LESSON 1 THE OIL INDUSTRY

Introduction:

Task 1 Listen to the track 2 and read. Match the texts 1-5 with the pictures A-E

1) Hi. My name is Armando Panganiban. I'm from the Philippines. I'm a driver. ***E***

2) Hello. My name is Ricardo Cabrera. I'm from Venezuela. I'm a roustabout.

3) I'm Ali bin Khalid, from Saudi Arabia. I'm an engineer. Nice to meet you.

4) Hi, I'm Jennifer Burgess. I'm from Scotland. I'm a radio operator.

5) Hello. I'm Matthew Aondoakaa from Nigeria. I'm a seismic operator.

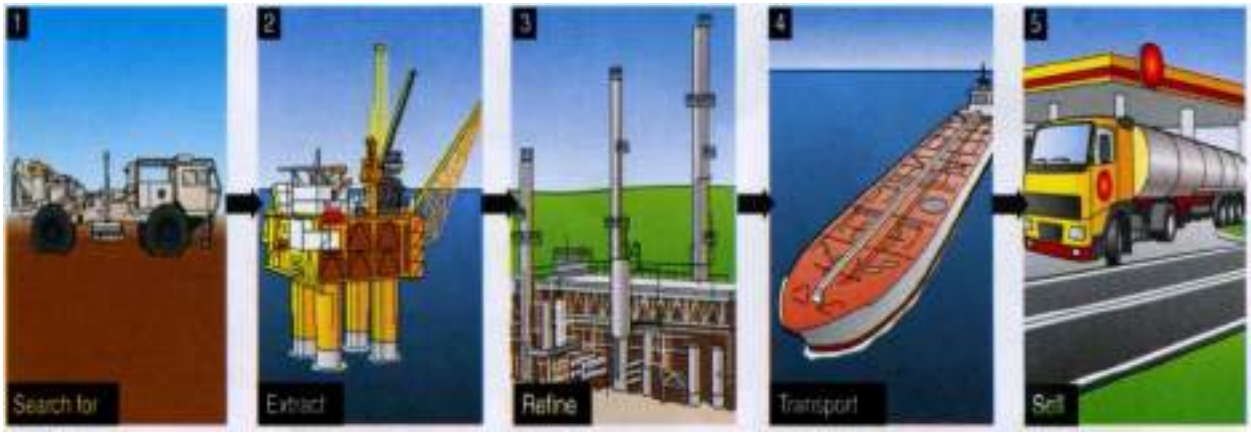
Speaking task:

Task 2 Practise the conversation in pairs.

A: What is your name? **B:** Armando Panganiban.
A: Where are you from? **B:** I'm from the Philippines.
A: What do you do? **B:** I'm a driver.

Listening task: Getting oil to the customer

Task 3 Listen to the track 3 and write the names under the photos.



Matthew Aondoakaa .....

Vocabulary task

Task 4 Translate the active vocabulary of the lesson into Uzbek language and learn them by heart.

to search, to extract, to refine, to transport, to sell, engineer, driver, roustabout, seismic operator, oil industry, job, work location, refinery, oil rig, road tanker;

Task 5 Listen to the track 3 again and complete the table.

Name	Job	Work location
Armando Panganiban		
Ricardo Cabrera	roustabout	
Ali bin Khalid		refinery
Jennifer Burgess	radio operator	
Matthew Aondoakaa		

Task 6 Are these sentences true (T) or false (F)?

1) Armando is a driver. He drives a road tanker. T / F
2) Matthew works on an oil rig. T / F
3) Ricardo is a roustabout. T / F
4) Ali is an engineer at a refinery. T / F
5) Jennifer is a radio operator on an oil rig. T / F

Grammar:

Present simple

We use the **present simple** to talk about something that is always or usually true	I / You / They work on an oil rig / at the refinery / in Nigeria
	He / She works on an oil rig / at the refinery / in Nigeria

Present simple of "be"

The **present simple** of "**be**" is irregular.	I **am** a driver.
	You / We / They **are** a driver / drivers.
	He / She **is** a driver.

Task 7 Talk about your classmates.

Richard Smith is from Alaska. He is a driver. He works in ….. .

Reading tasks: Jobs

Task 8 Read about different crews. Match the texts to the pictures of the jobs.

1) I work on a supertanker. We have a crew of 25. We live on the ship. The captain is in charge. We transport the oil. – *D*

2) Here is my crew. We live and work on an oil rig. The driller is in charge. He is the boss. We extract the oil. I'm a roustabout.

3) Our crew is small. We have a surveyor and three seismic operators. We search for oil. We work in the countryside.

4) The refinery is big. I work in the control room. I supervise the control room operators so I'm the supervisor. We control the refinery. We refine the oil.

Task 9 Practice in pairs. Talk about the pictures. Don't read the texts.

This man works in the refinery control room. He supervises ……..

Task 10 Read the conversations and learn them by heart.

Conversation 1

John: Hi. Welcome to the crew. My name is John. I'm the driller, so I'm in charge of this crew.

Ahmed: Thanks. I'm Ahmed.

John: This is Harry. And that's Martin. They are roughnecks?

Ahmed: Excuse me. Roughnecks?

John: Roughnecks. They do all the general jobs.

Ahmed: Oh, Ok.

Conversation 2

Sayed: Hello. I'm Sayed. I'm the new control room operator.

Brian: Oh, good to see you, Sayed. I'm Brian. I'm the supervisor. This is Frank. He's an operator, too.

Sayed: Hi Frank.

Frank: Hello, Sayed.

Conversation 3

Manuel: Hi. I'm looking for Fred. I'm Manuel.

Fred: Hi. I'm Fred. Are you the new radio operator?

Manuel: Yes, that's right.

Fred: Oh, good. Come with me. I'll show you the radio room.

Conversation 4

Antonio: Hello. My name is Antonio.

Chris: Pardon?

Antonio: Antonio.

Chris: Hi, Antonio. I'm Chris. Are you the new surveyor?

Antonio: Yes, that's right. Antonio Rivaldi.

Chris: Good to meet you. I'm a surveyor, too.

Language Use: Asking questions

We use questions to get information. The word order in questions is different from positive and negative sentences and we can use special questions words.	**Is** he the supervisor?
	Are you John?
	What's your name?
	What do you do?
	Where do you work?
	How do you spell that?
	Why are you late?

Oil fields

Task 11 Listen to the track and match the oil fields to the countries or state.

Oil fields	Countries or state
1 Samotlor	a) Venezuela
2 Prudhoe Bay	b) Mexico
3 East Texas	c) USA
4 Cantarell	d) Saudi Arabia
5 Greater Burgan	e) Kuwait
6 Rumaila	f) Alaska
7 Ghawar	g) Iraq
8 Bolivar Coastal	h) Russia

Task 12 Practice in pairs. Test yourselves. Then find a new partner and repeat.

A: Where is Ghawar?
B: I think Ghawar is in Saudi Arabia.
A: Where is East Texas?
B: I'm sure East Texas is in the USA.

Writing tasks:

Task 13 Use what or where to complete the questions.

1 *Where* do you work?
2 _____ do you do?
3 _____ is my helmet?
4 _____ is a roughneck?
5 _____ is your name?
6 _____ are you from?
7 _____ does he do?

Task 14 Label the pictures with the words in the box.

extract	search for	refine	~~sell~~	transport

1 sell 2 ..... 3 ..... 4 ..... 5 .....

Task 15 Find the names of six more countries and one state.

g	j	g	e	y	a	e	d	k	c	v
m	e	x	i	c	o	r	f	u	v	e
t	h	i	d	x	s	g	c	w	p	n
h	u	o	f	r	a	b	r	a	x	e
k	s	p	s	z	l	n	u	i	l	z
v	a	l	i	r	a	q	s	t	k	u
c	g	j	g	i	s	m	s	u	y	e
a	e	a	h	o	k	k	i	h	j	l
s	a	u	d	i	a	r	a	b	i	a

LESSON 2 AN INTERNATIONAL INDUSTRY

Warm up

Task 1 ***Study the map and discuss the questions.***

1 Where is your country on the map?

2 Which regions are these countries in?

a Algeria	**e** Malaysia
b Brazil	**f** the UAE
c Canada	**g** the UK
d Kazakhstan	**h** the USA

3 Can you name ten more oil-producing countries?

4 Do you know the words to describe the nationalities for those countries?

EXAMPLES: *an Algerian worker, a Brazilian oil company.....*

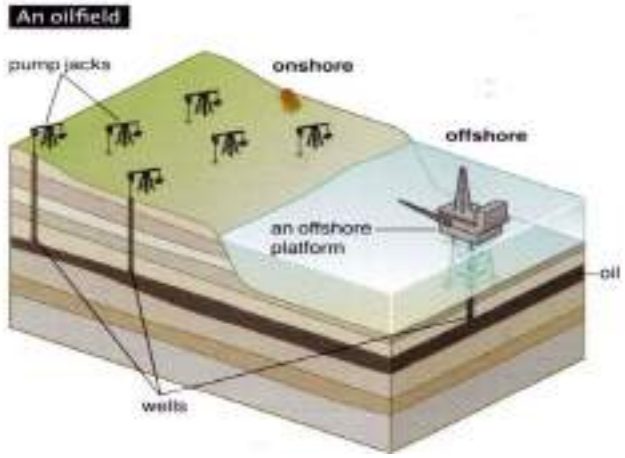
Task 2 ***Ask students to look at the map and name as many of the oil-producing countries as possible. Can they name the top ten oil producing countries? They are (in 2010):***

1 Saudi Arabia -11 million barrels per day (13.9% of estimated world total)
2 Russia - 9.9 million bpd (12.5%)
3 the United States - 8.3million bpd (10.5%)
4 Iran-4.2 million bpd (5.3%)
5 Mexico - 3.8 million bpd (4.8%)
6 China - 3.7 million bpd (4.7%)
7 Canada - 3.1 million bpd (3.9%)
8 Norway- 3 million bpd (3.8%)
9 Venezuela - 2.8 million bpd (3.6%)
10 Kuwait - 2.7 million bpd (3.4%)

But the list has changed by 2021.

- United States – 12108 million barrels per day
- Russia – 10835 million barrels per day
- Saudi Arabia – 9580 million barrels per day
- Iraq – 4620 million barrels per day
- Canada – 4129 million barrels per day
- China – 3823 million barrels per day
- United Arab Emirates – 3058 million barrels per day
- Kuwait – 2652 million barrels per day
- Brazil – 2604 million barrels per day
- Iran - 2213 million barrels per day

Task 3 ***Read the sentences about the UK. Make sentences about your country.***



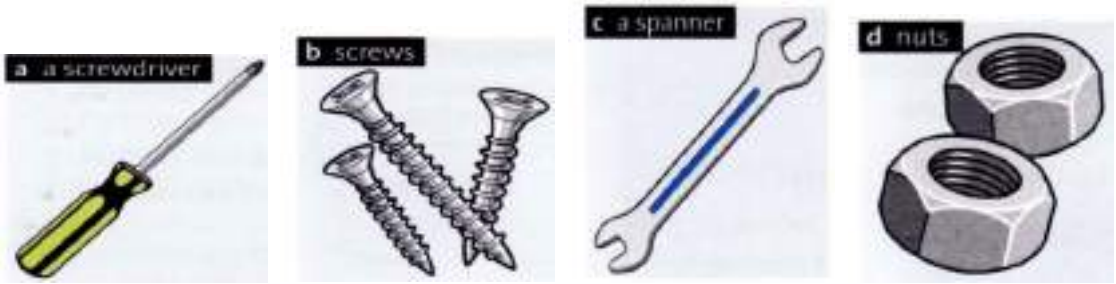
1 There is a big oil and gas industry in the UK.
2 There are oilfields and gas fields.
3 There are many offshore wells.
4 They are in the north and the east.
5 There are not many onshore fields.
6 There is a big onshore field in the south.

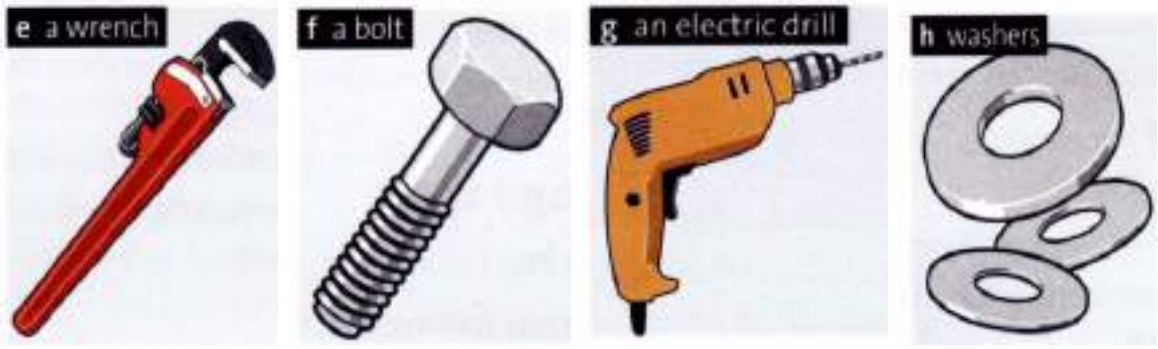
Vocabulary: Tools and hardware

Task 4 ***Translate the active vocabulary of the lesson into Uzbek language and learn them by heart.***

foreign, international, offshore, onshore, control room, drilling company, oilfield, oil well, operating company, plant, service company, team, technician, operate, supply, screwdriver, wrench, screws, bolt, spanner, electric drill, nuts, washers;

Task 5 ***Which of these do you have at home?***





Task 6 ***Practice this conversation.***

A: *What's this in English?* **B:** *It's a screwdriver.*

A: *What are these?* **B:** *They're washers*

Grammar : Articles *a / an / the*

Grammar

We use *a* and *an* to talk about something in general. We use *a* + singular noun that begins with a consonant. *For instance*: ***a*** pipeline, ***a*** team, ***a*** department; We use *an* + singular noun that begins with a vowel. *For instance:* ***an*** *oil rig,* ***an*** *effect,* ***an*** *idea*

However, we use *a* before nouns that begin with a '**y**' sound, e.g. ***a*** *university*. We use ***the*** before singular and plural nouns to talk about:

• a specific example of something: *Malik* is *a manager*. (= one of several) *Malik* is ***the*** *manager of this department.* (= there is only one manager)

• something that is known to everyone present: *He works at* ***the*** *university*. (= everyone understands which university it is)

• something that has been mentioned earlier: *A new plant has just opened.*
We will visit ***the*** *plant next week.*

• some countries, regions, rivers, seas, and oceans: ***the*** *UAE,* ***the*** *US,* ***the*** *UK,* ***the*** *Middle East,* ***the*** *Danube,* ***the*** *North Sea,* ***the*** *Pacific Ocean;*


Oxonoil
Technical Department – staff list
Manager: John Smith (UK)
Technicians: Lars Larsson (Norway)
Greg Ford (US)
Pierre Dupont (France)

Task 7 ***Read the staff list and complete the sentences with*** *a, an, the****, or*** *nothing****.***

1 Oxonoil is _____ small oil company.
2 John is _____ manager in the company.
3 John is manager of _____technical department.
He is from _____ UK.
4 Pierre is technician in _____department.
He is from_____ France.
5 Greg is _____ American technician.

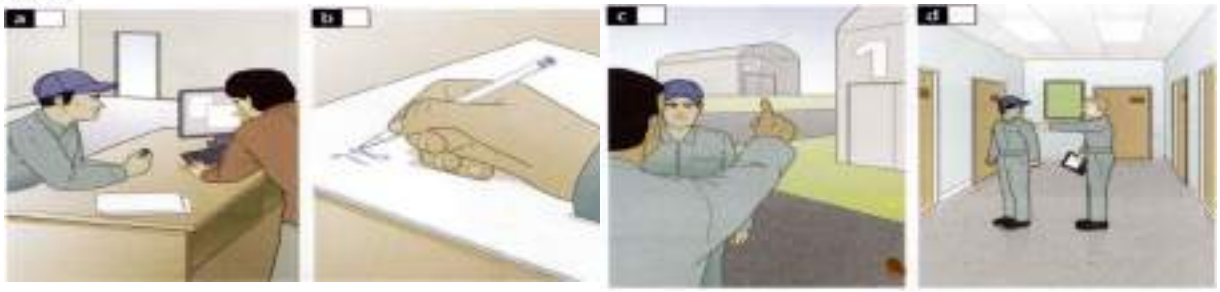
Task 8 ***Complete the sentences with*** *a, an, the****, or*** *nothing****.***

1 BP is _____ British company.
2 I like working _____ outside.
3 Ian is from _____ Canada.
4 I work in _____ UAE.

5 There's _____ screwdriver in my toolbox.
6 Exxon is _____ American company.
7 Do you have_____ electric drill at home?
8 Khaled is_____ manager of the workshop.
9 Do you work in_____ Saudi Arabia?
10 There's _____ technician in the control room.
11 I like working in _____ small team.
12 Do you speak_____ English?

Listening: Conversations

Track 5 **Task 9** ***Listen to four conversations. Number the pictures.***



Task 10 Listen again and complete the information.

1 The store is in building _____ in room. **2** The technician needs _____ bolts.
3 The part number is _____. **4** His employee number is _____.
5 The store phone number is_____.

Speaking: Checking

Task 11 Read the conversation then practise it in pairs.

A: What's in the box?
B: There are some bolts.
A: How many?
B: Twenty.
A: Good. What's the part number?
B: PD790.
A: What's that number again?
B: PD790.
A: The list says PD798. They're the wrong bolts.

Task 12 ***Get to know two groupmates. Ask them for the information. Write it down.***

First name: _____
Family: _____
Nationality: _____
Phone number: _____
Email address: _____
Date of birth: _____

LESSON 3 OIL AND GAS TODAY PART I

Kick off!

Task 1 Ex. 1 Match the labels with the photos.

1 pipeline

2 oil refinery

3 oil well

4 tanker

5 terminal

6 exploration team

7 petrol pump

Put them in order from the well to the customer. There is more than one possible order.

Vocabulary tasks:

Task 2 Translate the active vocabulary of the lesson into Uzbek and learn it by heart.

downstream, upstream, fuel, instrument, oil refinery, pipeline, plant, reserve, rig, sample, terminal, to flow, to oversee, to refine, update, import, to store, global, energy crisis, emergency, exporting, domestic, stockpile;

Task 3 Match the words (1-8) with the definitions (A-H).

1 ____ import	A) a very serious situation
2 ____ store	B) a period when a valuable resource is scarce
3 ____ global	C) to send products to a different country

4 ____ energy crisis	D) a large accumulation of something
5 ____ emergency	E**)** to bring in products from another country
6 ____ exporting	F) having to do with the entire world
7 ____ domestic	G) having to do with one country
8 ____ stockpile	H) to put something away for future use

Reading tasks:

Task 4 Read the text and translate it into Uzbek.

Oil has been used for lighting purposes for many thousand years. In areas where oil is found in shallow reservoirs, seeps of crude oil or gas may naturally develop, and some oil could simply be collected from seepage or tar ponds.

Historically, we know of tales of eternal fires where oil and gas seeps would ignite and burn. One example 1000 B.C. is the site where the famous oracle of Delphi would be built, and 500 B.C. Chinese were using natural gas to boil water.

With oil prices of 50 dollars per barrel or more, even more difficult to access sources become economically interesting. Such sources include tar sands in Venezuela and Canada as well as oil shales. Synthetic diesel (syndiesel) from natural gas and biological sources (biodiesel, ethanol) have also become commercially viable. These sources may eventually more than triple the potential reserves of hydrocarbon fuels.

Today oil and gas is produced in almost every part of the world, from small 100 barrel a day small private wells, to large bore 4000 barrel a day wells; In shallow 20 meters deep reservoirs to 3000 meter deep wells in more than 2000 meters water depth; In 10.000 dollar onshore wells to 10 billion dollar offshore developments. Despite this range many parts of the process is quite similar in principle.

Task 5 Read the given sentences and write *T* for *true* or *F* for *false* at the end of the sentences.

1. Historically, we know of tales of eternal fires where oil and gas seeps would ignite and burn.

2. In spite of this range many parts of the process is quite similar in principle.

3. Today oil and gas isn’t produced in almost every part of the world

4. With oil prices of 60 dollars per barrel or more, even more difficult to access sources become economically interesting.

Grammar review: Routines and activities

We use both the Present simple and Present continuous to talk about routines, and to describe activities.

Present Simple

Positive: I work with several other nationalities. = subject + infinitive (+ -s for he/she/it)

He works on an oil rig. Not ~~He work on oil rig.~~

Negative: I don't work on oil rig. = subject + do / does + not (don't / doesn't) + infinitive

He doesn't work on an oil rig. Not ~~*He don't work on an oil rig.*~~

Questions; **Short answers:**

Do they work at the main refinery? Yes, they do. / No, they don't.

= Do / Does + subject + infinitive

We use the **Present Simple** to talk about :

- things that happen regularly:
  Two billion tonnes of oil travel by tanker each year.
- Personal information: *I travel to work by car.*

It is common to use an adverb of frequency with the Present Simple, such as: *never, sometimes, often, usually, and always*. Note that these go before the main verb, but after be.

*I **often play** volleyball after work. We **are usually** very tired after our shifts.*

We also use other time expressions such as: *most of the time, twice a week, every day*. These can go at the beginning or at the end of a clause.

Most of the time, I work offshore. I work offshore most of the time.

Present Continuous

Positive: *I am working on a design for a pipeline.*

= subject + am / is / are + V_1 +ing

Negative: *The system isn't working properly.*

= subject + am / is / are + not + V_1 +ing

Questions; **Short answers:**

Are you working offshore this week? Yes, I am. / No, I'm not

= Am / Is / Are + subject + V_1 +ing

We use the **Present Continuous** to talk about:

- ✓ an action that is happening now: *They are talking to the designer right now.*
- ✓ an action that is happening over a longer period around now:
  He is studying to be an engineer.
- ✓ a change in routine:
  I usually play volleyball twice a week, but this evening I'm working late.

We use the Present Continuous with time expressions such as: *now, right now, currently, at the moment, this week, today.* These can go at the beginning or at the end of a clause.

Right now we are updating the control rooms for the refinery.

A new trainee is following me around this week.

Task 6 Complete these sentences with the correct form of the verbs in brackets.

1) Most of the time he _____ (sit) behind a desk, but this week he _____(get) some practical experience offshore.
2) A lot of different nationalities _____ (work) in the refinery, so sometimes people _____(have) problems communicating.
3) I _____(not understand) how this instrument _____(work). Can you explain it to me?
4) I 'm sorry, Mr. Peters isn't here. He _____(have) an Arabic lesson. He _____ (always have one on Monday evening.
5) He _____ (enjoy) sport a lot. He _____ (go) to the gym twice a week. He _____ (train) for next month's maraphon.

Speaking tasks:

Task 7 Agree or disagree with the following statements. Use the introductory phrases:

As far as I know…… *I don't really agree……* *Yes, but……*
I guess …… *I'm afraid it's not correct……* *On the one hand…..*
It's true …… *I wouldn't say that……* *On the other hand……*

1) The company of any nation depends on energy.
2) The main oil producing countries are China and Japan.
3) Oil and gas are the only sources of energy.
4) The 21st century is the age of alternative sources of energy.

Task 8 Read the sentences with their definitions and make up sentences.

downstream (adj.) – refining, processing, and selling

fertilizer (n) – a chemical or natural substance that is used to help plants grow better.

lubricant (n) – often a type of oil that is used to stop parts of machinery rubbing or sticking together.

Task 9 Which time phrases do we use with which tense? Write PS (Present Simple or PC (Present Continuous).

1) always **2)** at the moment **3)** most of the time **4)** today

5) right now **6)** this week **7)** sometimes **8)** twice a week

LESSON 4 OIL AND GAS TODAY PART II

Vocabulary tasks

Task 1 Match the jobs with the photos.

1) land surveyor 2) maintenance technician 3) petroleum chemist

4) piping designer 5) refinery manager 6) safety officer

Task 2 Match sentences *1-6* with replies *a-f*.

1) May I introduce myself? I am Mustafa Gabril.

2) What are you doing here, Mr. Black?

3) How are you finding it so far?

4) Is this your first time in my country?

5) So what do you do, Mustafa?

6) How interesting. What does your job involve?

a) I analyse soil and rock samples for petroleum.

b) Please call me Harry. I'm visiting the new oilfield.

c) I am very happy to be here. It's very interesting.

d) I'm very pleased to meet you. I'm Harry Black.

e) No, it's my third.

f) I'm a petroleum chemist.

Grammar review: Describing responsibilities

We can use verbs as well as expressions to talk about our jobs and responsibilities

Verbs: These include *look after, monitor, oversee*.

I look after the machinery on the oil rig. He monitors safety on board the rig.
The head of the team oversees every stage of the process.

Note the use of the Present Simple to give general facts about ourselves or others.

Expressions: These are used with ***be***, and include:

- **(be) in charge of + noun or –ing form:** *She is in charge of the facility.*
  I'm in charge of ensuring that safety procedures are followed.
- **(be) involved in + noun or –ing form**
  I am not involved in the exploration stage.
  We are involved in identifying the best places to drill for oil and gas.
- **(be) in responsible for + noun or –ing form**
  They're responsible for designing the piping systems.
  I am responsible for the safe arrival of vessels in our port.

We can also introduce our job responsibilies by saying - **My job is to + infinitive**.

My job is to ensure that safety prosedures are followed.

Task 3 Think of one more job and describe its activities and responsibilities to the class. Can they say what you do?

Example:

Well, I'm in charge of taking the oil tanker into the terminal. When I get on the tanker, the captain gives me control of the vessel. I know the waters around the terminal better than anyone else. I am responsible for the safe arrival of vessels in our port.

Answer: tanker pilot

Task 4 Work in pairs and imagine that you have one of the jobs from Task 1. Make short conversations. Example:

A: Hi, are you new here?

B: Yes, I'm. My name is Walid. I'm a piping designer.

A: Oh really? So what does your job involve / What do you do every day?

B: Well, I design piping systems in a refinery. It involves calculating flow rates and pressures. What about you?

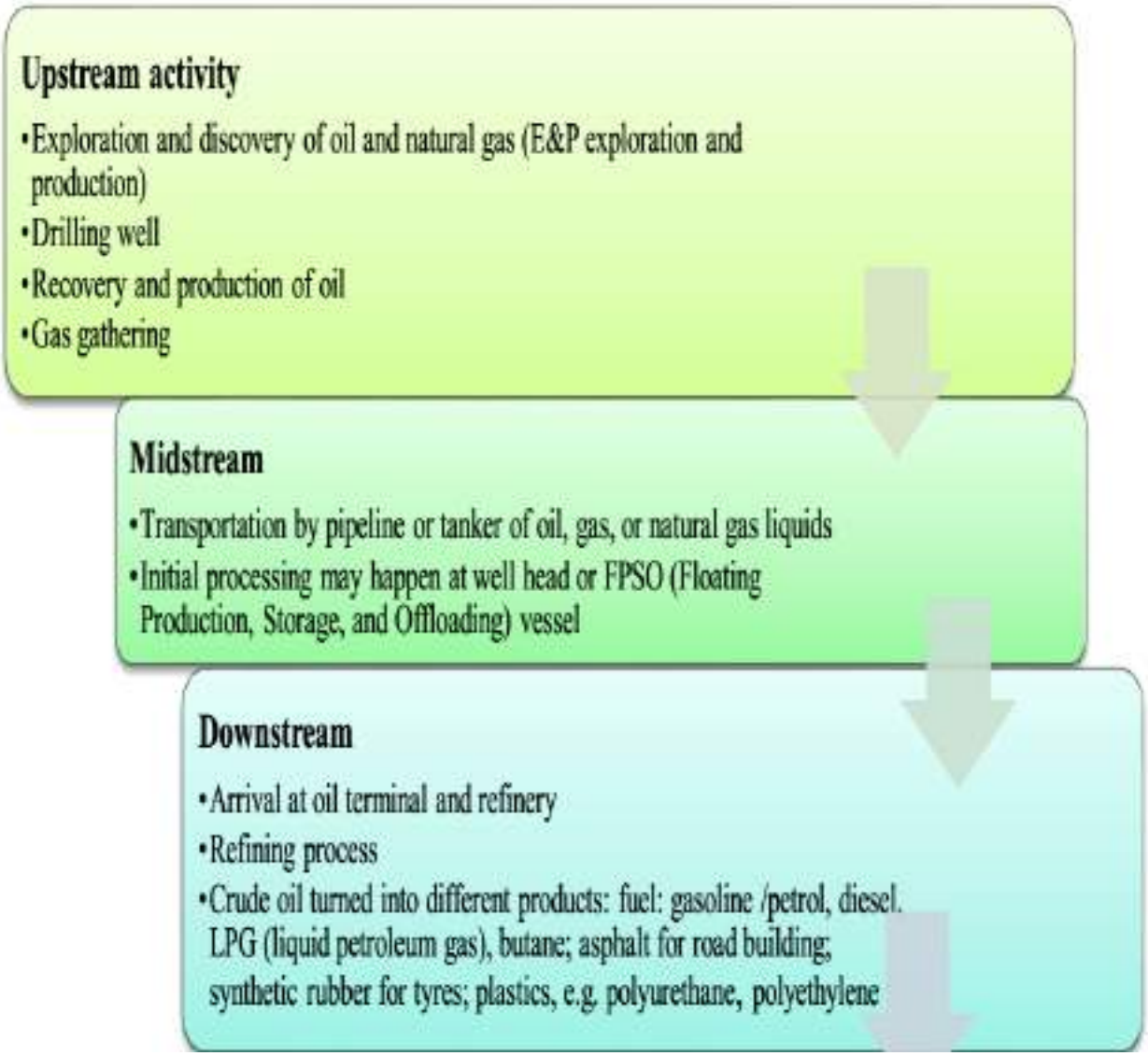
Task 5 Jack is talking to Hamza about his job. Put the words in the correct order to make questions and answers.

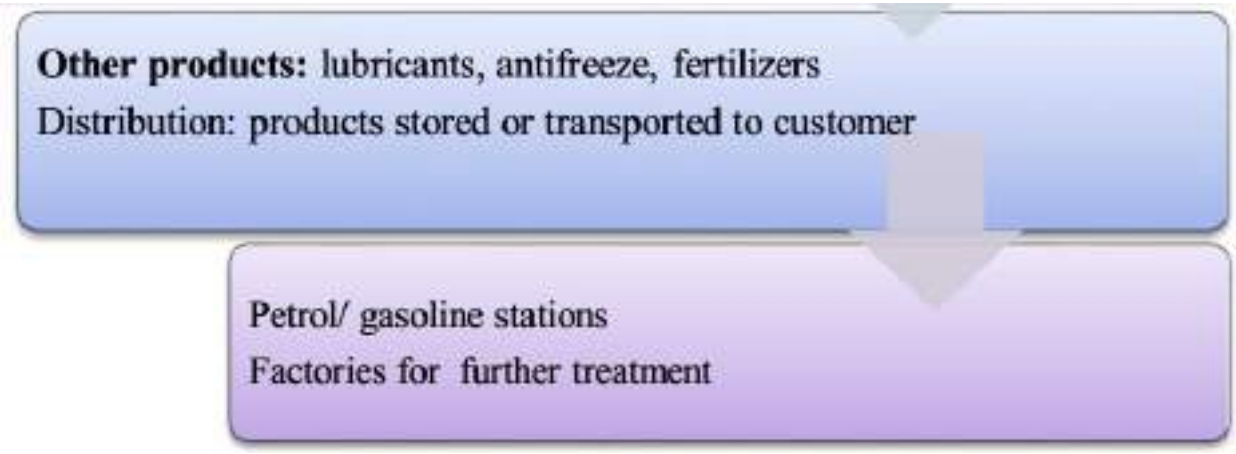
1) Jack at / you / what / do / refinery / / do / the? _____
2) Hamza responsible / I / safety / am / for _____
3) Jack does / involve / what / your job? _____
4) Hamza I / in / of / a / technicians / of / am charge / team _____
5) Jack are / moment / you / on / what / working / at / the _____
6) Hamza panels / we / monitoring / the / instrument / are _____

Reading tasks: Petroleum process

Task 6 Read the given passage and translate it into Uzbek.

From well to user





Task 7 Make nouns from the verbs.

1) explore **2)** transport **3)** distribute **4)** discover
5) recover **6)** refine **7)** lubricate

Speaking tasks:

Task 8 Look at the flow chart and decide if 1-8 are upstream, midstream, or downstream. Tick (V) the boxes.

	Upstream	Midstream	Downstream
1 transportation of crude oil			
2 selling of natural gaz to consumers			
3 explorationand discovery			
4 refining crude oil			
5 gas gathering			
6 asphalt production			
7 recovery of crude oil and natural gaz			
8 buying petrol / gasoline from a filling station			

Task 9 Match a more polite expression from *A* with a less formal expression from *B*.

A	B
1) Hello	a) Have you got a minute?
2) I'd like to introduce you to	b) How's it going?
3) I'm very pleased to meet you.	c) Bye.
4) How are you finding it?	d) I want you to meet ....
5) I'm very happy to be here.	e) Nice to meet you.
6) Please excuse me, I have to go.	f) See you around.
7) I hope to see you again.	g) Hi.
8) May I bother you a moment?	h) I'm having a great time.
9) Goodbye.	i) Sorry, I have to go.

LESSON 5 OIL FIELDS: IN THE FIELD

Kick off!

Task 1 Read the given questions and discuss it in groups.

1) What is oil field?

2) Do you know how many oil fields are there in Uzbekistan?

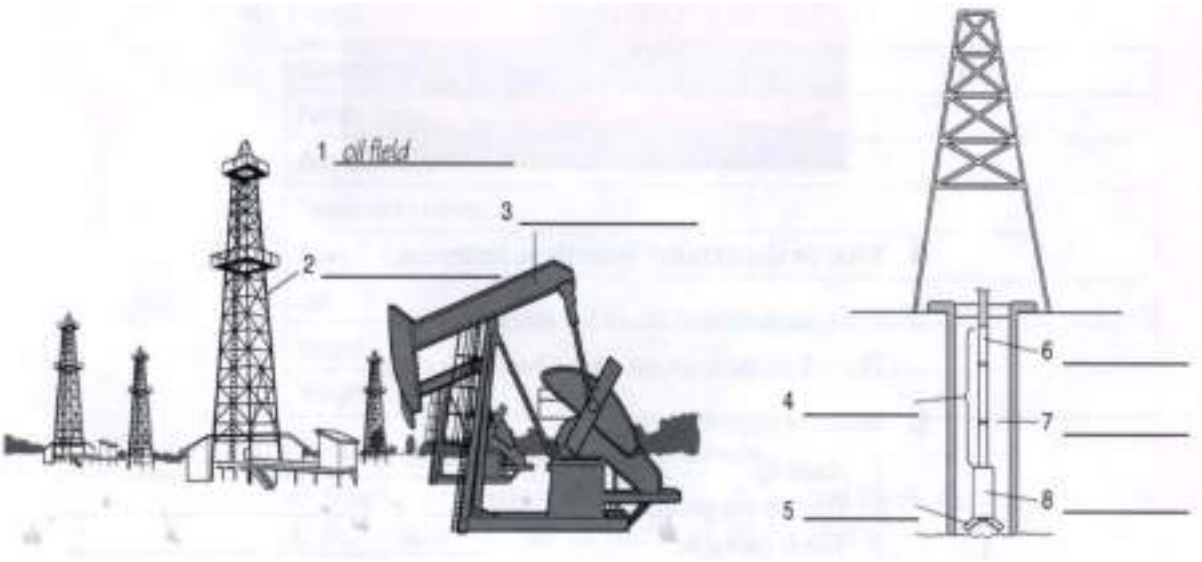
Vocabulary tasks:

Task 2 Translate the active vocabulary of the lesson into Uzbek and learn it by heart.

well hole, pumpjack, derrick, drill pipe, drill string, drill collar, drill bit, oil field, handwheel, flange, handle, valve, catline, doghouse, fishing, flare, knowledge box, pill, possum belly, catwalk, hands, wildcat, joint, employee, equipment;

Task 3 Label these diagrams with the words in the box.

well hole	pumpjack	derrick	drill pipe	drill string
drill collar	drill bit	~~oil field~~		



Task 4 Fill in blanks with the correct words and phrases from the word list.

catline, doghouse, fishing, flare, knowledge box, pill;

1) The rig crew stayed in the _____ during the storm.
2) The toolpusher took some paperwork out of the _____ .

3) The roughneck used a _____ to stop a leak.
4) Denise used a _____ to move the smaller equipment.
5) The worker tried _____ for the broken drill bit.
6) Bruce used a _____ to burn off the gas.

Task 5 Read the sentences and choose the correct terms.

1) The **hand / fish** worked hard to finish the job.
2) The rig had a large **catwalk / possum belly** that was used for storing fluid.
3) The crew working on the **wildcat / joint** well hopped to find oil.
4) The workers ran out of pipe, so they had to order more **joints / hands**.
5) The men tried to retrieve the **possum belly / fish** but it was out of reach.
6) The roughneck crossed the **catwalk / wildcat** to talk to the toolpusher.

Reading tasks:

Task 6 Read the text and translate it into Uzbek.

Rig worker weekly: Slinging slang

One challenge new rig workers face is language. Hands don't think twice about using words like possum belly, pill or flare. They might think it's funny when the new guy confuses a catwalk with a catline or wildcat.

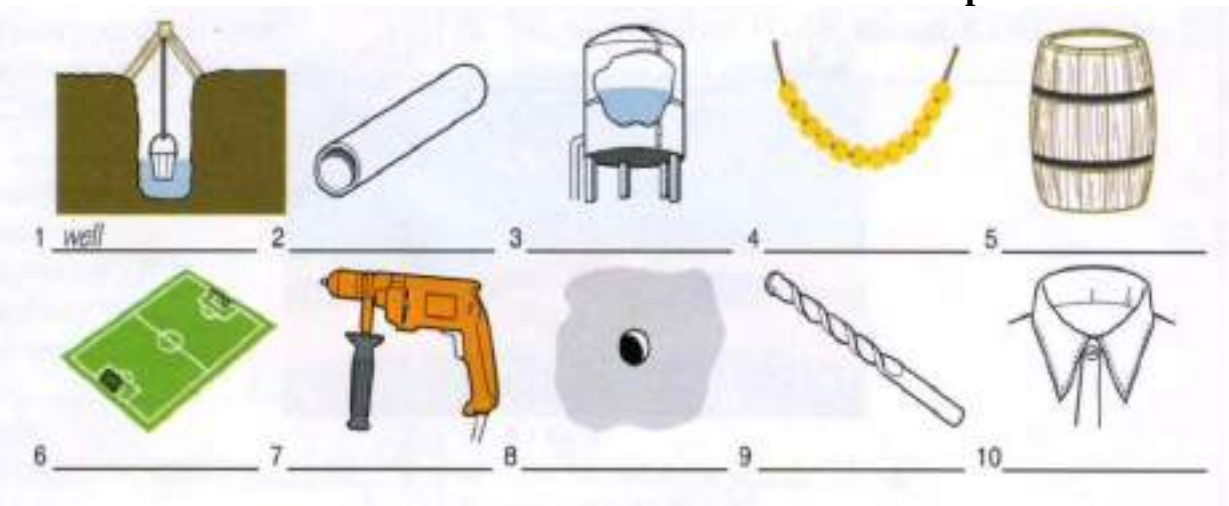
Most new workers get the idea of fish and fishing. However, other terms are not as clear. Doghouse and knowledge box are two such terms. In addition, most new hires do not know that joint is a length of pipe. Take the time to explain rig slang to new employees. It makes things easier when everyone is on the same page.

Task 7 Read the text and mark the following statements as true (T) or false (F).

1_____ New rig workers can be confused by slang.
2 ____ It is hard to guess the meaning of some terms.
3 ____ New workers need to figure out the slang on their own.

Listening task:

Task 8 Listen to the track and write down the words for the pictures.

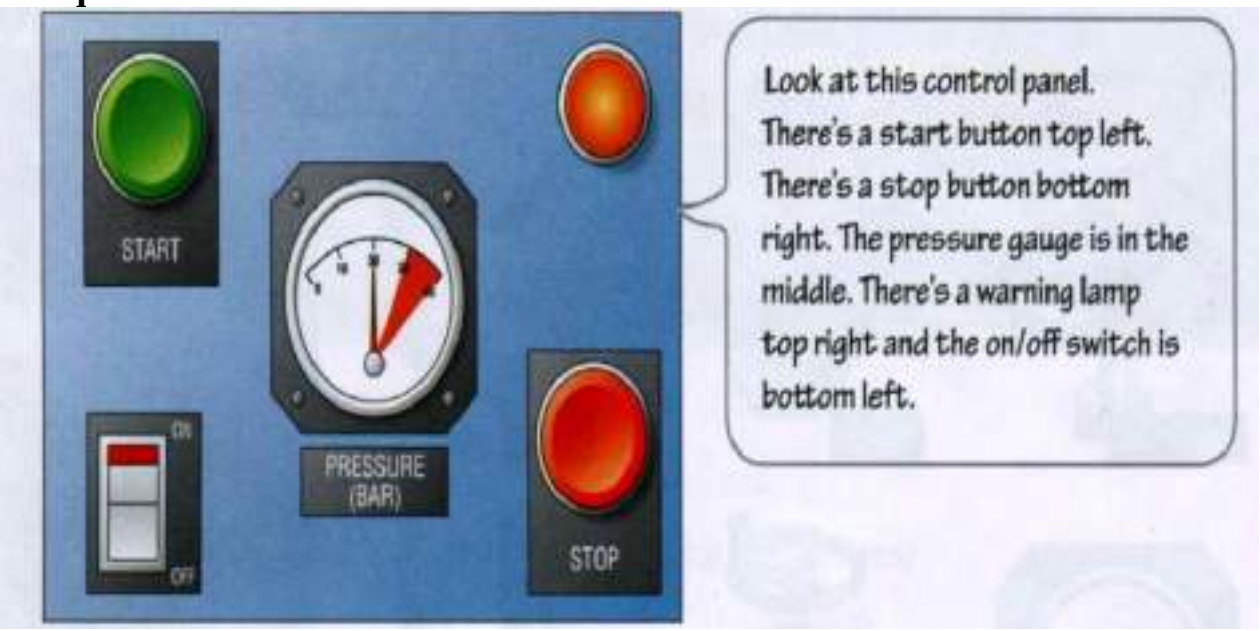


Grammar review:

There is / There are

We use **there is / there are** to say something or somebody exists.	**There is / There's** a lamp on the panel.
	There are three lamps on the panel.
In the plural negative form we use ***any,*** not a number.	**There isn't (is not)** a switch.
	There aren't (are not) any switches.
In questions we use ***any*** not a number. In short answers we omit the noun.	**A: Is there** a start button?
	B: Yes**, there is /** No**, there isn't (is not)**
	A: Are there any buttons?
	B: Yes**, there are /** No**, there aren't (are not)**

Task 9 Look at the picture and read the description. Then write the negative and question form of *there is/are*



Speaking task:

Task 10 Read the conversation and discuss it in groups. Match the verbs 1-5 with the nouns a-e.

Supervisor:	**Trainee:**
OK. Listen carefully.	Understood.
First, you turn this handwheel.	Clockwise?
No, anti-clockwise.	OK, anti-clockwise.
Turn it until it's open.	OK Until it's open.
Next, close this valve.	OK. Then close the valve.
And then wait a couple of minutes.	Wait a couple of minutes.
Then read the gauge and write the pressure in the log book.	OK. Got that.
And finally, check the flanges and the valves.	For leaks?
Yes, that's right.	

1)Turn	**a)** the gauge
2) Close	**b)** the pressure
3) Read	**c)** the valve
4) Write	**d)** the wheel
5) Check	**e)** the flanges

LESSON 6 THE UPSTREAM PROCESSES

Kick off

Task 1 Read the information. Match the underlined words with the explanations 1-6.

1 petrol / gasoline and diesel oil, for example
2 oil under the ground, usually dark brown
3 bring out or make
4 parts of an industry
5 the part that gets oil and gas out of the ground
6 the part that makes and sells useful products

Upstream and downstream

The oil and gas industry has two **sectors**: the **upstream** sector and the **downstream** sector.

Workers in the upstream sector find and **produce crude oil** and gas.

Workers in the downstream sector produce useful things from crude oil, like **fuel** for cars and planes.

Vocabulary tasks:

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

downstream, upstream, barrel, crane operator, cubic metre, development, driller, exploration, fuel, geologist, hydrocarbons, pipeline, production, roughneck, skills, crane operator;

Task 3 Match the upstream jobs with the descriptions.

Jobs	Descriptions
1) crane operator	**a)** studies rocks
2) driller	**b)** operates equipment to help geologists
3) geologist	**c)** supervises a drilling crew
4) geotechnician	**d)** works in a drilling crew under the driller's supervision
5) maintenance technician	**e)** operates a machine for lifting and moving heavy things
6) pipe-fitter	**f)** fits pipes to make a pipeline
7) production operator	**g)** services and repairs machines and equipment
8) roughneck	**h)** checks and operates production equipment

Grammar review: *do* and *does*, and *Wh-* questions

We use *do* and *does* to form the negative and questions in the Present Simple.

Negative: I/ You / We / You / They **do not (don't)** work here.

He / She / It **does not (doesn't)** work here.

= subject + ***do* / *does* + *not (don't* / *doesn't)*** + infinitive

Questions	Short answers
Do I / you / we / you / they work here?	Yes, I **do**.
Does he / she / it work here?	No, he **doesn't**.

=auxiliary ***do* / *does*** + subject + infinitive

We use a question beginning with ***do*** or ***does*** to ask a question that requires a **yes / no** answer.

If we want to find out specific information, we can put a question word before ***do*** or ***does***.

Question words include ***who, what, which, when, where, how***.

Where do you work? What does a well test operator do?

Some more examples

Do *you work outside?*	Yes, *I do.*
Does he test rocks?	*No, doesn't.*
I don't like working long hours.	*He doesn't work in an office.*

Task 4 Choose the correct word to complete the questions.

1 *Do* / *Does* roughnecks work in offices?

2 *Do* / *Does* a driller supervise a drilling crew?

3 *Do* / *Does* a production operator fit pipes?

4 *Do* / *Does* a well test operator test rocks?
5 *Do* / *Does* geologists test wells?
6 *Do* / *Does* maintenance technicians repair things?

Task 5 Complete the conversations with *do, does, don't,* or *doesn't.*

A: _____ [1] you work in Indonesia?
B: Yes, I _____ [2].
A: _____ [3] you live in Jakarta?
B: No, I_____ [4].
A: _____ [5] Stanley work in an office?
B: Yes, he _____ [6]. But he _____ [7] like it! He likes working outside.
A: _____ [8] Joao and Sylvie live in Brasilia?
B: No, they_____ [9]
A: Where _____ [10] they live?
B: They live in Sao Paulo.

Task 6 Complete the questions. Use the words in the list.

How What Where When Which Who Why

1) _____ does Anvar live?
2) _____ do roughnecks do?
3) _____ country does Sarvar work in?
4) _____ many days per week do you work?
5) _____ does Akbar work for?
6) _____ do we start work in the morning?
7) _____ does a well test operator need to be good with numbers?

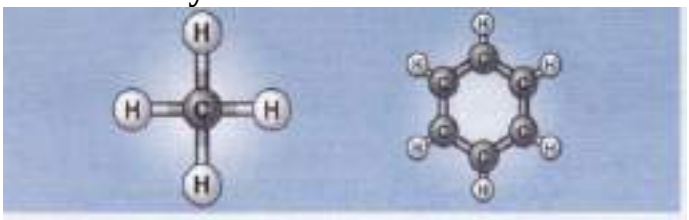
Reading: The upstream process

Task 7 Read the text and translate it into Uzbek.

How do oil companies find oil and gas?

The first step is exploration. Scientists study rocks and do scientific tests. They look for rocks that can hold hydrocarbons.

What are hydrocarbons?



Oil and gas are made of hydrogen (H) and carbon *(C).* So we call them hydrocarbons.

Do scientists find hydrocarbons?

No, they don't. They choose a good place for the next step: drilling. Drillers drill a well, and they sometimes find hydrocarbons.

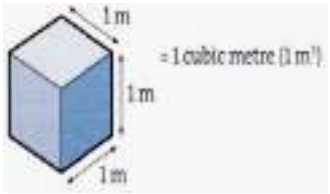
Does production start immediately after drilling?
No. First the company does more tests and asks 'How much oil is there?' and 'Are there any problems?' If the results of the tests are good, they go to the next step: development.

What does *development* mean?
It means they prepare for production. For example, they build a pipeline to transport the oil.
How long does development take?
From a few weeks to many years. Then production starts. Crude oil and / or gas flow from the well and along the pipeline.

Task 8 Answer these questions about the text.
1) What do scientists try to find?
2) Do drillers always find hydrocarbons?
3) What do companies do before development?
4) Why do they build pipelines?
5) Which words mean _____
a) difficulties? **pr** _____
b) carry to another place? **tr**_____
c) move continuously? **f**_____

Speaking: Measuring oil and gas

Task 9 Read the information and say the examples.



We can measure oil and gas in **cubic metres** (m^3)
Example:
This field produces 100000 cubic metres of gas per day (m3/d)
We use **litres** (l) for small quantities. 1 m^3 = 1000 **l**
Example:
Oil flows through the pipe at 10 ***litres per second*** *(l/s)*
US **barrels (bbl)** is another common measure. 1bbl = 159 litres
Example: This field produces 600000 barrels of oil per day. (bbl / d or bpd)
Say these quantities.
a) 100 l **b)** 50 bbl **c)** 170 m^3 **d)** 12 l/s **e)** 28 m^3/hr

Task 10 How to say large numbers? Read and say the numbers.
209 *= two hundred and nine*
380 *= three hundred and eighty*
3000 *= three thousand*
4444 *= four thousand four four hundred and forty-four*
500000 *= five hundred thousand*
560000 *= five hundred and sixty thousand*
6000000 *= six million*
7000000000 *= seven billion*

LESSON 7 HYDROCARBONS PART I

Vocabulary tasks:

Task 1 Read the active vocabulary of the lesson and translate it into Uzbek.

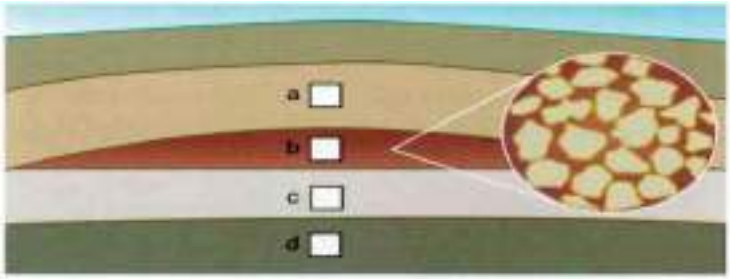
chemical, porous, sedimentary, permeability, porosity, pore, cap-rock, solid, finite resources, fossil fuel, reservoir rock, source rock, to bond, to burn, chain, pressure ;

Task 2 Match the words with the correct meaning.

1) organic matter	**a)** material produced from living things
2) sedimentary	**b)** it's not possible for a liquid or gas to pass through
3) impermeable	**c)** formed from the sand and mud that settle at the bottom of the sea
4) porous	**d)** has spaces that allow liquids and gas to pass through

Task 3 Look at the picture and match the words in 1-4 with picture.

1) source rock
2) reservoir rock
3) cap rock
4) oil and gas



Task 4 Work in small groups. Match the word with the correct definition.

1) atom	**a)** This consists of any number of atoms that are bonded together.
2) molecule	**b)** Different compounds that exist together in the same liquid.
3) boiling point	**c)** The smallest part of a substance that can be exist.
4) mixture	**d)** The temperature when a liquid changes into gas

Reading tasks:

Task 5 Read the text and translate it into Uzbek.

Hydrocarbons

Crude oil and natural gas are often found together. They are both made up of hydrocarbons, which are molecules that contain only carbon and hydrogen atoms. Hydrocarbons contain a lot of energy. When we burn them, we get this energy. We use hydrocarbons for fuel for heating, cooking, and transportation.

There are also many products that we can make from hydrocarbons. We use chemical process to change the hydrocarbon chains to make nylon, medicines, and lots of different plastics.

Hydrocarbons have different lengths and structures. Some are straight chains, some are rings. The smallest hydrocarbons are colourless gases under normal temperature and pressure. These are small molecules with one, two, three or four carbon atoms. The smallest is methane (CH_4). It has one carbon atom surrounded by four hydrogen atoms. Natural gas is a mixture of small hydrocarbons – methane (CH_4), ethane (C_2H_6), propane (C_3H_6), and butane (C_4H_{10}). They are used as fuels.

Hydrocarbons with more than four carbon atoms in each molecule are liquid. Crude oil is a liquid under normal temperature and pressure. It is a mixture of more than 100 different hydrocarbon molecules.

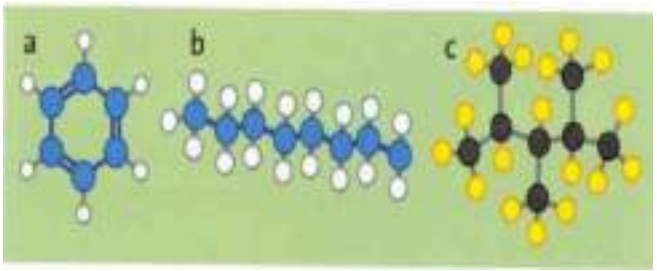
As hydrocarbon molecules get bigger they have a higher boiling point, so it is possible to separate the hydrocarbons. This happens at a refinery.

Gasoline is a mixture of hydrocarbons with between five and eleven carbon atoms. It burns easily and is an important fuel. It is colourless but we add colour for safety. Naphthas are hydrocarbons with between seven and thirteen carbon atoms. They are clear liquids. We do not use them directly as fuels, but we can change their molecular structure at the refinery to make different fuels. They are important for plants and products that dry quickly. Kerosene, diesel, and fuel oils are mixtures of larger molecules with higher boiling points. The largest hydrocarbons in crude oil are solid. They have more than 50 carbon atoms in long chains. Bitumen (Am E= asphalt) is an example. We use bitumen for building roads.

Task 6 Read the text again and write T (true) or F (false).

1) There are three different atoms in hydrocarbons.
2) Hydrocarbons are useful because they contain a lot of energy.
3) This is methane - C_3H_6.
4) Natural gas is a mixture of hydrocarbon gases.
5) Hydrocarbons with five carbon atoms are gases.
6) Diesel boils at a higher temperature than gasoline.
7) Bitumen is solid.

Task 7 Look at the picture of three hydrocarbon molecules. What shape are they? Match the picture with the correct word.



1) straight chain 2) branching chain 3) ring

Grammar: Present Continuous

Positive:

I **am talking**. He / She / It **is ('s) talking**. We / You / They **are ('re) talking**.

=Subject + **am / is / *are* + V_1-*ing*** form

Negative: I **am not ('m not) talking**. He /She / It **is not (isn't) talking.**

We / You / They **are not (aren't) talking**.

=subject + **am / is / *are* + *not* ('m *not* / *isn't* / *aren't)* + -ing** form

Questions	**Short answe**rs
Am I **talking**?	Yes, **I am**. / No, **I'm not**.
Is he / she / it talking?	Yes, he / she / it is / No he / she / it isn't.
Are we / you / they talking?	

= ***Am* / Is / *Are*** + subject + ***-ing*** form

We use the Present Continuous to talk about what we are doing at the moment. We do not use this tense to talk about routines, jobs, or to give facts about ourselves. For those functions we use the Present Simple.

*We'**re having** trouble with one of the control panels.*

*This machine **isn't working** properly.*

*Why **is** the warning light **flashing**?*

We often use time expressions such as ***(right) now, at the moment, currently***.

George is *giving a talk **right now**.*

The team is *having a meeting **at the moment**.*

V_1-ing : The rules for forming the *-ing* form are as follows:

- verb + *-ing: talk – talking, work - working*
- verbs ending in *-e: live –living, take – taking;* ***not*** ~~*liveing, takeing*~~
- short verbs ending in consonant + vowel + consonant: *get – getting, stop – stopping*

Some more examples for Present Continuous Tense:

*This man drives a petrol tanker. Right now he **isn't driving**.*

*He'**s unloading** petrol.*

Task 8 Write sentences using the Present Continuous.

EXAMPLE: I'*m not working* (not work) today. I'm having (have) a day off.

1) You _____ (work) in the office today. You_____ (not work) outside.

2) They _____ (not collect) data. They_____ (test) pipes.

3) We _____ (have) problems with the new computer. The screen _____ (not work).

4) _____ (not drive) now. I_____ (have) lunch.

5) He _____ (not measure) a pipe. He _____ (check) for leaks.

6) The drill _____ (make) a funny noise. It_____ (not work) properly.

Task 9 Complete the conversations. Use the Present Simple or the Present Continuous of the words in brackets.

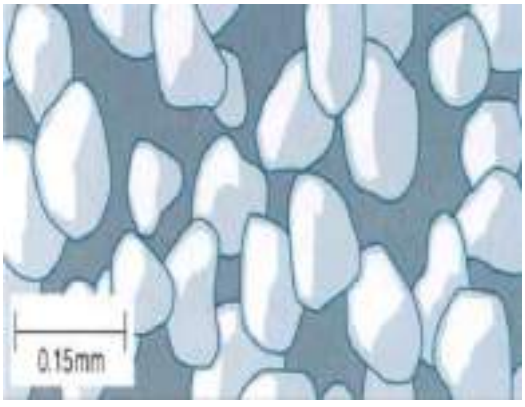
A: What _____[1] geologists _____[2] (do)?
B: They _____[3] (study) rocks.
A: What_____[4] you_____[5] (do) today?
B: _____[6] (work) in the Riyadh office.
A: _____[7] you _____[8] (have) a lot of problems with your hand-held computer today?
B: Yes! I _____[9] (go) to the technical support desk right now!
A: How_____[10] it _____[11] (go)?
B: OK, thanks. I _____[12] (have).

Speaking: Making and taking calls

Task 10 Choose the correct words.

A: *Goodbye* / *Hello*[1].Technical Support.
B: Hi. Is it / *that*[2] George?
A: No. *This* / *That*[3] is Ali speaking.
B: Can I *speak* / *say*[4] to George, please?
A: He's *talking* / *talks*[5] to the manager right now. Can I *take* / *get*[6] a message?
B: Yes. *This* / *That*[7] is Andrew Watts *at* / *from*[8] Human Resources.
A: Andrew Watts *at* / *from* [9] HR.
B: Yes, I want to talk to George *about* / *on*[10] the new computers for our office.
B: What's your *phone number* / *number phone*[11]?
A: 3745.
B: OK. *I'll give* / *I give*[12] him the message.
A: *Thank* / *Thanks* [13] you.

Do you know that?



Sedimentary rocks are composed of three parts – grains (natural minerals) natural cement (bonds the grains together) and pores (spaces filled with water, oil, gas). The pore space gives the rock porosity and determines the total volume of the field. The natural cement determines the rock permeability and the production rate from the field.

LESSON 8 HYDROCARBONS PART II

Vocabulary tasks:

Task 1 Read the active vocabulary of the lesson and translate it into Uzbek.

jet fuel, heating, lubricating oil, length, bottom, layer, mud, making road, aircraft, building, lorry, to exist, to calibrate, advantage, environment, exploration, skills;

Task 2 Match the pictures with the products.

	Picture	Product	Used for
1		gas	cooking and heating
2		petrol / gasoline	fuel for cars
3		naphtha	making other products
4		kerosene/ jet fuel	heating buildings and fuel for aircraft
5		diesel	fuel for cars, lorries and trains
6		lubricating oil	making machine parts move easily
7		bitumen / asphalt	making roads

Reading tasks:

Task 3 Read the text and translate it into Uzbek.

Lisa Song

I have always liked chemistry and after I graduated from university, I decided to find a job in the oil industry because it's more practical. My thesis at

university was about catalysts used in the petroleum industry and this gave me an advantage when I went for an interview.

I have been with this company for three years and I've gained a lot of experience using different modern measurement techniques.

To begin with I had to do routine laboratory work, but gradually I got more interesting projects. I helped install and calibrate specialist equipment at a refinery and recently I've been part of an offshore project. Next week I have to do a three-day offshore safety training course so I can go to the offshore platform to help with commissioning.

I have to make sure I know about new developments and learn more about statistics and computer technology. In the past I just reported results but now I also have to draw conclusions and make recommendations. I've been on company training courses for time management, communication presentation skills, and teamwork, which have been very useful.

The level of exploration in the industry changes from time to time so there is sometimes a higher demand for petroleum chemists. In the last few years the environment has become very important so there are more jobs for chemists. I need to get more experience and then I'm going to apply for a job abroad.

Task 4 Read the text and answer the questions from the text.

1) Why did Lisa want to work in the oil industry?
2) Why did she find it easy to get a job?
3) What sort of tasks did she have to do at first?
4) Why does she have to do an offshore safety training course?
5) Why do you think her company asked her to do courses in time management and teamwork?
6) Why are there more jobs for petroleum chemists at the moment?
7) Would you like to do this job? Why / why not?
8) Would you like to work abroad? Why / why not?

Task 5 Liza Song works as a petroleum chemist. What training do you think a petroleum chemist needs? Discuss in pairs and put plus (+) in the boxes.

	Yes	**No**
University degree in chemistry		
Offshore safety training		
Computer technology		
Training in statistics		
Time management courses		
Team working courses		

Grammar review: Articles a /an / the

A / an

We use **a** and **an** to talk about something in general. We use **a** + singular noun that begins with a consonant.

***a** pipeline, **a** team, **a** department*

We use **an** + singular noun that begins with a vowel.

***an** oil rig, **an** effect, **an** idea*

However, we use a before nouns that begin with a 'y' sound, e.g. a university.

the

We use the before singular and plural nouns to talk about:

• a specific example of something

Muktar is a manager. (= one of several)

Muktar is the manager of this department. (= there is only one manager)

• something that is known to everyone present

He works at the university. (= everyone understands which university it is)

• something that has been mentioned earlier

A new plant has just opened. We will visit the plant next week.

• some countries, regions, rivers, seas, and oceans

the UAE, the US, the UK, the Middle East, the Danube, the North Sea, the Pacific Ocean

Task 6 Complete the text by choosing between *a / an, the,* or *nothing*.

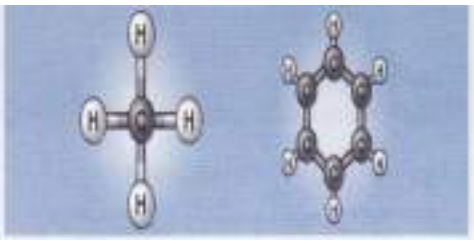
Before _____ [1] discovery of petroleum and natural gas, coal was _____ [2] most important source of energy. Coal was formed from _____ [3] plants that died between one million and four hundred million years ago when _____[4] lot of _____ [5] earth was covered in _____ [6] marshes. Tall plants grew in _____[7] marshes when they died, they formed _____[8] thick layer that was eventually covered up. As with oil, _____ [9] weight of other layers of rock helped to change them into _____[10] coal. First of all, they formed _____[11] substance called peat*. In some places, people still use _____[12] peats as _____[13] fuel. _____ [14] youngest coal is _____ [15] brown coal (lignite) that is used to generate _____ [16] electricity. _____ [17] best coal is anthracite, which is black and shiny. _____ [18] main problem with coal is that it causes _____ [19] pollution. Even so, even if oil and gas run, there is enough coal for _____ [20] next 250 years.

* a soft brown substance that is often burnt as fuel or used to make the soil in a garden richer.

Speaking task:

Task 7 Read the given passage and discuss some questions in small groups.

How do oil companies find oil and gas? The first step is exploration. Scientists study rocks and do scientific tests. They look for rocks that can hold hydrocarbons.



What are hydrocarbons?

Oil and gas are made of hydrogen (H) and carbon (C). So we call them hydrocarbons.

Do scientists find hydrocarbons?

No, they don't. They choose a good place for the next step: drilling. Drillers drill a well, and they sometimes find hydrocarbons.

Does production start immediately after drilling?

No. First the company does more tests and asks 'How much oil is there?' and 'Are there any problems?' If the results of the tests are good, they go to the next step: development.

What does development mean?

It means they prepare for production. For example, they build a pipeline to transport the oil.

How long does development take?

From a few weeks to many years. Then production starts. Crude oil and / or gas flow from the well and along the pipeline.

1) What do scientists try to find?

2) Do drillers always find hydrocarbons?

3) What do companies do before development? 4) Why do they build pipelines?

5) Which words mean _____

a) difficulties? pr_____ b) carry to another place? tr_____

c) move continuously? f_____

Listening task: The formation of oil and gas

Task 8 Listen to part of a lesson on the formation of oil and gas and label diagram 1.

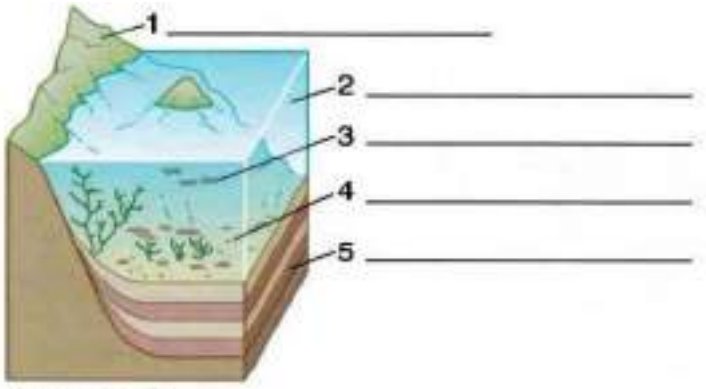


Diagram 1

LESSON 9 EXPLORATION PART I

Warm up

Task 1 Look at this picture. Give your opinions.

1 What is on the screen?
2 What do the colours mean?
3 What kind of glasses are the people wearing?
4 Who are the people?
5 What are they looking for?

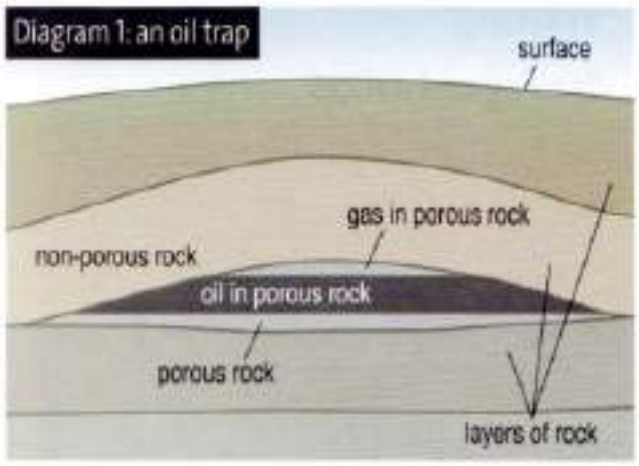
Vocabulary tasks:

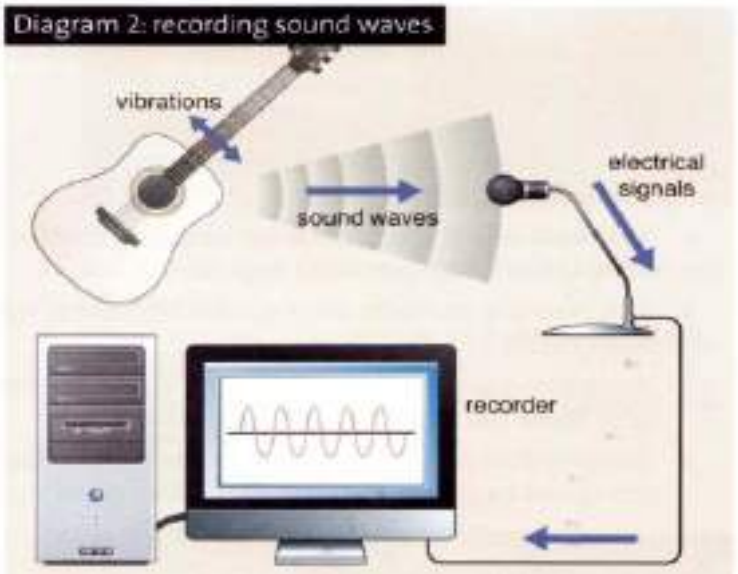
Task 2 Translate the active vocabulary of the lesson into Uzbek language and learn them by heart.

seismic, bearing, coordinates, geophone, heading, layer, position, signal, truck, vibration, wave, waypoint, convert, record, reflect, water resistant, weight, dust;

Task 3 Study diagram 1 and discuss the questions.

1) Which rock can hold water, oil, and gas?
2) Which rock is hard and very solid?
3) Why is the gas above the oil?
4) Why can't the gas go up to the surface?



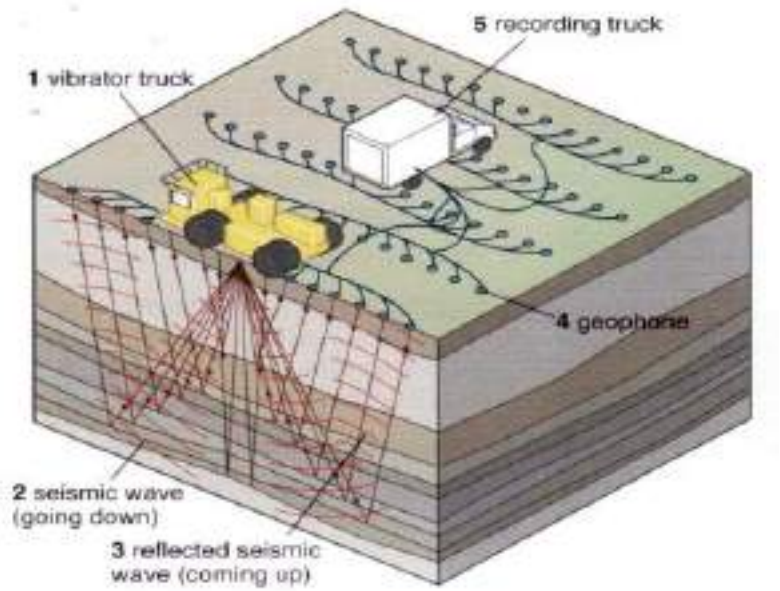


Task 4 Study diagram 2 and complete the sentences.

1) Vibrations produce _____.
2) A microphone converts sound waves into _____,

Reading tasks:

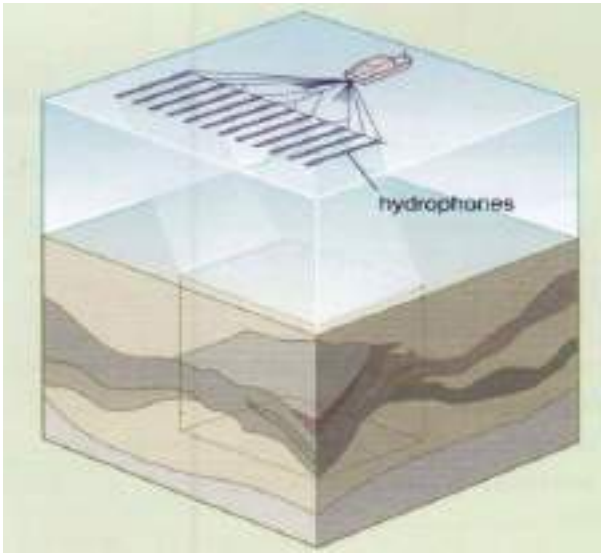
Task 5 Read the text and translate it into Uzbek.



How to find oil traps

Drilling is expensive. So oil companies plan carefully before they start drilling. First they make 3D maps of the rocks below the surface. Then they study these maps carefully. They look for possible oil traps. How do they make these maps? How do they find out what is below the surface? The answer is 'seismic waves'.

Seismic waves are sound waves, and they can travel through rock layers. Most oil companies use vibrator trucks to make seismic waves. These heavy trucks make vibrations on the surface, and the vibrations send waves down to the rocks below.



Each rock layer reflects some of the waves. The reflected waves travel up to geophones on the surface. Geophones are like microphones: they convert the waves into electrical signals. A machine in the recording truck records the signals.

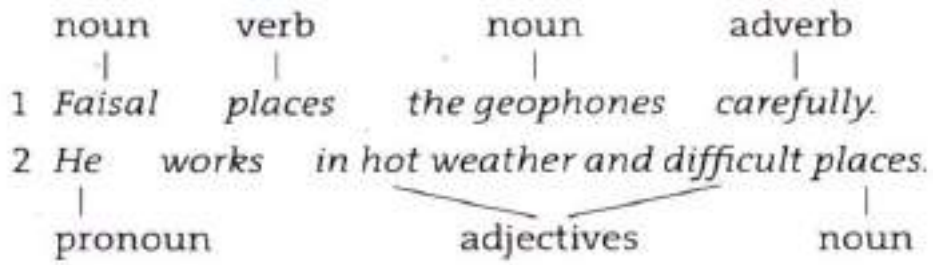
Computers can convert these signals into 3D maps. Seismic reflection works at sea too. But the crews use hydrophones, not geophones, and they use an underwater gun to make seismic waves.

Task 6 Read the text. Write T (true) or F (false).

1) Oil companies make maps of the surface.
2) Seismic waves can't go through rocks.
3) Vibrator trucks make seismic waves.
4) One rock layer reflects all the waves.
5) Geophones send electrical signals to the recording truck.
6) The geophones produce 3D maps.

Grammar review:

Words in sentences



Faisal and He = the SUBJECT geophones = the OBJECT in sentence 1

There are three kinds of sentence:

Questions (e.g. Who is he?) Statements (e.g. He is Faisal.)

Imperatives (e.g. Stop!)

Task 7 What kind of word is each underlined word? What kind of sentence is it?

EXAMPLE: *Don't forget your GPS. Forget is a verb. The sentence is an imperative.*

1) Faisal usually does the work quickly.
2) He likes it, and the money is good.
3) It's very hot in the desert in summer.
4) Is my new radio in the truck?

Task 8 Look at the words in brackets. Where must we put them to make correct sentences?

1) (porous) We find oil and gas in rocks.
2) (reflect) Mirrors light waves very well.
3) (badly) Black things reflect light waves.
4) (every day) He works outside.
5) (exact) What's your position?

Speaking tasks: Athabasca Oil Sands

Task 9 Read the notes about the Athabasca Oil Sands in Canada. Do you think it is a good idea to exploit them?

1)World's biggest source of bitumen. Equal to the world's oil resources.
2) Exploration costs are low. You can see the oil.
3) Refining costs are high.
4) Steam oil extraction uses a lot of water risk of pollution.
5) It is worth exploiting the sands when world oil prices are high.
6) The Oil Sands are under forest in a wild and beautiful area.
7) Exploitation will destroy the forest and affect the lives of Native Canadians.

Task 10 Study the situation. List the advantages and disadvantages of exploiting oil fields in offshore Greenland.

Experts believe there huge oil reserves offshore from Greenland. Exploration will be difficult and expensive. It is only possible to explore three months of the year. Temperatures are -30^0C in winter. Drilling offshore will be difficult. There are dangers from icebergs. There is also a 25% chance that there is no oil. Greenland's 57000 people live mostly from fishing and hunting. Oil will allow it to become rich and completely independent of Denmark.

Drilling and onshore installations could damage Greenland's environment. The habitat of wildlife like polar bears is in danger. Some people believe it will destroy the traditional way of life of Greenlanders and make social problems.

Task 11 Dave Bradley is a manager at Oil Company that is thinking about exploiting the oil Sands. Read his report. Is Dave for or against it?

Subject: Athabasca Oil Sands Project

1) _____ The Athabaska Oil Sands in Canada has the world's biggest source of bitumen. A working staff was asked to look into exploiting the resource.

2) _____ The Oil Sands provide an enormous and accessible reserve of oil. When world oil prices are high, companies like ours may consider exploiting the Sands.

3)_____ Although exploration costs are low, production costs are high. The steam extraction process is expensive because it uses a lot of energy.

4) _____The Sands are covered by forest in area of natural beaty. Steam extraction needs a lot of water so rivers will probably be polluted and wildlife killed. In addition, it will affect the lives of the native people who live there.

5) _____ On balance, I believe that the financial isk and risks to the company's reputation are too great. In my opinion we should continue to exploit our more conventional resources.

Task 12 Match the headings with the paragraphs.

a) Environmental risk **b)** Financial risk **c)** Recommendations

d) Backround **e)** The business opportunity

LESSON 10 EXPLORATION PART II

Warm up activity:

Task 1 Look at the photos. What are the people trying to find? Which ones are the most successful?




Vocabulary tasks:

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

chromatograph, crude, geochemist, geologist, gravimeter, magnetometer, survey, vibrator truck, well log, to decrease, to double, to fall, to halve, to increase, to use;

Task 3 Put the suitable word from the list to complete the sentences.

chromatograph, well logs, increasing, geologists, magnetometer,

1) The world population is _____and becoming more industrialized.
2) Photographs are examined by_____.
3) Geologists can use the information from different _____to construct a map of the area between the wells.
4) A gas _____ can analyse gas.
5) A gravimeter shows rock density and a _____ can be used in planes while flying over an area.

Reading tasks:

Task 4 Read the text and translate it into Uzbek

Geological methods

1) Photographs are taken from planes or satellites. These are then examined by geologists. They look for the special rock formations where oil is often found. These can be seen from the air. Afterwards, geologists on the ground collect rock samples and analyse them.

2) When a possible future oil field is identified, the next step is to drill an exploratory well. These are sometimes called ‘wildcat wells’.
3) Each time a new well is drilled, a ‘well log’ is created. The ‘well log’ is a record of the rocks and depth at which they are found. Geologists also keep core samples for analysis. Geologists can use the information from different well logs to construct a map of the area between the wells. This process is called ‘geological reasoning’.
4) This can help to identify where there are perhaps ‘petroleum traps’ for future drilling.

Geochemical methods

5) Geochemists analyse samples of surface water and soil for small amounts of oil and gas that show oil or gas reserves. A gas chromatograph can analyse gas. At sea, hydrocarbons can be found by equipment that is pulled along in the water.

Geophysical methods

6) Geophysicists use mathematics and physics to create a picture of the sub surface. They can identify types of rock by their density (mass) and magnetic qualities. They use different equipment in their search. A gravimeter shows rock density and a magnetometer can be used in planes while flying over an area. Another method is seismic exploration, which uses sound. Shock waves are produced by explosives that are placed in a hole in the ground. These waves are reflected back and show the different kinds of rock under the surface. Instead of explosives, a vibrator truck will be used.

Task 5 Answer the questions from the text.

1) What are three main methods used in oil and gas exploration?
2) Why are aerial and satellite photographs useful?
3) What is a well log, and why is it important to keep one?
4) What sort of samples do chemists take? How can this help in the search?
5) What is the difference between a magnetometer and gravimeter?
6) How do scientists carry out seismic exploration? Which methods are used on land?

Task 6 Match the stages a-f below with headings 1-6 in the text.

a) create well logs and take core samples for analysis
b) drill exploratory wells
c) geologists take samples on ground
d) identify petroleum traps
e) use geological reasoning to map area.
f) aerial photograhs identify possible

Grammar: The Passive

Active – We use the Active when we know who or what does an action, and we feel that is relevant or important to give this information.

Geologists study the structure and composition of the earth.

(= this is what geologists do)

The mud helps to control the pressure. *= subject +verb*

Passive – We use the Passive when we don't know who does an action, or when it is irrelevant.

The rock samples are taken to the lab.

(= this is the process; it doesn't matter who takes them)

Core samples are kept for analysis.

=subject +present simple of be+past participle

In the examples of the Passive above, we use the present simple of ***Be***. It is also possible to use other tenses of ***Be*** to describe actions in the past or future.

We can use Active and Passive forms with structures such as ***can*** and ***will***.

Active: *We can drill from onshore. I will contact the exploration team.*

Passive: *Oil can be drilled from onshore. (=a fact about oil)*

The exploration team will be contacted.

(=It doesn't matter who contacts them)

Passive with *by*

We often use the Passive when describing a process or system. If we want to say who or what causes something to happen in a process, we often use ***by*** after the Passive rather than changing the sentence to an Active form.

*Shock waves are produced **by** explosives in the ground.*

Task 7 Look at 1-4. Tick (✓) the sentences where we know who does the action.

1) Each time a new well is drilled, a 'well log' is created.
2) Gologists also keep core samples for analysis.
3) Photographs are taken from planes or satellites.
4) Geochemists analyse samples of surface water and soil for small amounts of oil and gas.

Task 8 Convert these sentences from active to passive. Begin with the underlined words.

1) Geologists conduct <u>an aerial survey</u> from a plane or satellite.
2) They study <u>the photographs</u> for examples of reservoir rock formations.
3) Afterwards, geologists on the ground collect <u>rock samples</u> and analyse them.

4) Geochemists will explore the rainforests for oil soon.
5) A magnetometer measures magnetic fields and an instrument called a gas chromatograph can analyse gas.

Task 9 Rewrite the sentences using the Passive.

1) Experts take aerial photographs for land-based exploration.
   Aerial photographs _____.
2) Afterwards, geologists analyse the photographs carefully.
   Afterwards, the photographs _____.
3) If the signs are promising, geologists on the ground collect samples.
   If the signs are promising, samples _____.
4) At this point, a drilling team can dig an exploratory well.
   At his point, an exploratory well _____.
5) If the signs look good, the oil company will drill a well.
   If the signs look good, a well _____.

Speaking task:

Task 10 Oil companies use many different methods in their search for oil and gas reserves. Match the methods with the photos.

1 aerial survey 2 chemical analysis 3 magnetic survey 4 seismic survey

Listening task:

Task 11 Dr. Marion Bell is an expert on the world consumption of oil. Listen to an extract of a radio interview where she was asked about trends in oil consumption. Listen to part A, and complete the notes.

Part A

Between 1994 and _____[a], consumption rose by _____[b]a year. In 2003 – 2004 it went up by _____ [c]. Chinese consumption _____ [d] between 1996 and 2006. By 2030, world demand will be _____[e] million barrels a day.

LESSON 11 DRILLING PART I

Warm up activity:

Task 1 Discuss these questions.

1) Successful drilling depends on controlling the pressure in the well. What do oil workers mean when they talk about a "blow-out"?

2) What kind of damage can it cause?

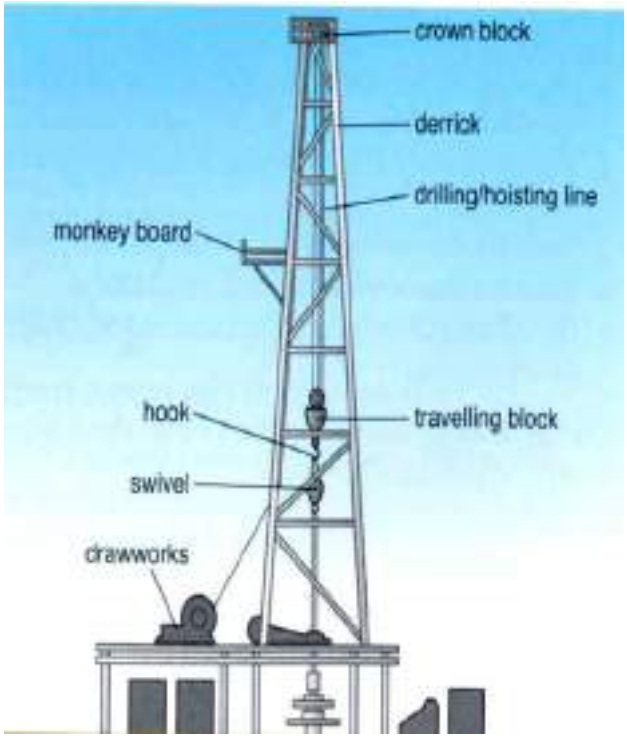
3) How can oil workers reduce the risk of a blow-out?

Vocabulary tasks:

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

crown block, derrick, monkey board, bit, hoisting/drilling line, hook, swivel, kelly, drawworks, travelling block, drill collar, drill pipe, rotary table, drill string, to rotate, tricone, industrial diamonds, above, over, around, opposite, behind, in front of, between;

Task 3 Study the diagram of a drilling rig and match the descriptions to the words in the diagram.



Example: This raises and lowers drilling equipment in and out of the well. - ***hoisting line***

1) The swivel and drilling equipment are all suspended from this. _____

2) The hoisting line goes around this piece equipment. When it turns, the line goes up or down._____

3) This is the steel tower that goes over the well. All the lifting and drilling equipment is inside it. _____

4) This connects two objects. It allows the one below to rotate, and the one above to stay still. _____

5) This is the small platform near the top of the derrick where the one of the drilling team stands. _____

6) This is the frame and wheels that move up and down the derrick on the hoisting line _____.

7) This is the steel frame and wheels that are fixed on top of the derrick. _____

Reading tasks:

Task 4 Read the text and translate it into Uzbek.

The drill string

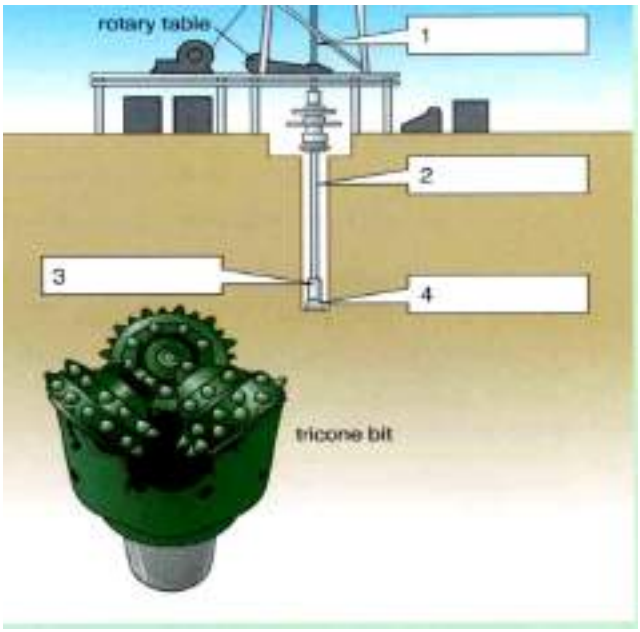
The work of drilling under the ground is performed by the drill string. The drill string consists of the kelly, sections of drill pipe, the drill collar, and a bit to drill the rock. The kelly is a strong pipe that is always at the top of the drill string.

It has four or six sides and goes through the rotary table which turns around (rotates). The rotary table is on the drill floor. There are many lengths of drill pipe between the kelly and the drill collar. Oil workers add sections of drill pipe one by one to the kelly. Each time they add a section, they lift the kelly out of the hole.

Then they add a section of drill pipe at the top of the string and lower it back into the ground. At the bottom of the string we can find the drill collar. The bit goes into the collar.

Bits are usually tricone – in other words, they have three rotating cones. A circular bit with a hole in the middle is used to take core samples. Drill bits can be covered with industrial diamonds to make them last longer.

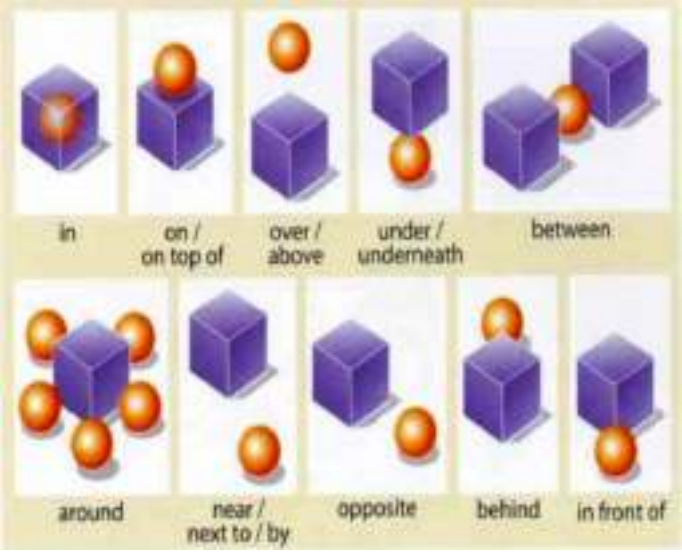
Drilling mud is pumped through jets in the bit – this lubricates and cools it and, as the mud is circulated, it also carries the pieces of drilled rock fragments to the surface.



Task 5 Read the text about what happens from the drilling platform to below ground. Label the diagram with the words in the list.

- bit
- drill collar
- drill pipe
- kelly

Grammar: Prepositions



Prepositions

We can use prepositions to describe where people or things are and to describe movement. Common prepositions of place include: *above, around, at, behind, between, from, in, in front of, next to, opposite, outside, over, under*.

These prepositions are used with *be*.

*Pipelines **under** the sea are expensive to build.*

*There isn't much space **between** the two sections.*

Prepositions of movement are used with many verbs such as *jump, move, rotate, travel*. Many prepositions of place can also be used as prepositions of movement.

*The apparatus moves **between** the two sections.*

Other prepositions that are commonly used to describe movement are *across, along, into, onto, through, to*.

*The mud carries the rock **to** the surface. The kelly goes **through** the rotary table.*

Task 6 Compete the sentences with suitable prepositions.

1) The crown block is _____ the top of the derrick.
2) The drill collar is _____ the bit and the drill pipe sections.
3) A member of the crew stands _____ the monkey board.
4) The kelly goes _____the rotary table.
5) The hoisting line goes _____the drawworks.
6) The swiwel is _____ the hook.

Task 7 Complete the sentences by choosing the correct preposition.

1) The crown block is _____ top of the derrick.
   a) in b) by c) on
2) The rotary table turns _____. a) around b) up c) down
3) Each time they add a length of pipe, they the kelly _____ the borehole.
   a) away b) off c) out of
4) There is a problem, I can't put the bit _____ the collar.
   a) by b) into c) by
5) They pump the mud _____ the borehole.
   a) down b) onto c) at
6) Horizontal drilling goes _____ the reservoir rock.
   a) at b) across c) opposite

Speaking tasks:

Task 8 Read the dialogue and answer the question below.

S= Simon, J=Jack

S: So tell me, Jack, who is in charge of this rig?

J: You could say the 'company man', because he represents the oil company that is paying for the drilling. He checks they are drilling the well the way his company wants.

S: I see, but he doesn't do drilling himself? Who is in charge of the drilling team?

J: The drill pusher. He is in overall charge of everything that goes on. When they are drilling, he is there day and night.

S:That is big responsibility. How many people does he have in his team?

J: That all depends, but his second-in-commandis the derrickman. He stands on the platform called the monkey board. He supervises each time they add and remove a piece of the drill string. Each time they want to add or take off pipe, they need to lift part of the drill string out of the well and lower it again. This is called tripping out and tripping in.

S: What an amazing expression. I know that there are some funny names for crew members too. Like the mud man. Why is mud important?

J: There are three main reasons. First of all, it helps to lubricate the drill.

S: Like oil in a motor?

J: That's right, otherwise the drill bit gets too hot.

S: And the other reasons?

J: The mud carries the rock that has been drilled to the top; you know, it brings it up through the borehole to the surface. Mud also helps to control the pressure in the well.

S: Is the mud the kind of stuff we find in the garden?

J: Not exactly. It is usually a mixture of diferent things.So the mud man you talked about is the engineer who is in charge of the mud supply.

S: Oh, right. So who else is there, then?

J:Well, there is the motor man who is in charge of the motors. He is important because if the motors break down, the equipment doesn't work. And we mustn't forget the roughnecks and roustabouts. Basically, the roustabout is a general helper who does whatever is needed to support the team.

S: And what about the roughnecks?

J: Well, they are the guys on the drilling floor. They move the pipes and join them up.

Roughnecks are strong tough guys who physical work in difficult conditions.

Task 9 Read the dialogue again and answer the questions.

1) What is the difference between the company man and the drill pusher?
2) Why does the derrickman stand on the monkey board?
3) What do they call it when they take part of the drill string out of the ground and put it back again?
4) What are three different things mud does?

Task 10 Which job do you think is the most.....

tiring? complicated? stressfull? dangerous? interesting?

LESSON 12 DRILLING PART II

Kick off

Task 1 Read the given passage discuss it small groups.

Although drilling rigs are similar in principle, they vary in size and complexity depending on the size and depth of the hole, the rock formation and the surface conditions, particularly whether onshore or offshore. The drilling rig rotates a drill string which holds a drill bit to create the borehole. The bit is a tricone comprising three conical rollers containing teeth made of a hard material: tungsten carbide, or sometimes diamond.

The drilling process requires the use of some very powerful and complex equipment: the main derrick, drive motor and rotary table, mud pupms, mud mixing and storage tanks, shale shakers for separating the cuttings in the mud, pipe-handling equipment, and drawworks to lower the draw string.

Vocabulary tasks:

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

fractured, horizontal, rotary, to complete, to connect, to drill, to bore, borehole, to deviate, deviated drilling, to exploit, to lubricate, chisel, approximately, pump, company man, drill pusher, derrickman, mud man, motor man, roustabout, roughneck;

Task 3 Match the jobs with the descriptions. The .....

1) company man	a) is in charge of the engines.
2) drill pusher	b) is a general helper.
3) derrick	c) looks after the mud supply.
4) mud man	d) leads the drilling team.
5) motor man	e) is second in command.
6) roustabout	f) represents the oil company.
7) roughneck	g) handles the pipes.

Reading tasks:

Task 4 Read the text and translate it into Uzbek.

The best way to drill

In the early days, oil men didn't exactly drill, they broke the rock with a kind of chisel and lifted out the pieces in basket. Progress was slow – sometimes drilling teams only drilled 20 to 30 feet a day. These days modern rotary drills can bore

through several hundred feet of rock in the same time. Engineers pump mud down the borehole to lubricate the bit. This stops the bit from becoming too hot, and also brings the drilled rock to the surface. This rock is analysed and the data is used to create a well log. Boreholes can be vertical, in other words, they go straight down.

If a bit meets hard rock, the well may deviate; that is it accidentally changes direction. However, with modern technology drillers choose deviated boreholes from the very beginning. In fact, this kind of drilling is more common than entirely vertical wells. Most oil-bearing strata are approximately horizontal so deviated drilling allows drillers to enter horizontally across oil-bearing rocks. Once the drill bit has entered the horizontal oil-bearing rock (the reservoir), it sends continuous feedback data for the well log. The engineers read the log and then adjust the angle of the borehole according to the information they receive. In this way the well stays within the reservoir. This is especially useful when the sub-surface is fractured. Horizontal drilling is much more efficient than the older, vertical wells.

It is possible in some circumstances to drill into an undersea oil reservoir from a land-based derrick. It can also be useful where the oil is under, say a large mountain. Deep water offshore platforms use multiple deviated wells from a single well. The Cognac platform in the Gulf of Mexico has sixty-two deviated wells running from it! This way a single well can be used to exploit a large area.

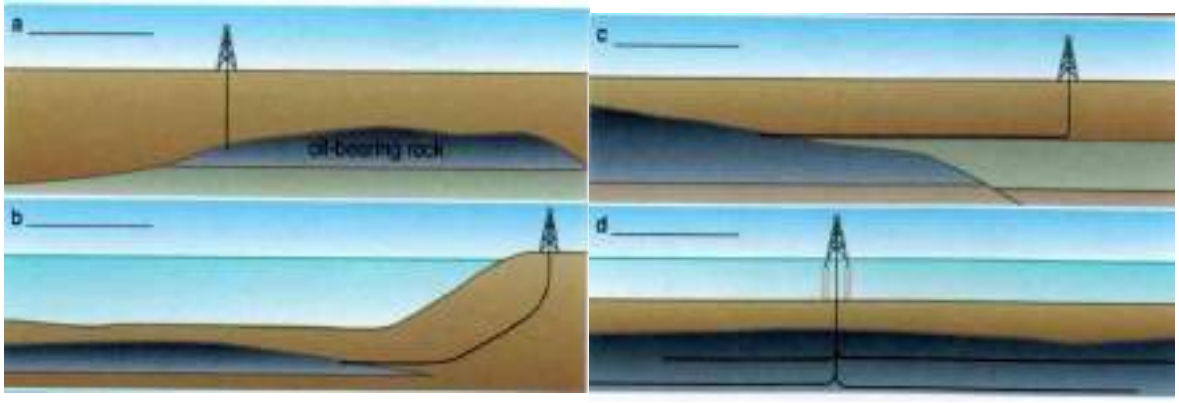
A horizontal well runs through the area above and across the reservoir. A horizontal well can recover five or six times more oil than a straight-down well. It also means that fewer vertical wells are dug and less damage is done to the surface

Task 5 Read the text and answer the questions 1-3 with a number.

Example: How many feet a day did people manage to drill in the early days of oil? – 20- 30 feet

1) How many feet of rock can a modern rotary drill bore in a day?
2) How many deviated wells run from the Cognac platform?
3) How much greater is oil production from a horizontal well?

Task 6 Label the diagramms with the type of drilling they show.



Speaking task:

Task 7 Mustafa is talking to Patrick aboiut what he needs to drill a well. Read their conversation and compare it with Mustafa's order, What other things did Patrick remember he needed?

M: Have you completed your requisition form, Patrick?
P: Yes, we'll need a new kelly.
M: Four or six sides?
P: Six. And sixty lengths of drill pipe.
M: 20 or 30 feet long?
P: Thisty feet.
M: Ok. And what about drill bits?
P: Well, we need two tungsten and one diamond tricone.
M: Great. I'll order everything tomorrow. If you think of anything else, tell me before then.

Grammar: Adjective forms

We can change adjective forms to modify the meaning of the adjective.

too*, *not ... enough

We use ***too*** + ***adjective*** and ***not*** + ***adjective*** + ***enough*** to talk about qualities in a different way.

The liquid is too thick. (= it needs to be less thick)
The liquid is not thick enough. (= it needs to be thicker)

We can use these expressions with adjectives that have opposite meanings to make them mean the same thing.

too thin = not thick enough *too dark = not light enough*

-er, -est and **more, most**

We can add **-er** to the end of an adjective or put more in front of the adjective to make a comparison between two things or people. We add **-est** or put the most in front of the adjective to make a comparison between more than two things or people. The rules are as follows:

		Adjective	Comparative	Superlative
Short adjective	+ ***-er / -est***	tall	tall**er**	the tall**est**
Adjective ending in *-e*	+ ***-r / -st***	large	large**r**	the large**st**
Short adjective ending in consonant + vowel + consonant	double the consonant + ***-er / -est***	big	big**ger**	the big**gest**
Adjective of two or more syllables	***more / the most*** + adjective	modern important	**more** modern **more** important	**the most** modern **the most** important
Adjective ending in consonant + *-y*	change *-y* to *-i* + ***-er / -est***	heavy	heav**ier**	the heav**iest**

*Let's make the mud **thicker**. The problem with the pump is getting **more serious.***

Task 8 Complete the questions, changing the word in brackets to more + adjective or adjective + -er.

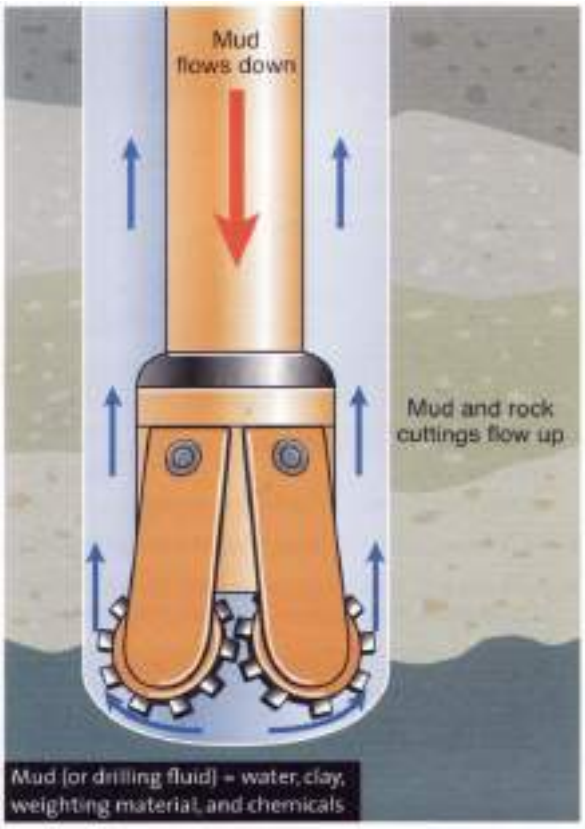
1) Which is (difficult) _____: maths or English?
2) Which is (long)_____ : a kilometre or a mile?
3) Which is (important) _____ : speed or safety?
4) Which is (cold) _____: Canada or the USA?
5) Which is (dangerous) _____: fire or H2S gas?
6) Which is (big) _____: Russia or China?

Task 9 Complete the sentences. Use the superlative form of the adjectives in the list.

big deep dirty experienced junior old

1) Roustabouts are the _____ people on an oil rig and they do the _____ jobs.
2) The toolpusher is usually the _____ and the _____ person on a rig.
3) The _____ well in the world is 10,685 metres. The well is in the Gulf of Mexico and belongs to BP, one of the _____ International Oil Companies.

Task 10 Complete the description of the mud process. .



Drilling mud is a mixture of water, clay, and other materials. The _____ [1] pumps mud from the _____ [2] into the top of the drill string. The mud flows down inside the 1 to the bit. It cleans and cools the _____ [4].

Then it flows up the hole and carries _____ [5] up with it. The mud and cuttings go to the _____ [6]. The mud screen separates the cuttings from the mud. The mud flows through to the _____ [7] below.

LESSON 13 PIPES AND PIPELINES

Warm up:

Task 1 Read the questions and discuss them in small groups.

1) Are there any pipes near where you are right now?
2) What do the pipes carry? What size are they?
3) Are there any major pipelines in your country?
4) Can you name some world-famous pipelines?

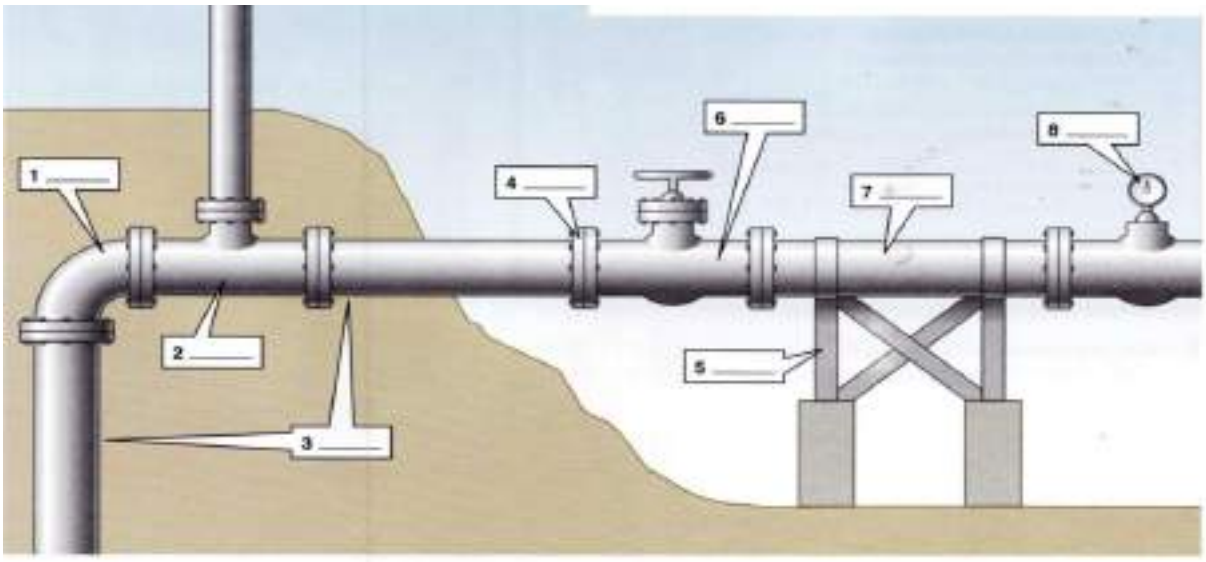
Vocabulary tasks:

Task 2 Read the active vocabulary and translate it into Uzbek.

tee, flanged joint, valve, elbow, pipe support, flowmeter, underground pipeline, section of pipe, to cause, to block, to inspect, to design, device, tools, deposits, oil flow, to slow, launcher, receiver, to push, quotation, to take out;

Task 3 Match the names with 1-8 in the picture.

a) flanged joint b) tee c) valve d) elbow e) pipe support
f) flowmeter g) underground pipeline h) section of pipe



Task 4 Match the underlined words with their meaning.

1) <u>cause</u> problems	a) stop the flow in
2) <u>reduce</u> oil flow	b) look carefully at
3) <u>block</u> the pipeline	c) make plans for

4) inspect pipes d) make less

5) design tools e) make

Reading tasks:

Task 5 Read the text and translate it into Uzbek.

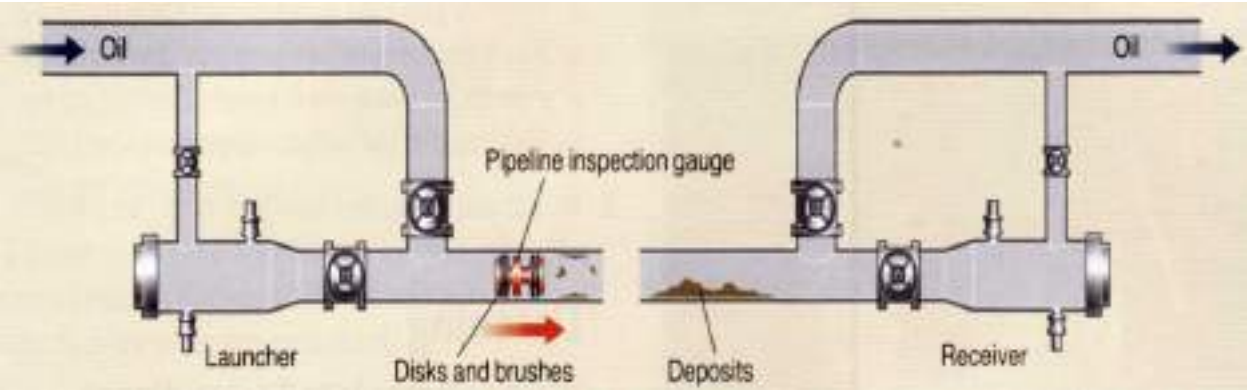
PIPELINE CLEANING SERVICES: Pipeline Support Global (PSG)

Deposits in a pipeline cause problems. They reduce oil flow. Sometimes they block the pipeline completely. This slows production. Pipeline Support Global can help. We

- ✓ inspect pipes;
- ✓ plan pipeline cleaning;
- ✓ design and make cleaning tools;
- ✓ manage pipeline cleaning;
- ✓ clean up the site.

We clean a pipeline with a pipeline inspection gauge (sometimes called a 'pig'). Here's how it works:

- ➢ We put a launcher and receiver in the pipeline system.
- ➢ We put the device into the pipeline.
- ➢ The oil pressure in the pipeline pushes the device.
- ➢ The discs and brushes clean the pipe.
- ➢ The device pushes the deposits out of the pipe.
- ➢ We take out the device from the receiver.



We clean pipes for all industries. Email for a quotation or more information.

Task 6 Read the text. Complete the sentences.

1) **D**_____ reduce the flow of oil.

2) PSG makes **t**_____ that clean pipes.

3) Workers use a **l**_____ to put the device in the pipe.

4) The device has **d**_____ and **b**_____They clean the pipe.

5) Workers take the device out at the **r**_____

6) A **q**_____ is a price for a job.

Grammar: Countable and uncountable nouns

Nouns can be countable or uncountable. Both types can be used with the. Countable nouns - These can be singular or plural. In the singular, they are used with **a / an** or **one**. In the plural, they can be used with numbers or other expressions such as **some** or **many**.

a pipe three instruments *an inspector several fittings* *one litre*

I have a cylinder. I see some sparks. We need the material.

How many cylinders are there? There's some water on the floor.

How much oxygen have we got?

The verb agrees with the countable noun.

*The pipe **carries** the oil.* *Some sparks **are** coming out of the machinery.*

Uncountable nouns -These have no plural form. They are used with expressions such as **some** or **much**, but not **a/ an** or numbers. Examples include **safety**, **smoke**, and **petrol**.

NOT ~~*a smoke, two petrols*~~

Uncountable nouns always have a singular verb form.

*There **is** smoke inside.* ***Is** there much smoke?*

Task 7 Choose the correct words to complete each sentence.

1) We switch off *equipment / an equipment*.
2) There are six main *hazard / hazards* for welders.
3) Gas *cylinder / cylinders* can explode.
4) Never look at *spark / the spark*.
5) Hot sparks can burn *clothes / a clothes* and start fires.
6) *Smoke / A smoke* from welding can be dangerous.
7) Use *cart / a cart*.
8) We always know *material / the material* we're welding.
9) Cover *skin / a skin* and eyes.
10) Don't stand in *water / a water*.

Task 8 Use the words in the list to complete the sentences. Then tick (V) U (uncountable) or C (countable).

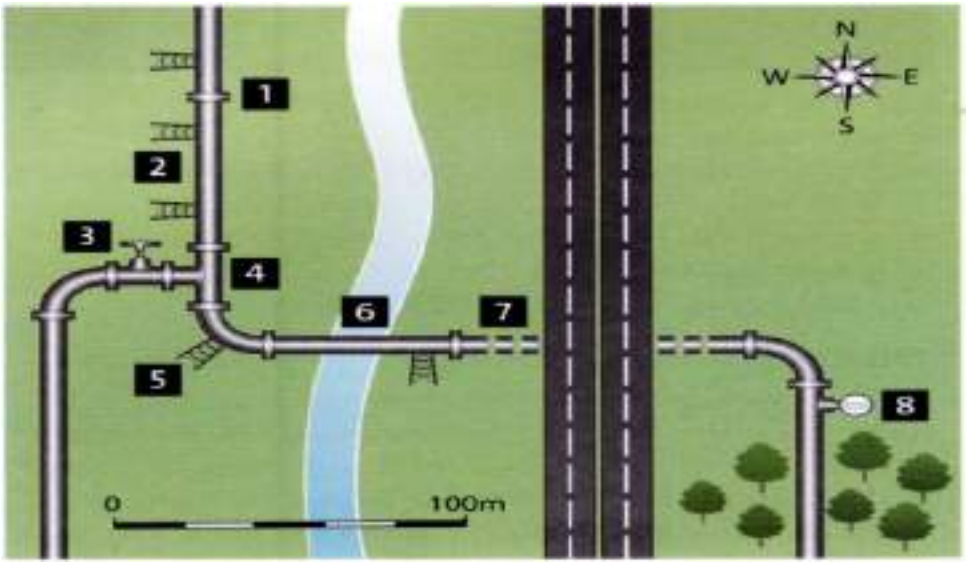
brush	deposits	ethanol	eyes	information
shock	smoke	steam	welder	oil

	U	C
1) Boiling water makes _____.	☐	☐
2) I have some _____.	☐	☐
3) I had wet feet and got a _____.	☐	☐
4) The _____ cleans the pipe.	☐	☐
5) My car holds five litres of _____.	☐	☐
6) The arc ray burned my _____.	☐	☐
7) I work as a _____ in Brazil.	☐	☐
8) Don't breathe the _____!	☐	☐
9) There are some _____ in the pipe.	☐	☐
10) _____ is a biofuel.	☐	☐

Speaking task: Describing a pipeline

Task 9 Match the descriptions with the numbers on the map.

a) At the motorway, the pipe goes underground.
b) There's a flow meter just before the pipeline goes into the forest.
c) There's an elbow, then the pipeline goes east.
d) There's a valve near the tee.
e) There's one section of pipe over the river.
f) There are two straight sections joined by a flanged joint.
g) There are two pipe supports under this section.
h) The pipeline goes south for about 100 metres. Then there's a tee.



LESSON 14 REFINING

Warm up:

Task 1 Match the petroleum product with a picture.

asphalt / bitumen

liquid petroleum gas

petrol/gasoline

kerosene / jet fuel

diesel / petrodiesel

fuel oil

Task 2 Answer the questions.

1) Which product is the heaviest? 2) Which is the lightest?
3) Which is a solid? 4) Which ones are liquids?
5) Which burns as a gas?

Vocabulary tasks:

Task 3 Read the active vocabulary of the lesson and translate it into Uzbek.

asphalt, boil, degrees Celsius (^{0}C), fractional distillation, fuel oil, furnace, to melt, kerosene, liquid petroleum gas (LPG), solid, to earth, to refine, refinery, to hide , neighbouring village, to store, to drain, to drive, average;

Task 4 Match the actions with the pictures.

a) Check the transport emergency card. b) Connect the pipes.

c) Drain the hoses. d) Load the tanker.

e) Drive the tanker out of the loading area. f) Switch off the master switch.

g) Drive the tanker into the loading area. h) Earth the tanker.

Reading tasks:

Task 5 Read the text and translate it into Uzbek.

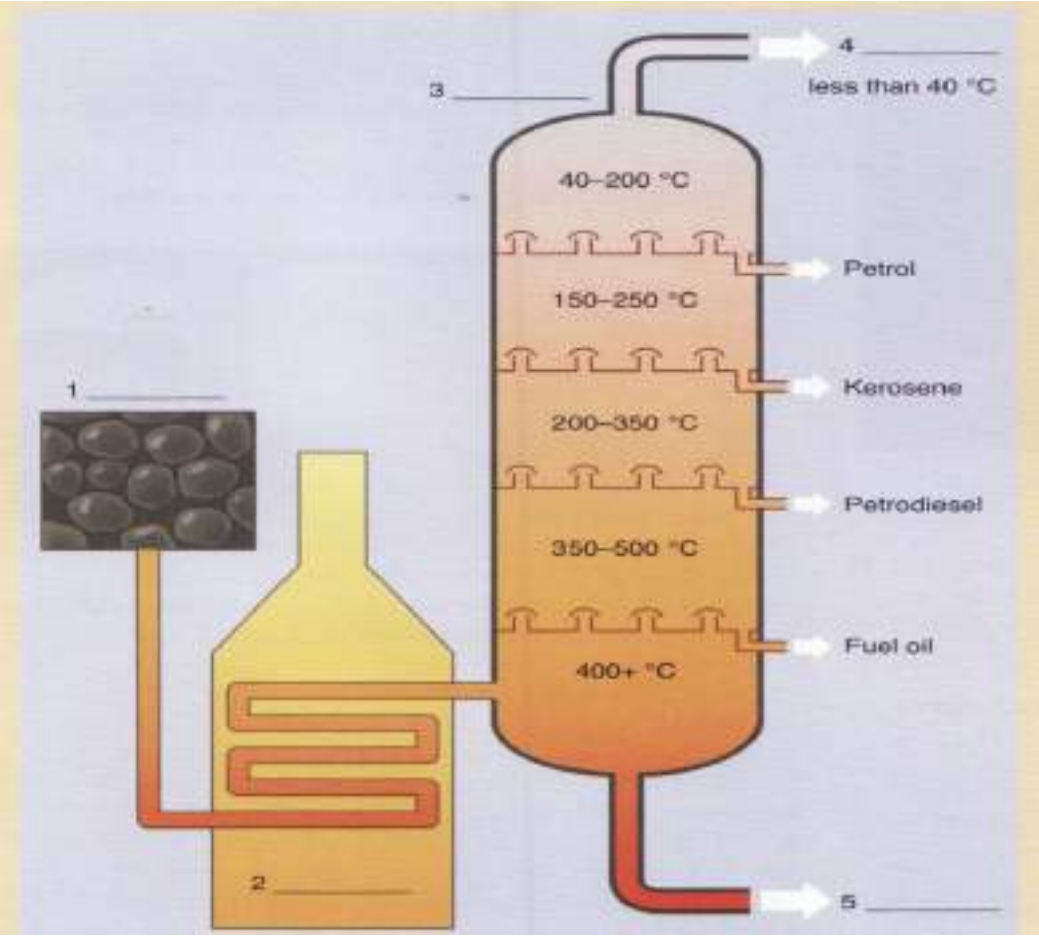
How a refinery works

An oil refinery turns **crude oil** into **petroleum gas**, petrol/gasoline, kerosene, diesel oil, fuel oil, **asphalt / bitumen**, and many other products. Here's how it works. First, the crude oil is pumped into the **furnace**, where it is boiled. Next, the boiling oil enters the bottom of the **distillation tower**. Boiling separates the crude oil into fractions. Fraction means part. The fractions of crude oil are products with different boiling points: petroleum gas, petrol, and so on. The lightest product, petroleum gas, rises to the top. The heaviest products, like asphalt, sink to the bottom. After the products are separated, they are piped out of the tower. The different products are stored in tanks in the refinery. Finally, they are taken out of the refinery by tanker lorry, rail tanker, boat, or pipeline.

Refineries and the environment. In addition to making useful petroleum products, fractional distillation and other refinery processes also can create noise, odour, air pollution, and water pollution. Most countries have environmental rules that refineries must follow. All refineries must monitor and control possible problems. Every refinery has a safety and environment officer. His or her job is to make sure the refinery follows the rules.

Temperatures vary for different refining processes, crude oils, and end products.

Task 6 Read the text. Use the words in bold to label the picture (1-5).



Task 7 Answer the questions from text.

1) Which product has a boiling point of about 350 0(7
2) Which is lighter, petrol or kerosene?
3) Which is the heaviest product on the picture?
4) What three vehicles does the text mention?
5) What environmental problems are mentioned?
6) Who has the job of monitoring possible environmental problems?

Grammar: Passive voice

We use the Passive to explain actions or processes. It generally isn't important who does the action. It is the action that is the most important element.

Passive: The crude oil is stored in these tanks. (= this is the process; it doesn't matter who stores them)

The refinery and pipes are hidden from the village by trees.

=subject + present simple of be + past participle

Active: We use the Active when we know who or what does an action, and we feel that it is relevant or important to give this information.

The crude oil travels along these pipes into the tanks.

The refinery uses river water for cooling the machinery.

= subject + verb

When describing a process, we can sometimes choose to use either the Active or the Passive. In this case, we often use by with the Passive to say who does the action.

Active: *A bridge connects the refinery to the main road.*

Tankers bring crude oil to the refinery.

Passive: *The refinery **is connected** to the main road by a bridge.*

*Crude oil **is brought** to the refinery by tankers.*

Task 8 Choose the correct word.

1) The trees hide / are hidden the refinery.
2) The refinery is managed / manages from the admin block.
3) Some products leave / are left the refinery in tankers.
4) Kerosene is taken / takes to the airport by a pipeline.
5) The crude oil is refined / refines in the distillation towers.
6) Tankers unload / are unloaded their oil at the jetty.
7) The crude oil stores / is stored in the tanks.
8) The distillation towers are distilled / distil the crude oil.

Task 9 Complete the sentences. Use the words in the list.

bring is connected is hidden is refined is returned
is stored manage take travels

1) This is the jetty. Tankers _____ crude oil to the refinery. They unload the crude oil here.
2) The crude oil _____ along these pipes into the tanks at the tank farm.
3) The crude oil _____ in these tanks until it is refined. Some of them are 80 metres high. There are over 200 steps to the top.
4) This is the main refinery. This is where the oil_____ in the distillation towers.
5) These pipes take the products out of the refinery. Some of the pipes _____ kerosene to the airport.
6) The refinery uses river water for cooling the machinery. The used water _____ here, to the salt marsh. It is often cleaner when it is returned than it was when it was taken from the river.
7) The refinery _____ to the main road here. All of the workers come and go this way. Some of our products leave this way in tankers.
8) The admin block is where the offices are. The people who work here _____ the people and all of the machinery at the refinery.
9) Oakton is the neighbouring village. The refinery_____ from the village by trees.

LESSON 15 ENGINEERING & CONSTRUCTION PART I

Warm up:

Task 1 Match the different branches of engineering in the oil and gas industry a-h with sentences 1-8.

a) drilling engineering
b) electrical engineering
c) environmental engineering
d) process engineering
e) mechanical engineering
f) structural engineering
g) production engineering
h) reservoir engineering

1) _____ is about finding ways to protect plants and animals and the environment and stop damage to the environment.

2) _____ is about designing, developing, and testing tools, engines, machines, and mechanical equipment.

3) _____ is about understanding the complex forces that will act on the platform and designing the platform to stand up to them.

4) _____ is about taking account of the flow rates, pressures, and temperatures of different fluids and the processes required change them into a useful product, then deciding on the size and type of equipment required.

5) _____ is about getting the best oil and gas production results. These engineers study detailed diagrams of the field to help them.

6) _____ is about managing the technical side of drilling wells.

7) _____ is about designing, developing, and testing electrical equipment that is used to produce power and control systems.

8) _____ is about managing the reservoir and the well. These engineers watch the equipment and the oil and gas flow.

Vocabulary tasks:

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

developing, understanding, complex forces, flow rates, fluids, required, stable, unstable, strong, weak, deep, shallow, floating, submersible, challenge, jack-up unit, wind, ice, to survive, saline, food supplies, fresh water, remotely operated;

Task 3 Look at the pairs of adjectives. Underline the correct adjective for each picture.

stable unstable

vertical horizontal

strong weak

deep shallow

floating submersible

Reading tasks:

Task 4 Read the text and translate it into Uzbek.

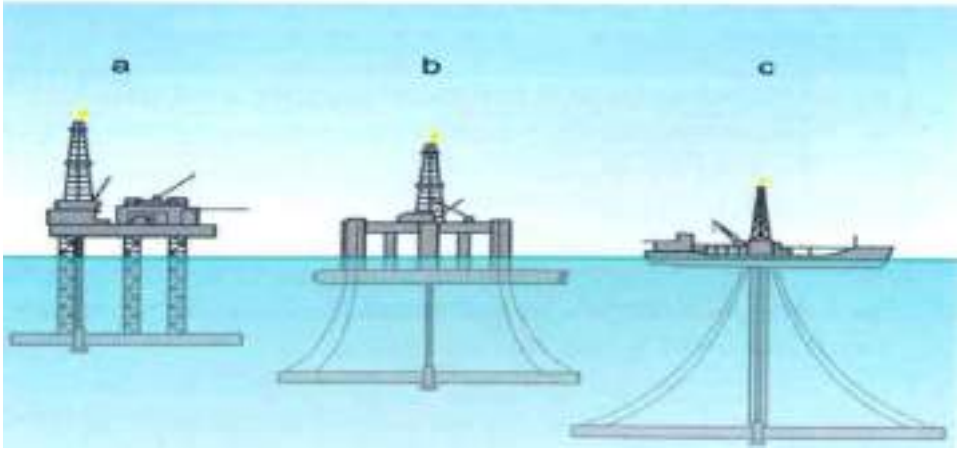
The semi-submersible drilling rig has vertical columns that are connected to pontoons below the water. They often have an engine. This allows them to move easily into position. The pontoons can be filled with water. This lets the rig go down into the water and makes it more stable. They can be used in water up to 300 metres deep.

Drill ships can move easily into position. They are able to drill in deep water of more than 1500 metres. But in bad weather they are unstable.

The jack-up unit is like a floating platform with legs. It has to be pulled into position by a ship. When the platform is in position, the legs are lowered to the seabed and then the platform is lifted out of the water. It is stable and can be used in water up to 100 metres deep.

Task 5 Read the text again and label the diagrams.

a _____ b _____ c _____



Task 6 What are the advantages and disadvantages of each of these platforms?

	Advantages	Disadvantages
Semi-submersible drilling rig		
Drill ship		
Jack-up unit		

Grammar: Talking about ability

We can talk about what is possible and impossible in the following ways.

- can / can't + infinitive *They can drill in deep water.*
- is / are (not) able to +infinitive *The oil is able to move freely in the pipe.*
- allow(s) +object +to+infinitive
  The hot water jacket allows the oil to move freely in the pipe.

We can use the above structures in the Passive, though *is /are (not) able to* tends to be used in the Active.

The rig can't be moved quickly.

The crown block allows the pipe to be lifted.

Another expression we use when talking about ability is *let(s).* This is slightly less formal than *allow(s),* and is not followed by *to.*

- let (s) + object + infinitive *This action lets the rig go down into the water.*
  Let(s) is more commonly used in the Active.

Task 7 Complete the sentences with can / can't and the active or passive form of the verb.

The semi-submersible drilling rig _____[1] (move) easily into position but it _____ [2] (use) in deep water. The drill ship _____[3] (use) in bad weather, but it _____[4] (use) in deep water. The jack-up unit doesn't have an engine so it _____ [5](move) into position by itself. It _____[6] (operate) in 100 metres of water but it _____[7] (use) in deeper water.

Task 8 Designers use CAD (Computer Aided Design) programs to create designs. These programs allow designers to create drawings in two dimensions (2D) or three dimensions (3D). Look at the list of features of CAD.

1) store drawings easily 2) display drawings

3) send drawings easily and quickly to other people

4) make calculations 5) rotate (turn) a design

6) view a design from different angles 7) change data quickly and easily

8) add standard designs 9) see the result of any changes

10) test some designs, e.g. electrical circuits

11) calculate volume, area, stresses, etc.

12) add colour and shading to make it easier to visualize

Use the information in 1-12 above to complete the text below. Put the verbs in the active or passive and add to if necessary. The sentences are in the same order as 1-12 above.

Engineers and designers use CAD programs to draw technical diagrams. These programs allow designers _____[1] drawings easily. Drawings can _____[2] and _____[3] to other people. Designers can _____[4] calculations and they are able _____[5] and _____[6] a design from a different angle. Designers are able _____[7] data quickly and easily.

CAD allows designers _____[8] standard designs and _____[9] volume, area, stresses, etc. Some designs can _____ [10] and designers can _____[11] the result of any changes. The program lets designers _____[12] colour and shading to make it easier to visualize.

Task 9 Match the words in *A* with their opposites in *B*.

A	**B**
1) old	a) horizontal
2) stable	b) submersible
3) vertical	c) weak
4) deep	d) new
5) strong	e) unstable
6) floating	f) shallow

LESSON 16 STORAGE OF PETROLEUM

Vocabulary tasks:

Task 1 Read the words and word expressions and tick the petroleum products.

1 asphalt	✓	7 petrochemicals (feedstock)	☐
2 diesel fuels	☐	8 paraffin wax	☐
3 jet fuel	☐	9 automotive and industrial lubricants	☐
4 kerosene	☐	10 liquefied petroleum gas	☐
5 gasoline	☐	11 propane	☐
6 fuel oils	☐	12 butane	☐

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

industrial lubricants, propane, butane, paraffin wax, tank farm, bullet tank, road tanker, underground tank, properties, synthetic rubber, vehicles, to ignite, to remain, aircraft, to rust, to heat, to pull, water-resistant, ropes, synthetic fibre;

Task 3 Match the words to the pictures.

1) catwalk 2) tank farm 3) bullet tank 4) underground tank 5) road tanker

Task 4 Match the products 1-5 with their descriptions a-e.

1 petrol	a) cannot be re-melted
2 jet fuel	b) corrosion-resistant
3 thermosets	c) remains liquid at low temperatures
4 synthetic fibres	d) do not stretch when pulled
5 synthetic rubber	e) ignites easily

Reading tasks:

Task 5 Read the text and translate it into Uzbek and complete the text with the headings in the box.

Plastics	Jet fuel	Synthetic rubber	Petrol

1_____ Also called gasoline, this is a liquid fuel for vehicles on land and sea. It ignites easily in engines. It remains liquid at normal temperatures.

2 _____ This is a liquid for aircraft and rockets. It remains liquid at very low temperatures.

3 _____ Also called polymers, these are usually light and strong and do not rust. They can be made into different shapes. There are two types:

- Thermoplastics: When you heat thermoplastics, they melt and you can shape them. You can reheat them and melt them again and again. This means that you can recycle them. Water bottles are made of thermoplastics.
- Thermosets: You cannot re-melt thermosets. They are heat-resistant. Engine parts are sometimes made of thermosets.

Synthetic fibres are made from plastics. Nylon is one example. Synthetic fibres are often water-resistant and do not stretch or break when you pull them. They are used to make ropes.

4_____ This is a heat-resistant and corrosion-resistant material. Oil and petrol cannot damage it. For this reason, it is often used to make fuel hoses.

Task 6 Match the sentences to the pictures.

1) Metal rusts. – B 2) Rubber stretches 3) Warning: corrosive materials
4) This jacket is water-resistant. 5) Ice melts at room temperature.

Task 7 Complete the sentences with words from the text above.

1) Fire hoses are made from _____.

2) _____ is used in aircraft.

3) Car fuel is called _____ or _____.

4) _____ is a synthetic fibre.

5) Water bottles are made of _____.

Speaking task:

Task 8 Read the text. Are these sentences true (T) or false (F)? Correct the false statements.

1) The smallest tank we have is 34000 gallons. T / F *largest*
2) The longest bullet tank is 18 metres. T / F
3) The pressure in the bullet tanks is lower than in the fuel oil tanks. T/ F
4) The nearest rig is 45 kilometres away. T / F

This facility is bigger than our others. In fact, it is the biggest facility we have. These tanks are for kerosene. They are much smaller than the tanks we use for the other fuel oils. The largest tank we have is 34,000 gallons. Here it is on the right. Here you can see the bullet tanks, which we use for LPG. The longest we have is 18 metres. The shortest is 6 metres. The pressure in the LPG tanks is normally around 5 bar. This is much higher than in the fuel oil tanks. Propane and butane are both heavier than air, so leaks can be a problem. The gas does not go away. The refinery is not far, only 3 kilometres from here. The closest rig is 35 kilometres away. The furthest is 150 kilometres.

Task 9 Read the information about the three storage facilities. Then complete the sentences.

	Al Gabar Oil Depot	Yakunst Tank Farm	Hangdong Terminal
Built	1962	1998	2001
Distance to refinery	3 km	120 km	27 km
Capacity	33 million litres	32 million litres	54 million litres
Number of tanks	27	44	60

1) Al Gabar is __*older*__ (old) than Yakunst.
2) Al Gabar is _____ (old) depot in the table.
3) Yakunst is _____ (far) from a refinery.
4) Al Gabar is _____ (close) to a refinery than Hangdong.
5) Hangdong has _____ (large) storage capacity.
6) Hangdong has _____ (great) number of tanks.

Grammar tasks:

Past simple

We use the **past simple** to talk about a completed action in the past.	*I* ***called.***
	He ***didn't call.***
	Did *you* ***call?***

Regular	Present	Past simple
	call	called
	roll	rolled
	ignite	ignited
	provide	provided
Irregular	**Present**	**Past simple**
	is / are (be)	was / were
	have	had
	forget	forgot
	come	came
	go	went

Questions
Did it work?
Did he forget?
Did he use water?
What happened?
What caused it?
How did it happen?

Task 10 Complete the sentences with the past simple tense of the verbs in brackets. Use the language box to help you.

1) The problem _____(be) a faulty pressure gauge.
2) The detection system _____(not work).
3) The alarm _____ (not go off).
4) I _____ (hear) you (have) a problem.
5) Some fuel _____ (ignite).
6) He _____ (use) water instead of CO_2.
7) I _____ (turn on) the lights.
8) I _____ (call) the duty electrician.
9) The driver _____ (forget) to put the brakes on.
10) The tanker _____ (roll) into the wall.

Task 11 Complete the sentences with the verbs in the box.

supply	provides	used	re-melted	~~is~~

1) Synthetic rubber __ *is* __a heat-resistant and corrosion-resistant material.

2) These tanks are _____ to store asphalt.

3) This facility _____ storage services for 35 different types of petrochemical.

4) We _____ automotive and industrial lubricants to customers all over the country.

5) Thermoplastics can be _____.

LESSON 17 PRODUCTION PART I

Kickoff:

Task 1 Match the names of places (1-4) with the photos (a-d).

1) drilling platform 2) Floating Production, Storage, and Offtake facilities (FPSO)
3) gas gathering plant 4) gas pipeline

Vocabulary tasks:

Task 2 Read the active vocabulary of the lesson and translate it into Uzbek.

corrosive, enormous, career, experience, FPSO, gas gathering plant, maintenance, personnel, pressure, priority, to gather, to generate, to meter, to monitor, friction, to dive, sub-sea pipeline, giving update, to run out, hidden treasure, desalination, site;

Task 3 Learn the words with their meanings:

compressor (n) a machine for increasing pressure of air or gas
desalination (n) the process of removing salt from water to transform it into drinking water
flare (n) the bright flame from burning the gas at a well head
friction (n) the resistance caused by one object moving or rubbing against another
gather (v) to collect / group together

Reading tasks:

Task 4 Read the text and translate it into Uzbek.

Kuwait's hidden treasure

Kuwait is a major oil exporter and has the world's fifth largest oil reserves. It has recently been lucky and discovered enormous fields of natural gas in the same reservoir as the oil. Flares sometimes burn this gas to get rid of it because of the risk of explosions. Kuwait, however, can use this gas to generate electricity to meet

the country's energy needs and to run desalination units for its fresh water supply. This will let Kuwait export its oil.

Gas gathering is where gas is captured and piped from the well head to the gathering centre where it is prepared for transportation to its final distribution centre. This involves dehydration (removing water) and the sulphur compounds that cause corrosion, particularly H2S. Then its pressure has to be increased by compressors for transportation along the pipes.

Friction in the pipes reduces pressure and flow, so intermediate compressor stations are used every 10 to 40 kilometeres along the pipeline to maintain pressure. A company from South Korea has built a gas-gathering plant for the Sabriya region. The high temperatures and the distant desert areas where the gas fields are located are important technical challenges. Equipment in these areas is controlled remotely. Quality and safety are extremely important. It is important to measure and correctly meter gas flows. The transmission of correct pressure and flow data to control stations ensure that that the gas arrives safety at its destination.

Task 5 Read the article about gas gathering in Kuwait. Statements 1-6 are wrong. Correct them by continuing the second sentence of each pair.

1) The Sabriya region has a new oilfield. I don't think _____.
2) Kuwait is going to continue with gas flaring. Really, aren't they going to ____?
3) Kuwait is going to export its natural gas. Are you sure? I think _____.
4) The gas is transported to the distribution centre in its natural state. I'm not sure that that's right. _____ .
5) They have to reduce the pressure as it travels along the pipeline. That's not right, they _____.
6) Many people work in the desert stations. Well, I thought that _____.

Task 6 Put these steps in the correct order to produce a flow chart of the gas gathering and transportation process.

a) Flow and pressure measurements are monitored at the control centre.
b) The gas goes from the well head to the gathering centre.
c) The gas arrives at the gas distribution centre.

d) Intermediate compressors raise the pressure of the gas.
e) Water and corrosive elements are removed.
f) Gas pressure is raised by the compressors at the gas gathering centre.

Grammar: Present Perfect Tense

Past Simple

We use the Past Simple to talk about completed actions in the past. We often use past time expressions such as ***yesterday, last week, in 1990, ago***, or ***for*** (but not ***since***) We can use this tense to answer the question ***When….?***

*He **started** the course two years ago.* *I **didn't work** in India for very long.*

*Why **did** you **come** back to England?*

Present Perfect

We use the Present Perfect o talk about a period of time that began in the past and which continues up to the present.

Positive:

*I've **lived** in India all my life.* = subject + ***have / has*** + past participle

Negative:

*We **haven't met** the CEO.*

= subject +have / has +not (haven't / hasn't) + past participle

Questions	**Short answers**
***Have** you **finished** reading the report?*	*Yes, I have / No, I haven't*
= Have / Has + subject + past participle	

We often use the time expressions ***for*** (+ period of time) and ***since*** (+ specific point in time). We can use this tense to answer the question *How long …….?*

*I **have worked** in Nigeria for five years.*

*He's **been** on the North Sea FPSO since 2006.*

Task 7 Complete the sentences using the verbs in brackets in the Past Simple or Present Perfect.

1) _____ (you see) Muqtar yesterday?

2) He has a lot of experience – so far in his career he _____ (manage) an FPSO in the Gulf of Mexico and he _____ (even write) a book about offshore production techniques.

3) They _____ (leave) Oman five years ago.

Task 8 Complete the sentences by changing the verbs into the Past Simple or Present Perfect.

1) Malkolm Scott _____(work) in the oil industry since 2004. Before that, he _____ (study) geology at university.
2) _____ (you ever / visit) an FPSO or oil platform?
3) They _____ (join) the company in 2003. Since then they _____ (work) in Kuwait and Iraq.
4) He _____ (study) oil and gas for three years at college, but now he is getting some practical experience.
5) People _____ (know) about the oil sands for hundreds of years.

Task 9 Make sentences with the Present Perfect.

1) They / exploit / that oilfield / more than twenty years.
2) He / work / on an FPSO / 2005.
3) How / long / you / be / oil business?
4) He / not / visit the platform / three months.
5) They / live / in Saudi Arabia / 1980.
6) How long / you study / English?

Speaking task:

Task 10 Read the information and discuss it in groups.

The big oil company where you work has its own TV channel. Each week there is a programme dedicated to 'old timers'. These are people who have worked in the petroleum industry for many years and who are going to retire soon. You are Steve Ryan and you are going to be interviewed for Oil TV.

Study your personal details.

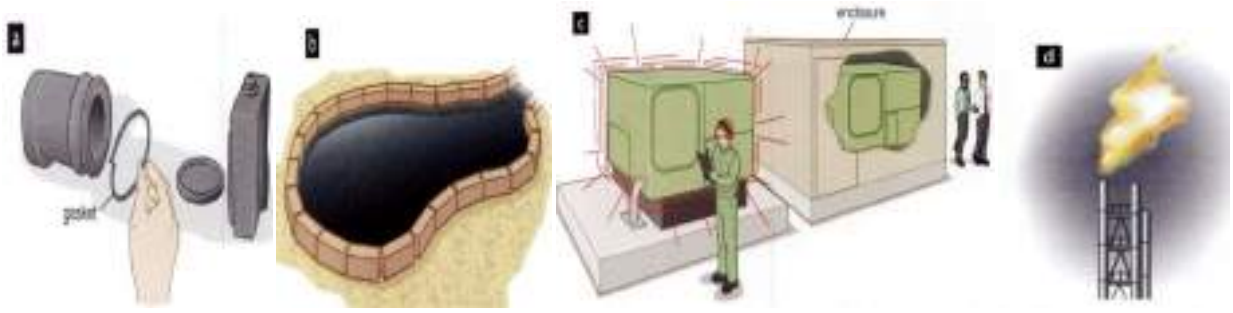
- ✓ You are 55 years old.
- ✓ You were born in Germany, where your father was with the British Army.
- ✓ You joined the Royal Air Force when you were nineteen.
- ✓ You trained to be a helicopter pilot. You learned how to fly Chinooks.
- ✓ You flew lots of different missions. You were a pilot in the Falklands War and the first Gulf War.
- ✓ You are still flying today.
- ✓ You spent ten years in the North Sea – flying to and from offshore rigs.
- ✓ You have worked offshore in Nigeria and the Gulf of Mexico.
- ✓ Most frightening experience; engine failed in the Gulf of Mexico. Five passengers. Everybody escaped.
- ✓ Since then you have worked for Big Oil.

LESSON 18 OIL AND THE ENVIRONMENT

Warm up:

Task 1 Look at these pictures. Which shows……..

1) an oil spill? 2) noisy equipment? 3) broken equipment? 4) a gas flare?



Task 2 Match each solution below with a picture in task 1.

1) Reduce the noise. 2) Make it safe. Clean it up. 3) Repair it. 4) Limit or stop it.

Vocabulary tasks:

Task 3 Read the active vocabulary of the lesson and translate it into Uzbek.

oil spill, noisy equipment, broken equipment, gas flare, to reduce, to repair, eco-hazard, incident, to limit, gas leak, collision, accident, environment, safety, harm procedures, protection programme, to protect, challenge, nature reserve, injury;

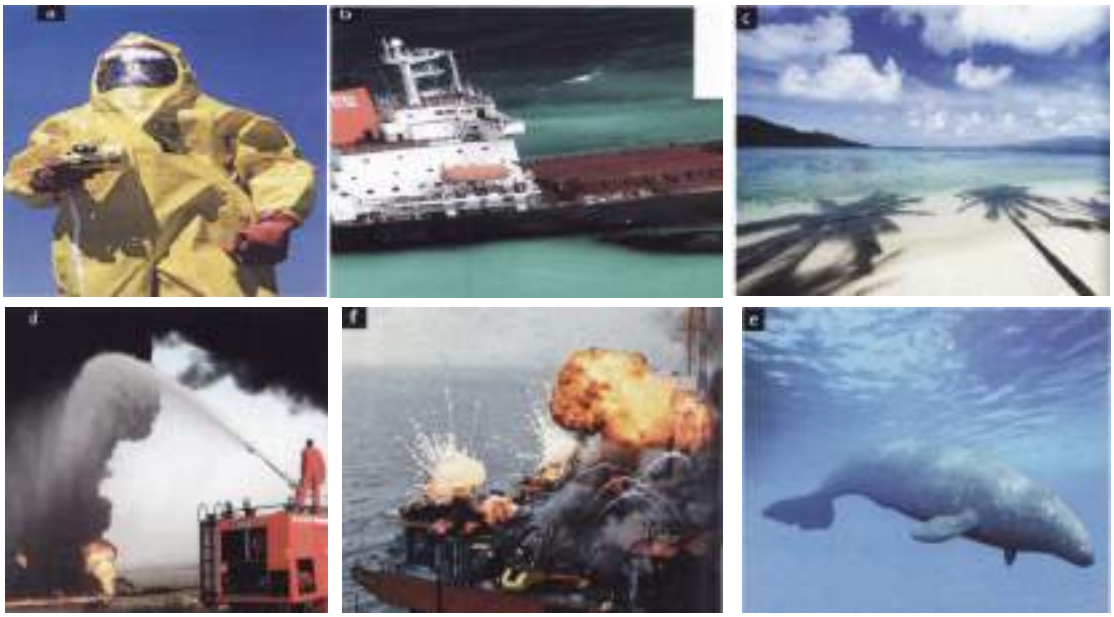
Preventing and dealing with eco-hazards and incidents

• An eco-hazard is something that can harm the environment: people, plants, animals, water, earth, air.

• An incident is something that happens, an event: a fire, a gas leak, an oil spill, a collision, an accident

Task 4 Match sentences 1-6 with pictures a-f.

1) The fire started early this morning.
2) After the rig explosion, we improved our equipment and safety procedures.
3) We followed the usual procedure. We reported the spill immediately.
4) There was a gas leak. We wore hazmat suits when we checked the damage.
5) The field is under a beautiful beach, so we used special drilling techniques.
6) Our company has a wildlife protection programme. We studied the grey whales before we started drilling.



Reading tasks:

Task 5 Read the text and translate it into Uzbek.

Wytch Farm

In 1973, the British Gas Corporation discovered a large oilfield in the south of England. There were 65 million tonnes of crude oil in the ground. And on the ground? A nature reserve including forests, trees, animals, birds, and a perfect beach and seaside - and a village. The engineers faced many challenges:

- noise from construction and drilling
- noise from trucks going to and from the site
- bad smells from the site
- possible oil spills, fires, and explosions
- possible damage to the plants and animals in the area.

British Gas planned the work very carefully. They studied the plants and animals in the area and developed a wildlife protection programme. In 1979, they began drilling. They put the drilling rig in a wood. It was behind the trees so people couldn't see it easily. And they used a special drilling technique: horizontal drilling. The easiest way to drill oil is straight down vertically into the oil. Horizontal drilling (sometimes called extended reach drilling) starts straight down, but then it turns. The drill goes into the oil from the side. Oil companies sometimes drill this way to help the oil

flow into the well more easily. But at Wytch Hill, it was a way to protect the environment. When you use horizontal drilling, the oil can be under a beautiful forest, a village, or even the sea, but the drilling rig and the gathering station can be far away. At Wytch Farm, some of the drilling started more than ten kilometres away from the oil. Wytch Farm is the largest onshore oilfield in Western Europe. But environmental damage at the site is very small.

Task 6 Read the text again and answer the questions.

1) What can you see in the area around Wytch Farm?
2) How many years passed between discovery and drilling?
3) What special drilling technique did British Gas use?
4) How far did some of the drilling go?

Grammar tasks:

Task 7 Complete each sentence with a word from the list. Use the Past Simple.

arrive burn go have ~~*start*~~

EXAMPLE: *We **started** cleaning up last night.*

1) The crew _____ at 6.30.
2) The refinery fire _____ for three days.
3) I _____ to college in Abu Dhabi.
4) When we opened the flow, we _____ a lot of problems with the new pipeline.

do make see ~~*start*~~ *stop*

EXAMPLE*: **Did** you **start** cleaning up last night?*

5) Did we _____ a phone call to head office this morning?
6) Did they _____ work at three o'clock yesterday because of the bad weather?
7) Did you _____ a training course in the UAE last summer?
8) Did he _____ Khaled and Sami yesterday?

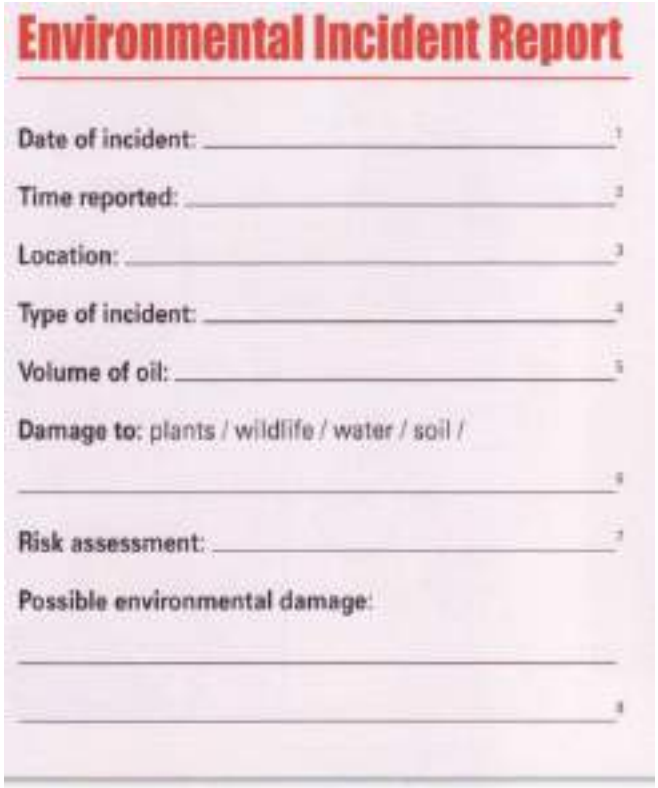
Task 8 Make questions. Use the Past Simple.

1) you / about / Did / the / learn / oil/at / industry / school/ ?
2) industry / Why / you / did / choose / oil / the / ?
3) tools / school/Did / use / you / power / at / ?
4) you / How / learn / did / oil/about / jobs / ?
5) did / lessons / When / you / English / begin / ?

Writing task:

Task 9 Complete the report form. Use the words in the list.

no immediate risk;
27 March;
Fazwan Area, Pipeline 32, Station 6;
20,000 litres;
no damage after clean up;
sand;
16.30;
pipeline leak;



Environmental Incident Report

Date of incident: _____ 1

Time reported: _____ 2

Location: _____ 3

Type of incident: _____ 4

Volume of oil: _____ 5

Damage to: plants / wildlife / water / soil /

_____ 6

Risk assessment: _____ 7

Possible environmental damage:

_____

_____ 8

Listening task:

Task 10 What can you see in the picture? Listen to the conversations. Match each conversation with a problem.

Conversation	**Problem**
1)_____	a) a leak
2) _____	b) an oil spill
3)_____	c) a noisy compressor

LESSON 19 WORKSHOP OPERATIONS

Task 1 Look at these two workshops. Which one is ……..

1) neat and tidy? 2) messy? 3) safer?

In which workshop is …….

1) it easy to lose tools? 2) easy to find tools? 3) easy to work?

Task 2 Read the workshop rules. For each rule, find an example in picture a where the rule has been broken.

Workshop Rules

- ✓ Keep the floors tidy and dry.
- ✓ Keep the workbenches clean.
- ✓ Put tools away when you've finished a job.
- ✓ Don't block the exit.
- ✓ When you leave, turn off the lights and all of your equipment.

Vocabulary tasks:

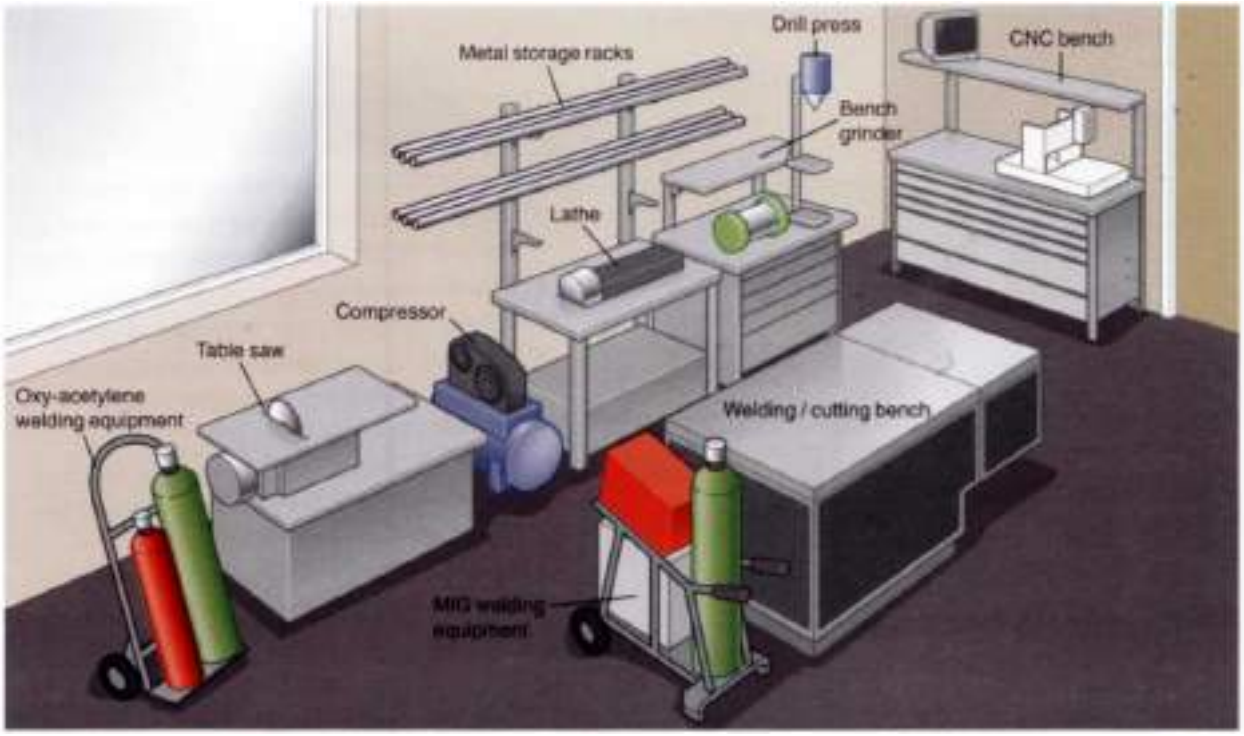
Task 3 Translate the active vocabulary of the lesson into Uzbek and learn it by heart.

broken, cluttered, messy, precision, tidy, budget, containment, micron, exit, responsibility, workbench, to maintain, to manage, to organize, to replace, to lose grinding, turning, shaping, cutting;

Task 4 Power tools and their functions: Match each function with a picture.

1 grinding
2 cutting
3 welding
4 designing
5 turning and shaping
6 drilling

Task 5 Work in pairs. Can you match each function above with a power tool or tools in the workshop picture below?



Complete the table using the words from picture above.

Tool	Function
oxyacetylene equipment	welding and cutting metal
t_____[1] saw	cutting wood and metal
lathe	t_____[2] and shaping metal
storage rack	s_____[3] pieces of metal
bench g_____[4]	grinding
drill press	d_____[5]
CNC bench	d_____[6] and making metal parts
cutting and welding b_____[7]	working on cutting and welding jobs
MIG equipment	w_____[8]

Work in pairs. Take turns asking and answering questions.

EXAMPLE:

A: What do you do with oxyacetylene equipment?

B: We weld and cut metal.

Reading tasks:

Task 6 Read the given text and translate them into Uzbek.

Smart workshop management

A workshop manager's day is filled with problems: broken equipment in difficult locations; expensive repairs on small budgets; people working closely together using powerful tools and equipment. There will always be problems, but smart workshop management can make work easier, quicker, and safer.

Ten top tips:

- ✓ Keep the workbenches clean and clear. A clean workshop is safer. It makes workers more productive.
- ✓ Keep the floors clean and dry.
- ✓ Create safety zones around large tools. The person who is using the tool can be inside the line. Others must stay outside the line.
- ✓ Use good lighting over work areas.
- ✓ Always put tools away after using them.
- ✓ Use guards on tools. Be sure that workers have and use personal protection equipment (PPE).
- ✓ Give clear work instructions for working safely. Tell workers what to do and how to do it.
- ✓ Take care of your workers. Maintain all machinery and tools. Stop using unsafe machines or tools.
- ✓ Spend time with your workers. Learn how they work. Everyone works differently. You may get some good ideas by watching.
- ✓ Watch for possible hazards. Use equipment and materials that can keep your workers safe.

A clean, organized workshop prevents problems.

Task 7 Match the opposites.

1) organized	a) dirty
2) clean	b) disorganized
3) clear (instructions)	c) cluttered
4) clear (workbench)	d) unsafe
5) safe	e) unclear

Task 8 Read the text and mark the following gaps as true (T) or false (F).

1) ____ A cluttered workshop is safer. It makes workers more productive.

2) ____ A clean, organized workshop causes a lot of problems.

3) ____ Give exact work instructions for working safely. Tell workers what to do and how to do it.

Grammar: Present Perfect Tense

Positive:

I / You / We / You / They have ('ve) checked the pressure.

He / She / It has ('s) checked the pressure.

=subject +have / has + past participle

Negative:

I / You / We / You / They have not (haven't) checked the pressure.

He / She / It has not (hasn't) checked the pressure.

= subject + have / has + not (haven't / hasn't)+ past participle

Questions:

Have I / you / we / you / they checked the pressure?

Short answers: *Yes, I have. No, I haven't.*

Has he / she / it checked the pressure? Yes, he has / No, he hasn't.

= Have / Has + subject + past participle

Many past participle forms are irregular and need to be learned individually. For example: *be, go,* and *take*.

Verb	Past Simple	Past participle
be	was, were	been
go	went	been, gone
take	took	taken

We use the Present Perfect to talk about:

• recent actions: *We've taken out the old switch and put a new one in.*

They haven't repaired the faulty lights. Have you done the maintenance check?

• our lives up to now, often with ever in the question form:

Have you ever worked in Kuwait? - Yes, I have. I worked there last year.

/ No, I haven't.

Task 12 Use the cues. Make Present Perfect sentences.

1) you finish welding? _____

2) we do the grinding _____

3) you and Ahmed paint it? _____

4) we not paint it _____

5) they build the base? _____

6) they not finish base _____

7) they check the inside? _____

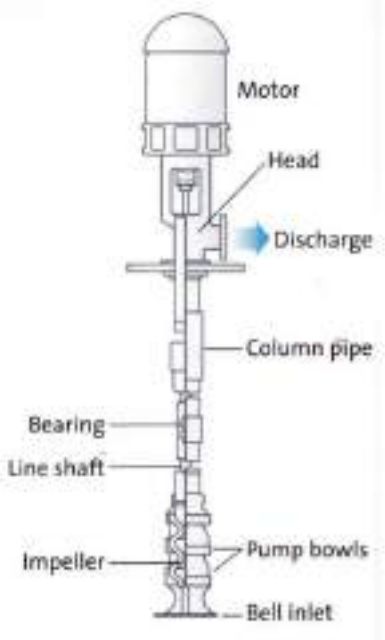
8) Simon check inside _____

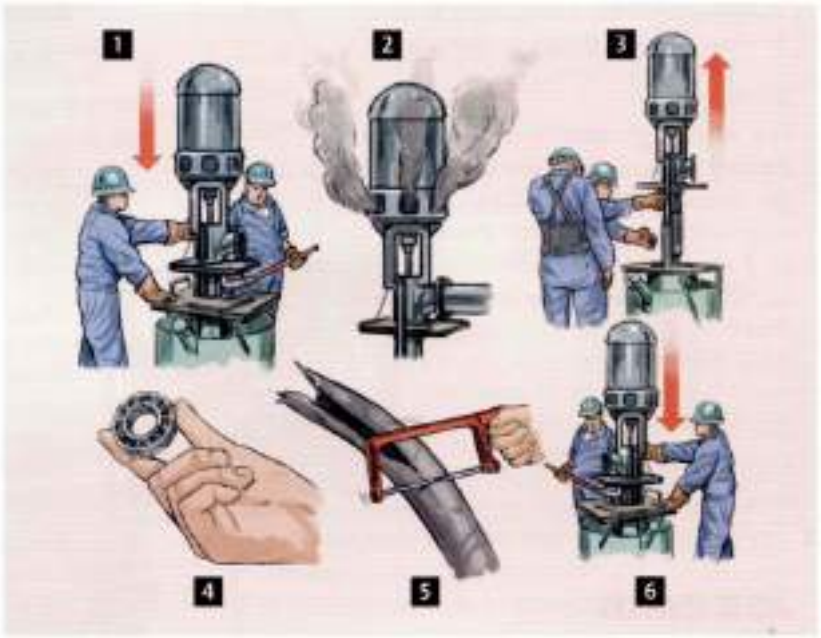
9) they not repair the valve _____

LESSON 20 REPAIRS AND MAINTENANCE

Task 1 Work in pairs. Match the sentences with the pictures.

a) We repaired the hose.
b) The pump stopped working.
c) We installed the pump.
d) We reinstalled the pump.
e) We replaced the bearing.
f) We removed the pump.





Vocabulary tasks: Problems and solutions

Task 2 Read and translate the active vocabulary of the lesson into Uzbek.

belt, bolt, gear, maintenance, troubleshooting, reinstall, remove, damaged, bent, corroded, frozen, jammed, rusted, split, worn, line shaft, impeller, bell inlet pump bowls, to replace, hose, bearing, loose, dent, routine maintenance;

Task 3 Look at the pictures. Find the things.

1) a belt
2) a bolt
3) a computer
4) a copier
5) a gear
6) a cap
7) a tank
8) a wire

Task 4 Match the sentence halves to describe the pictures.

1) The wires	a) is worn.
2) The tank	b) are corroded.
3) The computer	c) is jammed.
4) The copier	d) is leaking.
5) The bolt	e) is loose. So it's noisy.
6) The gear	f) is rusted.
7) The belt	g) is frozen. The system is down.
8) The cap	h) is damaged. There's a big dent in it

Reading tasks: Routine maintenance

Task 5 Read the given passage and translate them into Uzbek.

I'm an electrician. I work on anything and everything electrical in the oil industry. I help to install, maintain, and repair electrical wiring, fixtures, and control equipment. This includes troubleshooting when things go wrong. A lot of my work is outdoors. I work in all kinds of weather.

Sometimes I work in very high places. During any working week, I use all of my personal protective equipment (PPE): hard hat, safety glasses with side shields, safety shoes, safety gloves, hearing protection, fire retardant clothing, safety harness, and breathing apparatus. I also use a special insulating rubber matting. I can stand or sit on it when I work. It reduces the risk of shock. Electricity creates two main hazards. The first is electrocution. If electricity enters your body, it can burn you badly or kill you. The other hazard is sparks. Sparks are generally hazardous, but especially in the oil and gas industry. If there is a spark in an area with flammable gas, of course there can be an explosion. I work very carefully and check everything. Is the electricity switched off? Am I using the right PPE? And other electricians check my work too. We look out for each other.

Task 6 Read the text. Which topics does Carlos talk about?

1) His education and training.
2) His duties and responsibilities.

3) The dangers of his work.

4) The equipment he uses for troubleshooting.

5) Safety on the job.

Speaking tasks:

Task 7 Read the paragraph above. For each word or phrase below, write T (time) or A (action).

1) routine maintenance _____ 2) long life _____

3) procedure _____ 4) number of hours

Portable Electric Generator

Routine maintenance is important for the generator's safe operation and long life. Routine maintenance is especially important in hot and dusty environments. The schedule at the right shows the procedures and frequency for basic maintenance. The generator's hour meter shows the number of hours that the generator has run.

Task 8 Read the text again and mark the given gaps as true (T) or false (F).

1) It can reduce accidents and injuries. ___

2) It can save time and money. ___

3) It can help a machine work well for many years. ___

4) Heat and dust can damage a machine. ___

Task 9 How do you say it? Read the words aloud.

1 mm – one millimeter 2 mm – two millimeters

l µm – one micron 2 µm – two microns

0.001 mm – point oh oh one millimeters

0.025mm – point oh two five millimeters ± plus or minus

Task 10 Read the information. Answer the questions.

• 1mm = 1,000 µm • l µm = 0.001 mm

• A CNC milling machine has a tolerance of ± 25µm.

• The width of a human hair is 100 µm. • The diameter of a pinhead is 1mm.

• The length of a normal mosquito is 10 mm.

1) What is one hundred microns? 2) What is plus or minus twenty-five microns?

3) What is one millimeter? 4) What is about one centimeter?

5) How much is one micron in millimeters?

6) How much is one millimeter in microns?

Grammar tasks:

will: We use will when we decide what to do.

A: It's leaking. **B:** I'll check it.

• We use will when we talk about the future.

A: When will you finish? **B:** We won't finish before midnight

Task 11 Complete the short conversations. Use the words in the list in each conversation.

will ***'ll*** ***won't***

A: The belt is broken. **B:** I _____ [1] replace it.

A: _____ [2] you finish the job today? **B:** No, I _____ [3]

A: _____ [4] Khalid be here tomorrow?

B: No, he _____ [5]. He _____ [6] be here on Tuesday.

A: The gasket's damaged. **B:** We _____ [7] replace it.

A: _____ [8] we have time tomorrow? **B:** No, we _____ [9].

Task 12 Complete the sentences. Use the words in the list.

corroded dented frozen jammed leaking loose rusted worn

1) The belt on the compressor is _____, so it's noisy. We need to tighten it.

2) The gear is _____. It's almost smooth. We need to replace it.

3) The cap is _____ .There's oil dripping out of it.

4) The copier is _____. The paper is really stuck inside.

5) This bolt is _____. I can't loosen it at all.

6) My computer is _____. The system is down.

7) The tank is _____. Someone bumped into it with a fork-lift.

8) The wires are _____ where they connect to the battery. We need to clean them.