oil well is less than it was in the past.
4. The production on one well takes place only once.
5. Motorman is responsible for small unspecified repairs on the rig.
6. The work of the derrickman is the most demanding in terms of skills and training.
7. The work of the roughneck is mostly administrative.
8. On-shore drilling needs cleaning up the area from trees and plants.
9. Horizontal and directional drilling increase the risks to harm the environment.
10. The sense of trust, friendship and responsibility helps to safe working environment.

Заключение

Основным результатом практического применения материалов учебного пособия «Английский язык для студентов специальности «Нефтегазовое дело» является использование в процессе обучения в техническом вузе наиболее актуальных методических разработок авторов, инновационных технологий обучения, прошедших успешную апробацию в ходе реализации обучающих программ дисциплины «Иностранный язык» для направления «Нефтегазовое дело».

В результате работы с учебным пособием у студентов 1-го курса специальности «Нефтегазовое дело», изучающих английский язык как иностранный, формируются профессиональные компетенции специалиста, необходимые для осуществления устного и письменного общения на английском языке в специализированной сфере.

Студенты знакомятся с профессиональной английской терминологией, связанной с ключевыми сферами работы нефтегазовой отрасли: свойствами нефти и газа, их практическим применением и производством. Обучающиеся учатся выстраивать профессиональную коммуникацию на английском языке в рамках тем, посвященных особенностям технологического процесса нефте- и газодобычи, функционированию нефтяных скважин, их структуре и жизненному циклу. В процессе работы с пособием обучающиеся формируют и совершенствуют навыки монологического и диалогического общения в ходе изучения таких тем, как состав бурильной бригады, профессиональные обязанности сотрудников, а также соблюдение правил безопасности на буровой вышке. Особое внимание уделяется рассмотрению аспектов влияния нефтегазовой промышленности на окружающую среду.

Учебное пособие содержит обширный тематический вокабуляр (терминологический тезаурус) в объеме около 200 терминов, а также базовый набор синтаксических структур коммуникативной направленности, необходимых и достаточных для осуществления устной и письменной коммуникации на иностранном языке в рамках профессионального межкультурного взаимодействия в сфере нефтегазового дела.

Пособие знакомит студентов с примерами современных аутентичных научно-технических текстов, а также актуального видеоматериала, связанного с областью нефте- и газодобычи.

По итогам комплексной работы в рамках представленных тематических разделов (уроков) обеспечивается интенсивный процесс активизации лексики (в т. ч. профессиональных терминов), коммуникативных синтаксических конструкций, а также равномерное развитие всех базовых составляющих коммуникативных компетенций: чтение, аудирование, говорение, письмо.

Таким образом, данное учебное пособие соответствует актуальным потребностям общества в компетентных специалистах нефтегазовой отрасли, способных осуществлять профессиональную коммуникацию в устной и письменной формах на английском языке и готовых к профессиональному взаимодействию и сотрудничеству на международном уровне.

List of Sources

1. Economy Watch, URL: https://www.economywatch.com/world-industries/oil (время обращения - 13.07.2020).
2. Wikipedia, URL: https://en.wikipedia.org/wiki/Petroleum_industry (время обращения - 13.07.2020).
3. Wikipedia, URL: https://en.wikipedia.org/wiki/Petroleum_product (время обращения - 13.07.2020).
4. Wikipedia, URL: https://en.wikipedia.org/wiki/Natural_gas (время обращения - 13.07.2020).
5. Studentenergy, URL: https://www.studentenergy.org/topics/oil (время обращения - 18.07. 2020).
6. Studentenergy, URL: https://www.studentenergy.org/topics/natural-gas (время обращения - 22.07.2020).
7. U.S. Energy Information Administration, URL: https://www.eia.gov/energyexplained/natural-gas/ (время обращения – 20.07.2020).
8. Natural Resource Governance Institute. NRGI Reader. April 2015, URL: https://resourcegovernance.org/sites/default/files/nrgi_Oil-and-Gas-Industry.pdf (время обращения - 23.07.2020).
9. Energy Education, URL: https://energyeducation.ca/encyclopedia/Oil_and_gas_reservoir (время обращения - 26.07.2020).
10. ZMEScience, URL: https://www.zmescience.com/other/science-abc/layers-earth-structure/ (время обращения – 27.07.2020).
11. Sciencing, URL: https://sciencing.com/info-7872027-oil-well-coring.html (время обращения - 10.05.20).
12. CAPP, URL: https://www.capp.ca/explore/life-cycle-of-a-well/#:~:text=Well%20Classifications,classification%20and%20ends%20after%20reclamation (время обращения – 29.07.2020).
13. EnergyHQ, URL: https://energyhq.com/2017/08/from-inception-through-completion-the-life-cycle-of-a-well/ (время обращения – 09.03.2020).
14. Schlumberger, URL: https://www.glossary.oilfield.slb.com/en/Terms/d/drilling_crew.aspx
15. Keystone Energy Tools, URL: https://www.keystoneenergytools.com/safety-first-job-second-10-ways-keep-offshore-oil-rig-injury-fatality-free/#:~:text=Keep%20floors%2C%20pathways%20and%20work,equipment%2C%20to%20combat%20hazards%20quickly (время обращения – 04.08.2020).
16. EIA, U.S. Energy Information Administration, URL: https://www.eia.gov/energyexplained/oil-and-petroleum-products/oil-and-the-environment.php#:~:text=Exploring%20and%20drilling%20for%20oil,clearing%20an%20area%20of%20vegetation (время обращения – 03.08.2020).

17. Begin English, URL: http://begin-english.ru/study/irregular-verbs/ (время обращения – 13.07.2020).
18. Erich H. Glendinning, Norman Glendinning. Oxford English for Electrical and Mechanical Engineering , Oxford University Press, 1995, 189 p. p. 53.
19. The Guardian, URL: https://www.theguardian.com/culture-professionals-network/culture-professionals-blog/2012/mar/15/cv-tips-first-arts-job (время обращения - 21.11.2020).

Sources of Video

1. Youtube, URL: https://www.youtube.com/watch?v=57oP8GhY9zc (время обращения - 13.07.2020).
2. Youtube, URL: https://www.youtube.com/watch?v=zaXBVYr9Ij0(время обращения - 18.07. 2020).
3. Youtube, URL: https://www.youtube.com/watch?v=V8EHHW-3N5Y (время обращения – 20.07.2020).
4. Youtube, URL: https://www.youtube.com/watch?v=V8EHHW-3N5Y (время обращения - 23.07.2020).
5. Youtube, URL: https://www.youtube.com/watch?v=ZRB9In0CRrA (время обращения - 26.07.2020).
6. Youtube, URL: https://www.youtube.com/watch?v=7-a26cNmQPQ (время обращения - 10.05.20).
7. Youtube, URL: https://www.youtube.com/watch?v=0SmSNRTU1Vw (время обращения – 09.03.2020).
8. Youtube, URL: https://www.youtube.com/watch?v=TcAIyaFdHzU (время обращения - 31.07.2020).
9. Youtube, URL: https://www.youtube.com/watch?v=CiaRNvJr6qc (время обращения – 04.08.2020).
10. Youtube, URL: https://www.youtube.com/watch?v=Uti2niW2BRA (время обращения – 03.08.2020).

Application 1

Таблица А 1.1

Table of Irregular Verbs

Base form	Past simple	Past participle	Перевод
A			
arise	arose	arisen	возникать, появляться
awake	awakened / awoke	awakened / awoken	будить, проснуться
B			
backslide	backslid	backslidden / backslid	отказываться от прежних убеждений
be	was, were	been	быть
bear	bore	born / borne	родить
beat	beat	beaten / beat	бить
become	became	become	становиться, делаться
begin	began	begun	начинать
bend	bent	bent	сгибать, гнуть
bet	bet / *betted*	bet / *betted*	держать пари
bind	bound	bound	связать
bite	bit	bitten	кусать
bleed	bled	bled	кровоточить
blow	blew	blown	дуть
break	broke	broken	ломать
breed	bred	bred	выращивать
bring	brought	brought	приносить
broadcast	broadcast / broadcasted	broadcast / broadcasted	распространять, разбрасывать
browbeat	browbeat	browbeaten / browbeat	запугивать
build	built	built	строить
burn	burned / burnt	burned / burnt	гореть, жечь
burst	burst	burst	взрываться, прорываться
bust	busted / bust	busted / bust	разжаловать
buy	bought	bought	покупать
C			
can	could	could	мочь, уметь
cast	cast	cast	бросить, кинуть, вышвырнуть
catch	caught	caught	ловить, хватать, успеть
choose	chose	chosen	выбирать

Продолжение табл. А.1.1

cling	clung	clung	цепляться, льнуть
clothe	clothed / clad	clothed / clad	одевать (кого-либо)
come	came	come	приходить
cost	cost	cost	стоить, обходиться (в какую-либо сумму)
creep	crept	crept	ползать
cut	cut	cut	резать, разрезать
D			
deal	dealt	dealt	иметь дело
dig	dug	dug	копать
dive	dove / dived	dived	нырять, погружаться
do	did	done	делать, выполнять
draw	drew	drawn	рисовать, чертить
dream	dreamed / dreamt	dreamed / dreamt	грезить, мечтать
drink	drank	drunk	пить
drive	drove	driven	управлять (авто)
dwell	dwelt / dwelled	dwelt / dwelled	обитать, находиться
E			
eat	ate	eaten	есть, кушать
F			
fall	fell	fallen	падать
feed	fed	fed	кормить
feel	felt	felt	чувствовать
fight	fought	fought	драться, сражаться, бороться
find	found	found	находить
fit	fit	fit	подходить по размеру
flee	fled	fled	убегать, спасаться
fling	flung	flung	бросаться, ринуться
fly	flew	flown	летать
forbid	forbade	forbidden	запрещать
forecast	forecast	forecast	предсказывать, предвосхищать
foresee	foresaw	foreseen	предвидеть
foretell	foretold	foretold	предсказывать, прогнозировать
forget	forgot	forgotten	забывать
forgive	forgave	forgiven	прощать
forsake	forsook	forsaken	покидать

Продолжение табл. А.1.1

freeze	froze	frozen	Замерзать
G			
get	got	gotten / *got*	получать, достигать
give	gave	given	давать
go	went	gone	идти, ехать
grind	ground	ground	молоть, толочь
grow	grew	grown	расти
H			
hang	hung / hanged	hung / hanged	вешать, развешивать
have, has	had	had	иметь
hear	heard	heard	слышать
hew	hewed	hewn / hewed	рубить
hide	hid	hidden	прятаться, скрываться
hit	hit	hit	ударять, поражать
hold	held	held	держать, удерживать, фиксировать
hurt	hurt	hurt	ранить, причинить боль
I			
inlay	inlaid	inlaid	вкладывать, вставлять, выстилать
input	input / inputted	input / inputted	входить
interweave	interwove	interwoven	воткать
K			
keep	kept	kept	держать, хранить
kneel	knelt / kneeled	knelt / kneeled	становиться на колени
knit	knitted / knit	knitted / knit	вязать
know	knew	known	знать, иметь представление (о чем-либо)
L			
lay	laid	laid	класть, положить
lead	led	led	вести, руководить, управлять
lean	leaned / leant	leaned / leant	опираться, прислоняться
leap	leaped / leapt	leaped / leapt	прыгать, скакать
learn	learnt / learned	learnt / learned	учить
leave	left	left	покидать, оставлять
lend	lent	lent	одалживать, давать взаймы
let	let	let	позволять, предполагать
lie	lay	lain	лежать
light	lit / lighted	lit / lighted	освещать

Продолжение табл. А.1.1

lose	lost	lost	Терять
M			
make	made	made	делать, производить,
may	might	might	мочь, иметь возможность
mean	meant	meant	значить, иметь ввиду
meet	met	met	встречать
miscast	miscast	miscast	неправильно распределять роли
misdeal	misdealt	misdealt	поступать неправильно
misdo	misdid	misdone	делать что-либо неправильно или небрежно
misgive	misgave	misgiven	внушать недоверия, опасения
mishear	misheard	misheard	ослышаться
mishit	mishit	mishit	промахнуться
mislay	mislaid	mislaid	класть не на место
mislead	misled	misled	ввести в заблуждение
misread	misread	misread	неправильно истолковывать
misspell	misspelled / misspelt	misspelled / misspelt	писать с ошибками
misspend	misspent	misspent	неразумно, зря тратить
mistake	mistook	mistaken	ошибаться
misunderstand	misunderstood	misunderstood	неправильно понимать
mow	mowed	mowed / mown	косить
O			
offset	offset	offset	возмещать, вознаграждать, компенсировать
outbid	outbid	outbid	перебивать цену
outdo	outdid	outdone	превосходить
outfight	outfought	outfought	побеждать в бою
outgrow	outgrew	outgrown	вырастать из
output	output / outputted	output / outputted	выходить
outrun	outran	outrun	перегонять, опережать

Продолжение табл. А.1.1

outsell	outsold	outsold	продавать лучше или дороже
outshine	outshone	outshone	затмевать
overbid	overbid	overbid	повелевать
overcome	overcame	overcome	компенсировать
overdo	overdid	overdone	пережари(ва)ть
overdraw	overdrew	overdrawn	Превышать
overeat	overate	overeaten	объедаться
overfly	overflew	overflown	перелетать
overhang	overhung	overhung	нависать
overhear	overheard	overheard	подслуш(ив)ать
overlay	overlaid	overlaid	покры(ва)ть
overpay	overpaid	overpaid	переплачивать
override	overrode	overridden	отменять, аннулировать
overrun	overran	overrun	переливаться через край
oversee	oversaw	overseen	надзирать за
overshoot	overshot	overshot	расстрелять
oversleep	overslept	overslept	проспать, заспаться
overtake	overtook	overtaken	догонять
overthrow	overthrew	overthrown	свергать
P			
partake	partook	partaken	принимать участие
pay	paid	paid	платить
plead	pleaded / pled	pleaded / pled	обращаться к суду
prepay	prepaid	prepaid	платить вперед
prove	proved	proven / proved	доказывать
put	put	put	класть, ставить, размещать
Q			
quit	quit / *quitted*	quit / *quitted*	выходить, покидать, оставлять
R			
read	read	read	читать
rebind	rebound	rebound	перевязывать
rebuild	rebuilt	rebuilt	перестроить
recast	recast	recast	изменять, перестраивать
redo	redid	redone	делать вновь, переделывать
rehear	reheard	reheard	слушать вторично
remake	remade	remade	переделывать
rend	rent	rent	раздирать

Продолжение табл. А.1.1

repay	repaid	repaid	отдавать долг
rerun	reran	rerun	выполнять повторно
resell	resold	resold	Перепродавать
reset	reset	reset	возвращать
resit	resat	resat	пересиживать
retake	retook	retaken	забирать
retell	retold	retold	пересказывать
rewrite	rewrote	rewritten	перезаписать
rid	rid	rid	избавлять
ride	rode	ridden	ездить верхом
ring	rang	rung	звонить
rise	rose	risen	подняться
run	ran	run	бегать
S			
saw	sawed	sawed / sawn	пилить
say	said	said	сказать, заявить
see	saw	seen	видеть
seek	sought	sought	искать
sell	sold	sold	продавать
send	sent	sent	посылать
set	set	set	ставить, устанавливать
sew	sewed	sewn / sewed	шить
shake	shook	shaken	трясти
shave	shaved	shaved / shaven	бриться
shear	sheared	sheared / shorn	стричь
shed	shed	shed	проливать
shine	shined / shone	shined / shone	светить, сиять, озарять
shoot	shot	shot	стрелять, давать побеги
show	showed	shown / showed	показывать
shrink	shrank / shrunk	shrunk	сокращаться, сжиматься
shut	shut	shut	закрывать, запирать, затворять
sing	sang	sung	петь
sink	sank / sunk	sunk	тонуть, погружаться (под воду)
sit	sat	sat	сидеть
slay	slew / slayed	slain / slayed	убивать
sleep	slept	slept	спать

Продолжение табл.А. 1.1

slide	slid	slid	Скользить
sling	slung	slung	бросать, швырять
slink	slunk	slunk	красться, идти крадучись
slit	slit	slit	разрезать, рвать в длину
smell	smelled / smelt	smelled / smelt	пахнуть, нюхать
sow	sowed	sown / sowed	Сеять
speak	spoke	spoken	говорить
speed	sped / speeded	sped / speeded	ускорять, спешить
spell	spelled / spelt	spelled / spelt	писать или читать по буквам
spend	spent	spent	тратить, расходовать
spill	spilled / spilt	spilled / spilt	проливать, разливать
spin	spun	spun	прясть
spit	spit / *spat*	spit / *spat*	плевать
split	split	split	расщеплять
spoil	spoiled / spoilt	spoiled / spoilt	портить
spread	spread	spread	распространиться
spring	sprang / sprung	sprung	вскочить, возникнуть
stand	stood	stood	стоять
steal	stole	stolen	воровать, красть
stick	stuck	stuck	уколоть, приклеить
sting	stung	stung	жалить
stink	stunk / stank	stunk	вонять
strew	strewed	strewn / strewed	усеять, устлать
stride	strode	stridden	шагать, наносить удар
strike	struck	struck	ударить, бить, бастовать
string	strung	strung	нанизать, натянуть
strive	strove / strived	striven / strived	стараться
sublet	sublet	sublet	передавать в субаренду
swear	swore	sworn	клясться, присягать
sweep	swept	swept	мести, подметать, сметать
swell	swelled	swollen / swelled	разбухать
swim	swam	swum	плавать, плыть
swing	swung	swung	качать, раскачивать, вертеть
T			
take	took	taken	брать, взять

Окончание табл. А. 1.1

teach	taught	taught	учить, обучать
tear	tore	torn	рвать
tell	told	told	рассказать
think	thought	thought	думать
throw	threw	thrown	бросить
thrust	thrust	thrust	колоть, пронзать
tread	trod	trodden / trod	ступать
U			
unbend	unbent	unbent	выпрямляться, разгибаться
underbid	underbid	underbid	снижать цену
undercut	undercut	undercut	сбивать цены
undergo	underwent	undergone	испытывать, переносить
underlie	underlay	underlain	лежать в основе
underpay	underpaid	underpaid	оплачивать слишком низко
undersell	undersold	undersold	продавать дешевле
understand	understood	understood	понимать, постигать
undertake	undertook	undertaken	предпринять
underwrite	underwrote	underwritten	подписываться
undo	undid	undone	уничтожать сделанное
unfreeze	unfroze	unfrozen	размораживать
unsay	unsaid	unsaid	брать назад свои слова
unwind	unwound	unwound	развертывать
uphold	upheld	upheld	поддерживать
upset	upset	upset	опрокинуться
W			
wake	woke / waked	woken / waked	просыпаться
waylay	waylaid	waylaid	подстерегать
wear	wore	worn	носить (одежду)
weave	wove / weaved	woven / weaved	ткать
wed	wed / wedded	wed / wedded	жениться, выдавать замуж
weep	wept	wept	плакать, рыдать
wet	wet / *wetted*	wet / *wetted*	мочить, увлажнять
win	won	won	победить, выиграть
wind	wound	wound	заводить (механизм)
withdraw	withdrew	withdrawn	взять назад, отозвать
withhold	withheld	withheld	воздерживаться, отказывать
wring	wrung	wrung	скрутить, сжимать
write	wrote	written	писать

Source: Begin English, URL: http://begin-english.ru/study/irregular-verbs/ (время обращения – 13.07.2020).

Application 2

CV: Useful Terms and Expressions

CV (Curriculum Vitae) – (лат. – “ход жизни”) краткое описание жизни и профессиональных навыков.

10 tips on writing a successful CV

1). Get the basics right. There is no right or wrong way to write a CV but there are some common sections you should cover. ...
2). Presentation is key. ...
3). Stick to no more than two pages of A4. ...
4). Understand the job description. ...
5). Tailor the CV to the role. ...
6). Making the most of skills. ...
7). Making the most of interests. ...
8). Making the most of experience.
9). Including references. References should be from someone who has employed you in the past and can vouch for your skills and experience. If you've never worked before you're OK to use a teacher or tutor as a referee. Try to include two if you can.
10). Keep your CV updated. It's crucial to review your CV on a regular basis and add any new skills or experience that's missing. For example, if you've just done some volunteering or worked on a new project, make sure they're on there – potential employers are always impressed with candidates who go the extra mile to boost their own skills and experience.

Source: The Guardian, URL: https://www.theguardian.com/culture-professionals-network/culture-professionals-blog/2012/mar/15/cv-tips-first-arts-job (время обращения - 21.11.2020).

Task 1. Look at the examples of CVs. In what way are they similar? What are the differences? What CV has the best outline in your opinion? Why? (Give your answer using the phrases: In my opinion …, As far as I can see… , As for me ….)

CV 1

 **Marjorie D. McGahey** Date of birth: April 4, 1987 Phone: 718-564-6972 Email: marjorie@jourrapide.com Address: 526 Longview Avenue, Brooklyn, NY 11226 **OBJECTIVE:** Takes advantages of sales skills and experience and understanding of tyres market to become professional Sales staff and bring a lot value to Customers.	
EDUCATION: foreign trade University Major: Economics and International Business JPA: 7, 34/10	Sep. 2005- June 2015
WORK EXPERIENCE: The Trading Company Sales executive -Manage a retail shop in NeyOm province -Attend type exhibitions, conferences and meetings with suppliers.	May 2011- Now
CULTURIMEX BRANCH Marketing Executive -Customer care and look for new customers -Do marketing promotions for the image of the company -Implement the signed contract	Apr. 2010- Apr. 2011
ACTIVITIES Volunteering New York Believe Volunteers Group Take care of and teach culture for the homeless children in Honoi 3d sponsor society Center. Cycling for environment (C4E): cycling every Sunday morning every week to propagandize people to protect our environment.	Jun. 2008- Mach 2009
REFERENCES Mr. C. Smith Vice Director of the Culturimex branch Adress 763 Elc Ld, Little, Tuscon, AX 85705 e-mail: smithC@eleworm.us Mobile: 631-678-5968	

Source: Google. com, URL: https://www.google.com/search?q=professional+cv+example&tbm=isch&hl=ru&sa=X&ved=2ahUKEwjDkpefloTtAhVEySoKHXiiDQ0QrNwCKAB6BAgBEFs&biw=1119&bih=629#imgrc=zWHOmIVD9bZyDM (время обращения – 15.11.2020).

CV 2

John Doe

Business Development Manager

Professional Business Developer with more than four years of experience in the business development process, involved in product testing, management and development of new business opportunities.

john.doe@gmail.com
202-555-0166
New York, USA
linkedin.com/in/john.doe
john.doe

Work experience

Business Development Manager
Air State Solutions
09/2014 – 06/2017

- Successfully managed $ 2-3 budget projects and successfully achieved the project scheduled goals.'
- Developed and implemented new marketing and sales plans and defined the strategy for the next 5 years.

Business development Assistant
Air State Solutions
08/2012-09/2014

- Increased the customer satisfaction rate by 25% by improving the customer service
- Planners, supervised and coordinated daily activity of 3 junior business analysis

Education

MSc in Economics and Business Administration
The University of Chicago
09/2008- 06/2010

SKILLS

Organizations

American Management Organization (2015-Present)
Association of Private Enterprise Education (2014-Present)
eBusiness Association (eBA) (2013-Present)

Honours and Awards

Jury Mwmber, Venture Cap Entrepreneurship Competition *(2016)*
Venture Cup USA
Sales Individual and Business Development Award *(2015)*
Air State Business Awards
Excellence in Customer Partnering Award
IES – Institute of Excellence in Sales

Source: Google.com, URL: https://www.google.com/search?q=professional+cv+examples&tbm=isch&ved=2ahUKEwjkx9P9loTtAhWXtCoKHXCVAcEQ2-cCegQIABAA&oq=professional+cv+examples&gs_lcp=CgNpbWcQAzIECAAQEzIECAAQEzIECAAQEzIECAAQEzIECAAQEzIECAAQEzIECAAQEzIECAAQE1CCiBFYgogRYPuLEWgAcAB4AIABXYgBXZIBATGYAQCgAQGqAQtnd3Mtd2l6LWltZ8ABAQ&sclient=img&ei=OO2wX-TLJJfpqgHwqoaIDA&bih=629&biw=1119&hl=ru#imgrc=DqWlESBUKgGg4M (время обращения 15.11.2020).

CV 3

Employment	
2011 - Present	IT Support Assistant ABC Electronics LTD.
2008-2011	IT Admin Dana Corporation
2006-2008	IT Assistant M&M Electronic Vehicles LTD.
Qualifications	
2004-2007	**BSc Psychology, University Colledge, Birmingham**
Skills	
	• Excellent Communication Skills
	• Excellent Management Skills
	• Great IT Skills
Hobbies and Interests	
	I enjoy skiing, hiking, football, going to the gym, eating out with my friends, bird-watching and going to church on Sundays.
References	
	Mr Evan **Tesco** Birmingham, West Midlands, B55 1 KE, United Kingdom Tel.: 078 4320 3833 e-Mail: evan.sanders82@hotmail.com

Source: Google, URL: https://www.google.com/search?q=bad+CV+examples&tbm=isch&ved=2ahUKEwjF-uDgk5LtAhVOxioKHTnkC7gQ2-cCegQIABAA&oq=bad+CV+examples&gs_lcp=CgNpbWcQAzIECAAQEzIECAAQEzIICAAQBxAeEBMyCAgAEAcQHhATUP7bAljphQNgkYkDaAJwAHgAgAFhiAGjCJIBAjEzmAEAoAEBqgELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=40C4X4X9Ac6MqwG5yK_ACw&bih=786&biw=1416#imgrc=E-yHzH-Hm21xyM (время обращения – 21.11.2020).

Task 2. Match the names of headings used in CVs with their definitions:
permanent address, referees, surname, employment history, hobbies and interest, personal details, skills, title, professional affiliation, marital status, qualifications, educational history, date of birth

a) basic facts about you - _____
b) practical abilities - _____
c) where you live most of the time - _____
d) what you do in your free time - _____
e) when you were born - _____
f) Mr., Mrs., Mss, Prof. - _____

g) details about your working life - _____
h) if you are married or single - _____
i) people who can tell us about your qualities and character - _____
j) proof that you have successfully completed a course - _____
k) schools and colleges - _____
l) family name - _____
m) place of your work/ membership

Source: Erich H. Glendinning, Norman Glendinning. Oxford English for Electrical and Mechanical Engineering , Oxford University Press, 1995, 189 p. p. 53.

Task 3. What information is included in CV in Russia? Is the information that is not usually asked?

Task 4. Look at the CV below and complete the gaps with the names of headings.

Таблица А.2.1

Пример резюме

Date of birth, sex, tel., qualifications, hobbies and interests, permanent address, last name, marital status, referees, education history, employment, skills, name, professional affiliation.

a) _____	Jaudy
b) _____	Mc Webber Photo
c) _____	10, Jalaram Society, P.O. Vapi Distr. Valsad, Gujarat State, 396191, India
d) _____	+91 8745095627
e) _____	male
f) _____	15/06/1971
g) _____	married, wife: Anny Webber-Jappati, 3 children
h) _____	Bachelor Degree in Oil and Gas International Institute, Bologna – 1995 Masters Degree in the University of Engineering, India - 1996 Masters Degree in the Hyderabad University, India – 1999

Окончание табл. А.2.1

i) _____	Oil India Ltd, Oil Rig Operator, 2003 - present BP Petrochemicals, engineer, 1999-2003; Your Group PLC, rig manager, 2003-2012;
j) _____	Professional Engineer of Gujarat State, India Member of International Association of Oil and Gas Producers, London, Great Britain
k) _____	Diploma of Bachelor, Drilling and Production Equipment; Diploma of Masters, Gas Installations Certificate of Hazard Assessment Analytic Certificate of Management if Organization
l) _____	English – native speaker French – Professional Level Driving License
m) _____	Playing guitar, gardening, travelling
n) _____	John Parajapur – Senior Manager at WORKINGLIMITS, London, tel. 5468495648 Violeta McDougal - Senior Lecturer at University of Engineering, India, tel.: 5869546984

Application 3

Writing Annotation/Summary

Summary/Annotation – a short outline of the main ideas of the text, it has simple and clear structure and is written with the use of discourse markers.

Аннотация – краткое изложение основных идей текста, имеет простую и четкую структуру с использованием определенных фраз (дискурсивных маркеров), отражающих структуру текста.

The List of Discourse Markers Used for the Summary:

Таблица А. 3.1

Фразы для резюме

Discourse Marker	*Example*
1. The title of the texts (article) is …- текст называется …	*The article is called* "Oil and Gas Extraction".
2. It *outlines*/*presents* the problem of … - В нем представлена проблема …	*It presents the problem of* the methods used for oil and gas extraction in onshore zones.
3. It addresses the issue of … - В нем затронут вопрос о …	*It addresses the issue of* using special equipment and methods of oil extraction.
4. Firstly, it speaks about … - Во первых, в нем говорится о …	*Firstly, it speaks about* the analyses needed for determination of the methods of extraction.
5. Firstly, it is said that… - Во первых, в нем говорится о …	*Firstly, it is said that* the analyses needed for determination of the methods of extraction.
6. Secondly, there is some information about … - Во вторых, представлена информация о …	*Secondly, there is some information about* the drilling head and its types.
7. Further on it concerns the idea of … - Далее рассматривается вопрос о …	*Further on it concerns the idea* of using special lubricators for making the process more effective.
8. Also, it is said that … - Также говорится о том, что …	*Also, it is said that* water and sand help to let out gas from the pores of the rock.
9. After that the author highlights the issue of … - Далее автор подчеркивает идею о том, что …	*After that the author highlights the issue of* the importance of cement casing in oil extraction.

Окончание табл. А. 3.1

10. The information about …. was the most *useful/interesting* for me, because…- Информация о … была наиболее *важной/интересной* для меня, потому что …	*The information about* three different ways of gas extraction *was the most interesting for me, because* these are details that every specialist must know.
11. The text (article) may be taken from … - Статья может быть взята из (источник) …	The text (article) may be taken from the professional site for the specialists in oil and gas sphere or for all interested in it.
12. The text (article) may be interesting for those who … - Текст (статья) может быть интересной для тех, кто … .	*The text (article) may be interesting for those who* study oil and gas as a student or those who undergo professional development courses in the sphere of oil extraction.

Application 4

Professional Thesaurus

Aa

abandon - покидать
abandonment [əˈbandənm(ə)nt] – оставление, заброшенность
abandoned - заброшенный
accumulate [əˈkjuːmjʊleɪt] - накапливать
advisor [ædˈvaɪzə] – консультант
anticlines – антиклинали (выпуклый изгиб слоев горных пород)
appraisal [əˈpreɪz(ə)l] – экспертиза, оценка
associated gas [əˈsəʊʃieɪtɪd] — нефтяной газ, попутный газ

Bb

barnacle [ˈbɑːnək(ə)l] – балянус (морское животное)
be pro-active [prəʊæktɪv] – занимать активную позицию, действовать на опережение.
break away – откалываться
buy-in – зд. воспринимать всерьез, следовать правилу.

Cc

camaraderie [ˌkamәˈrɑːd(ə)ri] – дух товарищества
cap rock – покрывающая порода
caprock - перекрывающая порода
carbon [ˈkɑːb(ə)n] - углерод
cavity [ˈkavɪti] – впадина, полость
CDC - Centers for Disease Control and Prevention - Федеральное агентство министерства здравоохранения США.
challenge [ˈtʃalɪn(d)ʒ] - сложная задача
chamber [ˈtʃeɪmbə] - скважина
coalbed [kəʊlbed] – угольный пласт
combat [ˈkɒmbat] – победить
complex – комплексный
complex mixtures [mɪkstʃəz] - сложные соединения
complicated – сложный
conduct maintenance [kənˈdʌkt ˈmeɪnt(ə)nəns] – проводить техническое обслуживание
contaminate [kənˈtamɪneɪt] - загрязнять
control room – диспетчерская, аппаратная

conventional [kənˈvɛnʃ(ə)n(ə)l] – привычный, традиционный
conventional natural gas [conventional ˈnatʃ(ə)r(ə)l] – обычный природный газ
core barrel - цилиндр для захвата грунта при алмазном бурении
core bit - колонковое долото
core catcher - кернорватель
crew [kru:] – бригада

Dd

decrease [dɪˈkri:s] - уменьшение
deem [di:m] – полагать, думать
dense [dɛns] - плотный
density [ˈdɛnsɪti] - плотность
derrickmen – верховой рабочий
diamond cutting device – алмазный бор
dig - копать
dissolve [dɪˈzɒlv] - растворять
disturb [dɪˈstə:b] - беспокоить
downstream [ˌdaʊnˈstri:m] – нефтеперерабатывающий сектор

Ee

economically feasible [ˈfi:zɪb(ə)l] – экономически оправданный
environment [ɪnˈvʌɪrənm(ə)nt] – окружающая среда
equipment [ɪˈkwɪpm(ə)nt] – оборудование
estimate – оценивать
experience [ɪkˈspɪərɪəns] - опыт
exploration - исследование, разведка
extraction [ɪkˈstrakʃ(ə)n] – добыча
facilitate [fəˈsɪlɪteɪt] - способствовать, содействовать
facilities – приспособление, оборудование
fall [fɔ:l] – обвал
familiar [fəˈmɪlɪə] – знакомый, известный
faulty [ˈfɔ:lti] – имеющий недостатки
feeder [ˈfi:də] – суфляр газа
feedstock [ˈfi:dstɒk] – сырье для промышленности
fire resistant [rɪˈzɪstənt] – огнестойкий
firing - выстреливание
floor hand – рабочий, вручную присоединяющий (отсоединяющий) бурильную трубу
follow suit [ˈfɒləʊ su:t] - следовать требованиям
foreign matter- инородный материал
fuel [ˈfju:əl] – топливо

Gg

gathering lines [ˈgað(ə)rɪŋ] - сборные трубопроводы
gauge [geɪdʒ] - индикатор
grain [greɪn] – гран, зерно
grip - захватывать
groundwater [ˈgraʊn(d)wɔːtə] – грунтовая вода

Hh

hard hat [hæt] – защитная каска
harm [hɑːm] - вредить
hazardous job [ˈhazədəs] – опасные профессии
hydraulic fracturing [hʌɪˈdrɔːlɪk ˈfræktʃərɪŋ] – гидравлическое дробление
hydrocarbon [ˌhʌɪdrə(ʊ)ˈkɑːb(ə)n] - углеводород
hydrogen [ˈhʌɪdrədʒ(ə)n] - водород

Ii

impermeable [ɪmˈpəːmɪəb(ə)l] - (водо)непроницаемый
increase [ɪnˈkriːs] – увеличить
inject [ɪnˈdʒɛkt] – вводить, впрыскивать
injury [ˈɪn(d)ʒ(ə)ri] – травма

Kk

keeping alert [ˈkiːpɪŋ əˈləːt] – быть начеку, быть готовым
kerogen - кероген
lead tong operator [liːd] – оператор свинцового соединительного ключа
leak [liːk] – утечка
lever [ˈliːvə] – рычаг
licensee - лицензиат
life span – жизненный цикл
liquid [ˈlɪkwɪd] - жидкость
maintain [meɪnˈteɪn] – поддерживать
makeup – состав, структура
mammal [ˈmam(ə)l] -млекопитающийся
mandatory orientation [ˈmandət(ə)ri ˌɔːrɪənˈteɪʃ(ə)n] – обязательные правила
marine [məˈriːn] - морской
measure [ˈmɛʒə] - измерять
medicating [ˈmɛdɪkeɪttɪŋ] – лечение при помощи лекарств
midstream [mɪdˈstriːm] –сектор транспортировки и хранения нефтепродуктов
migrate [mʌɪˈgreɪt] - перемещаться

minor [ˈmʌɪnə] - незначительный
monkeyboard – площадка верхового рабочего
motormen [ˈməʊtəman] – машинист

Nn

nitrogen [ˈnʌɪtrədʒ(ə)n] - азот

Oo

offshore [ɒfˈʃɔː(r)] – в открытом море
oil well coring – взятие нефтепробы
oil patch [patʃ] - нефтяная промышленность
onshore [ˈɒnʃɔː] – прибрежный, береговой
opportunity - возможность
orphan well - оставленная, но не заглушённая скважина
orphaned - потерянный
oxygen [ˈɒksɪdʒ(ə)n] - кислород

Pp

personnel [pəːsəˈnɛl] – персонал
petroleum [pəˈtroʊliəm] – нефть
pipeline [ˈpaɪplaɪn] – трубопровод
plug – заглушать, закупоривать
pneumatic [njuːˈmatɪk] – пневматический, воздушный
pocket – нефтяной карман
pore [pɔː] – пора, скважина
PPE - personal protective equipment - индивидуальные средства защиты
premature failure [ˈprɛmətʃə ˈfeɪljə] – преждевременная поломка
preventive maintenance – профилактическое обслуживание
probable reserve [rɪˈzɜːvz] – вероятный запас
reclaim - восстанавливать
reclaimed - восстановленный
reclamation - восстановление
recovery [rɪˈkʌv(ə)ri] – восстановление
recreational fishing – любительское рыболовство
refining [rɪˈfaɪnɪŋ] – очистка
remediate – исправлять, восстанавливать
removal [rɪˈmuːv(ə)l] – удаление, устранение
requirement - требование
reservoir [ˈrezəvwɑː] - резервуар
rheostats – реостат

rig site – буровая установка
Rigs-to-Reefs program - программа превращения не эксплуатируемых нефтяных скважина в искусственные рифы.
rock strata [rɒk ˈstrɑːtə] - каменное напластование; породная толща
rotary table [ˈrəʊt(ə)ri] – оборудование для роторного бурения, вращающаяся площадка
rotten egg [ˈrɒt(ə)n] – тухлое яйцо
roughneck [ˈrʌfnɛk] - подсобный рабочий
roustabout [ˈraʊstəbaʊt] – подсобный рабочий
rule of thumb [θʌm] – правило, проверенное практикой
rules and regulations [ruːlz ænd ˌregjʊˈleɪʃənz] — правила и нормативы

Ss

safety [ˈseɪfti] – безопасность
safety harness [ˈhɑːnəs] – страховочный ремень
sample – образец
seal [siːl] - запечатывать
secure [sɪˈkjʊə] – сохранять, обезопасить
sediment grain - осадочные породы
senior [ˈsiːnɪə] – старший
shale gas [ʃeɪl]- сланцевый газ
share [ʃɛː] – доля, часть
sidewall coring - отбор керна боковым грунтоносом
signage [ˈ saɪnɪʤ] - вывеска, указатель
sipping [ˈsɪpɪŋ] – просачивание, выход небольшого количества жидкости
site – строительная площадка
slimhole drilling rig – бурение из скважины малого диаметра
sour gas [ˈsaʊə] - сернистый нефтяной газ
spill [spɪl] – образование нефтяного пятна, пролив нефти
sponge [spʌn(d)ʒ] – зоол. губка
steel cable – стальной кабель
steel-toed boots [stiːl təʊt] - сапоги со стальным носком
struck-by [strʌk bai] – мешающие на пути
sulphur [ˈsəlfər] - сера
superior [|suːˈpɪərɪə] – зд. управляющий
suspended well – законсервированная скважина

Tt

tap [tæp] – зд. добывать, качать
thread [θrɛd] - нить, струна
tight gas [tʌɪt] - газ в плотных породах

to fuel [tə ˈfjuːəl] – заправлять горючим
toolpusher – буровой мастер
topple [ˈtɒp(ə)l] - вырабатывать
tough – твердый, жесткий
training [ˈtreɪnɪŋ] – обучение
transferred [trænsˈfɜːd] – разъездной
trap [træp] – зд. накапливать
trench [trɛn(t)ʃ] - впадина
trip [trɪp] - преграждать

Uu

underground rocks [ˌʌndəˈgraʊnd]- подземные породы
undertake – происходить, осуществлять
underwent – прош. от undergo - испытывать
unprovable reserve [rɪˈzɜːvz] – предположительный запас
upstream [ˌʌpˈstriːm] – нефтедобывающий сектор

Vv

vary [ˈveəri] – изменять, варьироваться
viable [ˈvʌɪəb(ə)l] – жизнеспособный
volatile [ˈvɒlətʌɪl] – изменчивый

Ww

walk the talk — поступать в соответствии с убеждениями; провозглашаемыми принципами
waterproof [ˈwɔːtərpruːf] – водонепроницаемый
well [wel] – зд. скважина
well sampling - взятие суровых образцов
wellhead – устье скважины

Лавриненко Ирина Юрьевна

Козлова Виктория Вячеславовна

АНГЛИЙСКИЙ ЯЗЫК

для студентов специальности «Нефтегазовое дело»

учебное пособие для студентов, обучающихся по направлению 21.03.01 «Нефтегазовое дело»

Отпечатано в авторской редакции

Рисунок на обложке Алексея Гридина

Подписано в печать 25. 11. 2020.

Формат 60x84 1/16. Бумага для множительных аппаратов.

Уч.-изд. л. 5,0. Усл. печ. л. 5.9. Тираж 350экз. Заказ № 101.

ФГБОУ ВО «Воронежский государственный технический университет
394026 Воронеж, Московский проспект, 14

Участок оперативной полиграфии издательства ВГТУ
394026 Воронеж, Московский проспект, 14