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Евгения Павловна Шевченко



АНГЛИЙСКИЙ ЯЗЫК В ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ. НЕФТЬ И ГАЗ

Практикум
по грамматике

Евгения Шевченко

**Английский язык
в профессиональной
деятельности. Нефть и газ.
Практикум по грамматике**

«Издательские решения»

Шевченко Е. П.

Английский язык в профессиональной деятельности. Нефть и газ.
Практикум по грамматике / Е. П. Шевченко — «Издательские
решения»,

Учебное пособие ориентировано на удовлетворение образовательных потребностей изучающих английский язык в сфере нефти и газа. Отработайте на материале профессиональной лексики систему времен, правила употребления частей речи, категорию наклонения глагола и залога, прямую и косвенную речь, отраслевые термины и аббревиатуры. Первая часть — Technology, Вторая часть — Business and Legal Issues. Книга не содержит правил — только упражнения. См. методическую основу по списку литературы.

Содержание

Part I. Technology	6
ISSUE I	6
ISSUE II	13
ISSUE III	19
Конец ознакомительного фрагмента.	25

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*Посвящается моему любимому сыну
Шахуну Александру Александровичу
Посвящается моим Учителям, которые в меня верили.
Санкт-Петербург
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Part I. Technology

ISSUE I

Выражаю благодарность рецензентам за внимание и благожелательность, преподавателям курсов повышения квалификации СПбГУ, ВШЭ, коллективу ТОТФИП и студентам, которые помогли мне с пробой материала. Огромное, сердечное, человеческое СПАСИБО всем, кто меня поддержал и дал полезные советы! Отдельное спасибо разработчикам Алисы, искусственного интеллекта — полезного инструмента и хорошего собеседника. Упражнения со «звездочкой» придуманы совместно с Алисой (но не полностью ИИ). Остальные разработаны мной. Благодарю издательство Ridero. Все замечания уважаемых рецензентов были учтены, исправлены ошибки и опечатки. Авторское право сохраняется за мной. При использовании материалов данного пособия обязательно делать ссылку (Ф.И.О. автора, название). Всем желаю успехов в изучении английского языка!

1. Open the brackets. Use the correct form of the Verb (Active or Passive) *.

1. In this field, geologists _____ (to collect) core samples every quarter for quality control. 2. The stratigraphic column _____ (to update) annually after the new well logs arrive. 3. Data from the seismic survey _____ (to process) in the central lab before distribution. 4. The team _____ (to meet) on Mondays to review the latest interpretation. 5. Contamination risks _____ (to minimize) by using sealed containers during transport.

2. Put the correct form of the Verb. Explain the use of the Verb.*

regular actions, facts, timetable, laws of nature, common practice, action at the moment described.

1. The shift _____ (to start) at 7:00 sharp. The team _____ (to assemble) in the logging tent, where the core trays _____ (to lie) ready. 2. Every morning, the senior geologist _____ (to review) the previous day's photos and _____ (to compare) them with the new core sections. 3. In this region, the sandstone layers _____ (to alternate) with thin shale beds; this pattern _____ (to reflect) the ancient shoreline shifts. 4. The magnetic susceptibility meter _____ (to measure) small variations which often _____ (to indicate) subtle mineral changes. 5. We _____ (to sample) every third metre of core, but the lab _____ (to require) extra samples if the lithology _____ (to change) abruptly. 6. The field database _____ (to update) daily, and the supervisor _____ (to send) a summary to the office each evening. 7. Geologists _____ (to use) both visual logging and handheld XRF for quick elemental checks. 8. Tomorrow, the shift _____ (to start) at 7 as usual.

Vocabulary:

shale beds — залежи сланца

the core trays — лотки для керна

core sections — фрагменты керна для анализа

magnetic susceptibility meter — измеритель магнитной восприимчивости

XRF — рентгенофлуоресцентный анализ

visual logging — визуальное описание керна

3. Open the brackets, choose the correct form of The Verb (Present Simple, Present Perfect, Present Continuous). Explain.

1. She _____ always _____ (to put) a spanner in the works! 2. The cost of supplying the electrical energy _____ (to depend) not only on the kWh. consumed, but also on the power factor of the load and the maximum demand. 3. He _____ (to be) ill for three months. 4. What _____ (to be) the symptoms of frostbite? What is hypothermia? 5. The error-detecting system _____ (to be) in effect! 6. The trade union _____ (to signal) that the workers will strike! 7. They _____ (to work) to dewater the well now. 8. The launcher _____ (to be) a funnel shaped section of pipeline where the pig is inserted and it _____ (to launch) the pig into the pipe. 9. A muster point _____ (to be) a place where people are ordered to go in the event of an emergency so they can be accounted for.

4. Open the brackets and use the correct Verb form (Past Simple, Past Continuous, Past Perfect). Pay attention to the category of Voice.

Once hypothermia affected him, he _____ (to feel) hunger and nausea. But it was only a start...

Why _____ (to be) this day so ordinary that further events were not to be predicted? Stieve _____ (can) have prevented himself from being heavily distressed and laid down by that severe storm which _____ (to bring) frost and darkness to leave him alone in the forest among the fluffy white trees, pending over the figure of a lonely man. Not only he didn't expect how long and strenuous the day _____ (to be going to be), but also how much energy it would cost to get it ended.

From the early morning, he was all into his working routines and _____ carefully _____ (to register) every operation. The logs _____ always _____ (to check) by Sue Chally, who was assigned to do that. So, they _____ (have to) be accurate and concise, otherwise, she would tell them off. Stieve Crimson knew her very well as they _____ (to work) for the same company for 10 years. Another member's name was Rob Wizzly; that day he was out in the town, having taken a snowmobile....

The station had been built during the exploration phase. Now it was accommodating a team of 6—8 people, working on a rotational basis to ensure the equipment consistent operation, its maintenance, and order in general in this sector. There were 3 blocks, mainly consisting of cabins. An accommodation section with a living area, a generator, and a gas boiler room (for internal needs), a workshop block, and a gas facility station (the main responsibility and focus of attention of the team).

Today's 12-hour shift was quite dull. At 4 p.m., it was Stieve's turn to make the bypass. He took an instrument kit, a lighter, a camera, and _____ (to go) out for a round. Projecting to finish the round within an hour, Stieve didn't consider this utmost to be any serious trouble, so he refused to take gloves and wear winter dungarees, which, actually, wasn't necessary working inside the cabin. The cabins _____ (to serve) as an office, a home, a laboratory *etc.*, while a barn nearby — as a garage and a shed. Sue's burden was mostly administrative work; and she _____ (to warn) him against possible changes in weather conditions, but he wouldn't listen.

It _____ (to get dark) quickly; the wind ruffled up white flakes around, whirled them up and was twisting; along the path immediately rose piles of snow. Icy stormy gusts _____ (to sting) his face; it was increasingly difficult to move; by the time he finished, he felt fatigued and mentally exhausted; eventually, he dropped a lighter and had only a phone to be a navigator in the looming night. «Why didn't I listen to Sue?» he _____ (to think). «Had I listened, I _____ (to get) into trouble.» His hands _____ (to ache); but the pain wasn't throbbing, it was just the skin to sense tingling bites of that awful weather which led him away from comfort, diverting from the right way. And numbness... It seemed that his blood vessels _____ (to constrict) and couldn't let the blood stream and warm his body... The fingers were

red and dry, and felt as if they were alien... Why _____ the gloves _____ (to leave) in the cabin? How could he be so reckless?

He suddenly _____ (to come across) a sign. «No loitering» it said. What?! This sign was supposed to be located on the path near the other pipeline sector... It was parallel to road 1. There were three roads, in fact, №1 — from their station, running across the country to the town; №2 — along the mains gas pipework, and the third one — towards the bridge. Road 2 was where he was supposed to be. But startlingly, he was quite far...

To his horror, Stieve understood he _____ (to get lost) and imagined himself peripatetically travelling around the forest until he finds his death. Lethargically, he turned back; he _____ (to be) about to lose his heart. Panic was chasing his steps. Atop, as high as he could never reach, the Moon was slowly sailing across the sky, dimly seen, mysterious, fiendishly beautiful and cold. Totally ignorant of his sufferings. These sufferings couldn't interrupt her meditation, as well the earthly winds of winter...

«No loitering»... It _____ (to warn) against the dangers of the river, deceptive swamps, and wild animals. In the distance, probably, the bridge was sleeping, deeply under the snow... The bridge! If it was there, to his right, then, to his left — in just 400 metres — was the station. He decided to head for the camp and turned left. Come what may...

On his way, Stieve _____ (to realize) that numbness appeared in all his body, as well as headache and nausea; trembling, Stieve _____ slowly _____ (to rove) towards the destination, which should have already been seen. And he saw it! 200 meters! In the vicinity of the station, he felt relief. That's it! As soon as he got in, Stieve immediately had a glass of warm water. He put his hands into a bowl with the room temperature water and then added more — warmer, so the extremities didn't hurt. They gradually were regaining their normal colour and sensitivity. But where was Sue?! She _____ (can, to be) far! She couldn't have left to search for him! Suddenly, Stieve _____ (to hear) the door screeching. It was Sue! She was just after him.

5. Write 4 forms of the Verbs.

Example: to put — put — put — putting

To panic —

To picnic —

To mimic —

To snowshoe —

To rescue —

To sink —

6. Use proper Verb forms in the sentences (Reported Speech).

1. Put a bandage over your arm.

Jim recommended Abby

2. Keep the workplace clean.

John told Andrew

3. Get your workers to use the PPE.

Anna commanded Lenny

4. If you use a walky-talky, you should speak clearly and in short sentences.

Abby mentioned that

5. I am an electrician. I work on anything and everything electrical in the oil industry.

Carlos Sanchez said that

6. If there is a spark in the area with flammable gas, of course there can be an explosion.

Carlos Sanchez confirmed

7. He is suffering from cold exposure.

Sue told a doctor that Stieve

8. We followed the usual procedure. We reported the spill immediately.

Sue said that

9. Our company has a wildlife protection program. We studied grey whales before we started drilling.

Rupert told the press

10. Make sure that the electricity is off before you touch him.

Jim told John

7. Choose 4—6 questions which a doctor should ask on receiving an emergency call if some incident happens on a construction or a production site and a worker is injured. Make dialogues with these questions.

Is he breathing? Can he talk? Does he have a family? Does he have medical insurance? Is he bleeding? Does he have a driving license? Can he move? Is it raining? Is it safe for doctors to be there? Is he in pain? Is he conscious?

8. Make Disjunctive Questions.

1. Let's call an emergency service, _____?

2. He isn't in pain, _____?

3. It was an electric shock, _____?

4. Give him painkillers, _____?

5. The area has been cleaned, _____?

6. Fire extinguishers are in places, _____?

7. We shall take him to the hospital, _____?

9. Use the most suitable Modal forms.

1. You _____ (can't, must, may) work more than 12 consecutive hours. 2. You _____ (have to, should, can) make the bypass every 4 hours. 3. A line rider _____ (need to, may) carry the tools and detectors and report the trouble immediately. 4. A well tester _____ (must, may) exercise due diligence doing the job and accurately measure, register, report the flow rate of the well. 5. The project _____ (may, need to) get the contractor a foothold in the oil and gas sector. 6. Plunger lift uses gas pressure to remove excess fluid from gas wells so that gas production _____ (can, need to) continue.

10. Read the sentences. In brackets, find the meaning of the words and expressions in bold*.

1. When the drilling *hit pay dirt* on the first try, the whole crew were **over the moon**. (incredibly happy, far away).

2. The offshore helicopter lands here **once in a blue moon** — only when the weather is perfectly calm (monthly, very seldom).

3. Don't **ask for the moon** — we can't get spare parts delivered before tomorrow (an expensive trip, a difficult thing).

4. The contractor **promised the moon**, but we're still waiting for the basic equipment (time, much).

5. He's been a bit **moonstruck** ever since the night shift rotation changed (dizzy, distracted).

* *hit pay dirt* — *попасть в продуктивный пласт, добиться успеха.*

11. Match.

1. UT ____ a. Floating Production Storage and Offloading

2. MFL ____ b. Emergency Action Plan

- 3. ROV ____ c. Magnetic flux leakage
- 4. GIP ____ d. Remotely Operated Vehicle
- 5. EAP ____ e. Self-contained breathing apparatus
- 6. IDIOT ____ f. Electrical velocity analyzer
- 7. EVA ____ g. Deadweight Cargo Capacity
- 8. DWCC ____ h. Instrumental Digital Online Transfer
- 9. SCBA ____ i. General Protective Equipment
- 10. FPSO ____ j. Personal Protective Equipment
- 11. PPE ____ k. Ultrasonic Testing
- 12. GPE ____ l. Global Positioning System
- 13. GPS ____ m. Gas In Place

12. Arrange the following words and expressions into groups according to their communicative function in a text. One word or expression might have more than one use. Make sentences to illustrate the use of these discourse markers.

- 1. Author wants to compare.
- 2. Author wants to show alternative.
- 3. Author wants to specify the time of the event.
- 4. Author wants to generalize.
- 5. Author wants to underline resemblance.
- 6. Author wants to emphasize differences or special features.

My overall opinion, or, totally, alternatively, after, to sum up, before, as important as, just like, in a similar way, unlike, when, in the bygone times, looking back, until, on the whole, otherwise, in spite of, another opportunity, two decades ago, so far, since, just like all outstanding scientists, whereas, meanwhile.

13. Read the example. Make short dialogues to express mutual consent. Complete.

Example:

— *I like Stieve!*
— *Do you?*
— *Yes. I do!*
— *So do I!*

1.

— I am looking for block A.
— Are you?
— Yes, I ____!
— So ____ I!

2.

— I have completed my examination test!
— ____ you?
— Yes, I ____!
— So ____ I!

3.

— People worry!
— ____ they?
— Yes, they ____!

— So do the dogs!

4.

— This generator is out of service!

— _____ it?!

— Yes,... it _____...

— and so _____ that...

5.

— The riggers on station Z were not supplied with enough food.

— _____ they?!

— No...

— Neither were the riggers on station Y...

6.

— This time tomorrow we will be airborne.

— Will you?

— Yes, we _____!

— So, _____ the others!

7.

— I have never seen him so angry...

— Haven't you?

— No... never...

— Neither _____ anyone here...

8.*

— I have lost my keys.

— _____ you? Haven't you left them in a muster room?

— No. I've put them right here. I'm sure of it. And haven't seen since then...

— _____ has anyone. We will check every drawer.

9.*

— I've never seen all the security feeds go dark at once.

— _____ you?

— No. Even the backup system should have kicked in.

— _____ has the control room. They lost the signal ten minutes before we did.

10.*

— I've never heard the emergency broadcast repeat the same message for hours.

— _____ you?

— No. It's just static now.

— _____ has anyone. Nothing tuned in from the other side of town. The signal's dead everywhere...

P.S. Write Geographical Names

Russian Noun. English Noun. English Adjective. Nationality.

США

Австралия

Канада

Новая Зеландия

P.P.S. Write translation. Match these places to the countries.

Washington DC, Texas, Arkansas, Dallas, Ottawa, Toronto, Montreal, Vancouver, Detroit, Silicon Valley, Canberra, Sydney, Melbourne, Perth, Adelaide, Wellington, Auckland, Christchurch, Rotorua, Alberta, Edmonton, Montreal, Port Arthur, Cushing (Oklahoma), Port Fourchon, the Gulf of Mexico, Bakken, Karratha, Gladstone, Pluto, Wheatstone, Marsden Point (Whangarei), Taranaki Basin.

ISSUE II

1. Make questions to the following sentences using these Pronouns: who, what for, how fast, why, how long, when.

1. Inspectors inspect the pipes. 2. Welders join the sections of the pipework. 3. Workers paint the pipe. 4. Pipe-fitters prepare the pipes and put parts together. 5. Pipe-fitters assemble the parts. 6. Pipe-fitters read the plans.

2. Use The Auxiliary Verbs to change the sentences and make them emphatic.

Example: Welders do use electric power to weld!

1. Weld dry! 2. Welders wear a helmet to protect eyes and head. 3. The arc melts the pieces of metal. 4. Connect the new hose to the pump! 5. Use the PPE handling chemicals! 6. You need to tighten these loose bolts. 7. Yesterday, we painted the pipework.

3. Read the dialogue and do the tasks.

Sue: This meeting won't last long. We have only one question on the agenda. Yes, that's room 4 B, a tool storage.

Rob: What's wrong, Sue?

Sue: The door wasn't locked this morning. I got in at about 11 and saw the instruments on the counter: pliers, a power drill, a screwdriver kit, cables and bolts...

Rob: That must have been Andrew. I saw him coming out yesterday evening. Approximately, at 5 p.m.

Stieve: I saw Carlos with an instrument kit today, in the morning. At 9 a.m., he was going to 4 G, probably to check the cables. A couple of days ago, he said he had noticed some problems with an electric circuit. He was planning some repairing.

Lenny: He also told Andrew that he was going to troubleshoot all the stations of block 4.

Sue: Yes, I heard this too. But when I talked to him, he wanted to take a snowmobile and inspect pipe section 22. It was about 9:30.

Rob: All five rooms of block 4? This is 4 A... so he is very likely to appear here soon. Hm... Shall I take the dogs? This will facilitate the examination and repairs.

Sue: Good idea, Rob. But I have taken the key to 4 B. They are on the same ring as 4 C. ...All rooms of block B are located next to each other, so, I believe, we will see him here soon. No chance to miss him! Rob, do take the dogs! Stieve, check the generator. Andrew, go to 4 G and remove the petrol cans. I will talk to Carlos, then help Andrew.

3.1 Questions: How many rooms are there in block 4? _____ Who was going to examine the electric circuits and carry out necessary maintenance? _____ Where was Carlos at the time of briefing? _____

3.2 Match the room with its number.

4 A _____ Garage

4 B _____ Kennels

4 C _____ Workshop

4 D _____ Tool storage

4 G _____ Muster room

3.3 Answer the questions.*

1. Why was Sue worried about room 4 B?
2. Who did Rob think might have been in the tool storage room?
3. What was Carlos planning to do with electric circuits?
4. Why did Rob want to take the dogs?
5. What did Sue have that was important for access to rooms 4 B and 4 C?

3.4 Match the sentences with what they express.

1. Certainty +++ _____ a. Andrew is very likely to see Carlos first
2. Possibility + _____ b. Rob can't have taken the keys of 4 B
3. Probability ++ _____ c. Carlos must have taken the keys
4. Negative possibility ____ d. Sue may have missed Carlos as she was busy in the office
5. Ability _____ e. Rob was able to handle the dogs himself

Write 2—3 recommendations to Carlos, starting with «You should have + V3» to help the team avoid misunderstanding in the future.

4. Use the proper Future forms of The Verb.

1. The examination procedure _____ (to finish) by 3 p.m. At 2 p.m., _____ (to have a meeting). 3. He _____ probably _____ (to return) by 6. 4. _____ I air the room and clean it? 5. I _____ (to report) the incident immediately! 6. Please, drain the hose, _____ you? 7. _____ you go to the canteen or _____ you stay in cabin A 2? 8. By 7 p.m., we _____ (to repair) the cable for 5 hours. 9. Let's search the main building, _____ we? 10. I am sure, we _____ (to find) the key.

5. Use proper Prepositions of Movement and Direction.

1. Where are you going _____? 2. Go _____ of the main building, then turn r ____ t. 3. Go s _____ t, then take the second r _____ t. 4. In front _____ A3, you will see the gas boiler station. 5. At the junction, turn l ____ t. 6. Go _____ the gate. 7. Run _____ the field. 8. Drive _____ the pipeline. 9. Move _____ the street. 10. Stop _____ the corner.

6. Use The Present Continuous Tense (or The Present Simple). Identify the function.*

1. The pressure in the line _____ (rise) steadily. We need to reduce the flow. 2. The temperature of the wellhead _____ (drop) as we increase the cooling rate. 3. This month, we _____ (run) extra safety drills because of the new regulations. 4. The inspector _____ (come) tomorrow to check the storage tanks. 5. We _____ (start) the maintenance shutdown next Monday. 6. Normally, Alex works on the north platform, but this week he _____ (help) the drilling crew. 7. Usually, the lab does weekly tests, but right now they _____ (analyze) an urgent sample. 8. Listen! The pump _____ (vibrate) unusually loudly. Lenny should check it. 9. The contractor _____ (arrive) at 3 p.m. to inspect the valve. 10. Right now, the control room operator _____ (monitor) the pressure in pipeline 3. 11. Be careful: the team _____ (clean) the spill zone, the floor is slippery. 12. Oil prices _____ (go up) again, so the project economics looks better.

7. Use a proper Conjunction (until / not until). Pay attention to The Inversion.*

*Example: The crew will not start the pump **until** the pressure readings are verified. — **Not until** the pressure readings are verified **will** the crew start the pump.*

1. We cannot release the valve _____ all personnel confirm they are clear. 2. The rig will remain offline _____ the safety inspection is completed. 3. _____ the safety inspection is completed will the rig be brought back online! 4. Maintenance will not proceed _____ the lockout-tagout procedure is fully documented. 5. _____ the lockout-tagout procedure is fully documented, will maintenance be allowed to proceed! 6. No new drilling phase will begin _____ the geological report is approved. 7. _____ the geological report is approved will any new drilling phase be authorized.

7.1 Read and translate. Explain the use of The Inversion. Write the numbers of the sentences where it is used.

1. Only after they had finished welding, did they go into the cabin.
2. Such a cold day was it that they had to get the dogs to stay in the main building.
3. Carlos had no idea that the team were looking for him.
4. On no account will Sue let them miss the briefing.
5. Not till the last wire had been examined could they have some rest.
6. Never had Stieve had such a terrifying experience.
7. Little did he know what his decision would lead to.
8. It was such a nice day that he went out without wearing warm clothes.
9. On no account would Jack have let this happen if he had predicted the consequences!
10. Under no circumstances were they granted access to the premises.

8. Explain the use of The Conjunctions (until / lest). Pay attention to The Category of Mood.*

*Example 1: The technician tightened the coupling bolts thoroughly, **lest** a vibration-induced leak **develop** during operation. Союз **lest** используется как часть конструкции с сослагательным наклонением, подчеркивая значение нежелательности результатов действия. Является частью придаточного цели, часто выделяется запятой.*

*Example 2: No technician will be allowed to access the unit **until** the isolation procedure is confirmed by the shift supervisor. — Союз **until** используется как часть придаточного времени (идет вслед за главным), поэтому запятой не выделяется.*

Vocabulary:

isolation procedure — процедура отключения

coupling bolts — болты соединения

weld seam — сварной шов

sump — сборник

pressure spikes — скачки давления

lube oil flow — подача смазочного масла

bypass valve — обводной клапан

bearing seizure — заклинивание подшипников

flushing procedure — процедура промывки

isolation tags — бирки отключения (LOTO)

compartment — отсек

pressure leak — утечка под давлением

gasket — прокладка, уплотнитель

gas detector — газанализатор

flange joint — фланцевое соединение (с кольцами под болты)

1. They inspected the weld seam again, **lest** any micro-crack be overlooked before the hydrotest.
2. The operator kept the emergency drain open, **lest** the sump overflow under sudden pressure spikes.

3. The maintenance team will not restart the compressor **until** the oil pressure reaches the nominal value. We will keep the bypass valve closed **until** the pressure test is completed. 4. Before starting the turbine, the engineer double-checked the lube oil flow, **lest** bearing seizure occur due to insufficient lubrication. 5. No personnel will be allowed in the work zone **until** the gas detector confirms safe levels. 6. **Until** the seal replacement is verified by the supervisor, the pump will remain offline. 7. **Until** the line pressure is confirmed stable, the crew will not start the flushing procedure. 8. The engineer inspected the gasket again, **lest** a seal failure happen under thermal stress.

8.1 Use constructions with the conjunction «lest» instead of the given sentences.

1. The technician replaced the old gasket with a new one to prevent leaks. 2. Before reassembling the flange joint, inspect the gasket surface for cracks or deformation. 3. The operator double-checked the pressure relief valve settings to prevent an overpressure event during the startup sequence. 4. The supervisor ordered a double verification of the isolation tags to avoid the unit re-energizing during maintenance. 5. They kept the emergency vent line open not to enable vapour accumulation. 6. We should not allow vapour accumulation as it creates a hazardous atmosphere in the compartment. 7. We tightened the bolts to prevent vibration. 8. Ensure all isolation tags are signed and dated by the responsible supervisor; otherwise, the tags are considered invalid. 9. All flanges must be torqued to the specified value; otherwise, a pressure leak may occur. 10. Verify that the bypass valve is closed before the pressure test; otherwise, the test results will be invalid. 11. The gasket must be replaced with a new one of the specified material to ensure a pressure-tight seal. 12. Disassembly of the flange joint shall be performed only after isolation and depressurization to avoid injury, release of hazardous media, or unexpected movement of components. 13. All flange joints in the high-pressure section shall be torqued according to the table in Appendix B to avoid a pressure leak under operating conditions.

8.2 Use one of the Conjunctions (*otherwise, providing that, in case*). In some cases they are interchangeable. Explain the meaning.

Example: consequence, test invalid, contingency, failure possible, condition, access granted.

1. The technician replaced the old gasket with a new one; _____, a pressure leak might occur during the hydrotest. 2. Ensure the bypass valve is closed before the pressure test; _____, the test results will be invalid. 3. Temporary bypass operation is permitted, _____ that continuous monitoring is maintained and a written waiver is filed. 4. Have a spare gasket ready _____ the existing one shows signs of deformation during disassembly. 5. All flanges must be torqued to the specified value; _____, uneven loading may deform the gasket and compromise the seal. 6. Maintain the flare system on standby _____ of an unplanned pressure release. 7. Verify that the isolation tags are signed and dated; _____, the work cannot be authorized. 8. Provide a secondary pressure gauge _____ the primary instrument fails during the test. 9. Access is granted, _____ that the tag is properly signed and dated. 10. Keep a repair kit nearby _____ a leak develops. 11. Keep the relief valve accessible _____ pressure spikes unexpectedly.

9. Use a proper Conjunction (until, unless, lest, not until).*

1. The rig crew will not begin tripping pipe _____ the well control checklist is signed by the drilling supervisor. 2. We cannot authorize the night shift overtime _____ HR confirms the staffing waiver. 3. The technician tightened the flange bolts twice _____ a pressure leak develop during the hydrotest. 4. _____ the lab results confirm the corrosion rate is below the threshold, no permanent repair will be approved. 5. The flare system will remain on standby _____ the gas flow stabilizes and the analyzer shows safe levels. 6. We will not remove the lockout-tagout devices

_____ every authorized person has been notified, and the area is declared clear. 7. The crew will remain on standby _____ the spill response team confirms the containment is secure. 8. We cannot authorize any overtime, _____ the site manager approves the request in writing. 9. _____ the site manager approves the request in writing can we authorize any overtime! 10. _____ the safety audit is completed, no new drilling phase will be started! 11. We will not release the pressure, _____ all personnel are at a safe distance! 12. The contractor was told to delay the cement job _____ the formation data is revalidated.

10. Find the equivalent to the words given. Write down your answers.

1. Velocity _____ a. Surrounding area
2. Viscosity _____ b. Relationship between mass and size
3. Affinity _____ c. Thickness of liquid
4. Density _____ d. Similarity
5. Vicinity _____ e. Speed

11. Match.*

1. HSE _____ a. Personal Protective Equipment (средства индивидуальной защиты)
2. LOTO _____ b. Key Performance Indicator (ключевой показатель эффективности)
3. PPE _____ c. Health, Safety, and Environment (охрана труда, безопасность и экология)
4. KPI _____ d. Lockout/Tagout (блокировка и маркировка)
5. SDS _____ e. Safety Data Sheet (паспорт безопасности вещества)

12. Read the lines. Choose one option to meet your professional context.

1. husky _____ a. буровик; б. грубиян; в. порода собак.
2. alligator _____ a. разводной ключ; б. животное; в. песня.
3. wild cat _____ a. дикая кошка; б. плохой характер; в. разведочная скважина.
4. Christmas Tree _____ a. арматура устья скважины; б. елка; в. пальма.
5. pig _____ a. свинка; б. скребок; в. еда.
6. dogleg _____ a. дорога с поворотом; б. лестница с поворотом; в. труба с изгибом.
7. hulk _____ a. нефтеналивная баржа; б. комикс; в. самолет.
8. dog house _____ a. будка; б. бытовка; в. передряга.
9. a go-devil _____ a. скребок; б. тягач; в. баржа.

P.S. Write Geographical Names

Russian Noun. English Noun. English Adjective. Nationality.

Бали
Хорватия
Черногория
Афины
Албания
Сербия
Испания
Португалия
Бразилия
Венесуэла
Перу
Кипр

P.P.S. Match these places to the countries.

Бар, Подгорица, Загреб, Пирей, Риека, Тирана, Дуррес, Альхесирас, Барселона, Валенсия, Лиссабон, Рио-де-Жанейро, Сантус, Каракас, Ла-Гуайра, Лима, Кальяо, Никосия, Лимасол, Ларнака, Фамагуста, Денпасар, Беноа, Джакарта, Танджунг-Приок.

ISSUE III

1. Find the Russian equivalent.

1. paraffin _____ а. пропан
2. benzene _____ б. расклинивающий наполнитель
3. sodium _____ в. керосин
4. propane _____ г. магний
5. mercury _____ д. ртуть
6. proppant _____ е. натрий
7. magnesium _____ з. сера
8. sulfur _____ и. бензин
9. nitrogen _____ к. кремний
10. silica _____ л. диоксид кремния
11. petrol _____ м. азот
12. silicon _____ н. бензол

2. Read the definitions and choose the correct word out of two in bold.

1. A wildcatter is a prospector who drills wells in areas **not known** / **well known** to be productive.
2. A numbness is **a lack of sensitivity** / **oversensitivity** in the parts of body.
3. Sour gas is a type of gas which contains a significant amount of **hydrogen sulfide** / **carbon dioxide**.
4. Vermiculture is a process that uses **worms** / **chemicals** to break down organic waste and turn it into a fertilizer.
5. A utility pig is used to remove **debris** / **air** and clean a **pipeline** / **a well collar**.
6. Shut-in period is the time in which gas pressure **accumulates** / **condenses** within a well to help cycle and operate a plunger.
7. A touchdown point is a **destination** / **starting point** of the pipe of the seafloor.
8. Brine is water full of **salt** / **fish**.

3. Read and choose one of two words in bold. Convey the ideas of the text briefly, write the annotation in your native language (10—15 sentences) [16].

Explore 12 Types of Gas: A Comprehensive Guide.

Gas is a fundamental state of matter characterized by its **lack of** / **prominent** fixed shape or volume. **Unlike** / **resembling** solids, which maintain a definitive shape, and liquids, which conform to the shape of their containers, gases expand to fill available space, exhibiting a unique capability that allows them to take on various shapes. **Additionally** / **Contrastingly**, gas behavior can be compared to plasma, another state of matter, which consists of charged particles. Understanding gases is **essential** / **helpful** for various industries, as they play a crucial role in chemical reactions, energy production, and many natural phenomena. Pure gases, **such as** / **unlike** helium and oxygen, serve as foundational components in numerous applications, making a comprehensive understanding of types of gas critical for businesses.

Types of Gas

1. Monoatomic Gases

Monoatomic gases consist of single atoms that remain independent of one another. These gases are characterized by their simplicity and stability, making them fascinating subjects of study.

Examples of monoatomic gases include noble gases such as Helium, Neon, Argon, Krypton, Xenon, Radon, and the **recently / fortunately** discovered Oganesson. Each of these gases has unique properties, such as low reactivity and a high degree of atomic stability. Their inert nature **makes / states** them suitable for various applications, including lighting and cooling systems. The uniqueness of monoatomic gases distinguishes them from other types of gas, particularly when considering their role in scientific research and industrial applications.

2. Polyatomic Gases

Polyatomic gases contain two or more atoms, allowing for a diverse range of molecular structures and reactions. These gases can be classified further into diatomic, triatomic, and tetratomic categories. Diatomic gases, such as Hydrogen (H_2), Nitrogen (N_2), and Oxygen (O_2), are essential / to life and play a critical role in combustion processes. Triatomic gases like Ozone (O_3) and Water vapor (H_2O) are vital for atmospheric chemistry, influencing climate and weather patterns. Tetra atomic gases, **such as / in contrast to** Sulfur trioxide (SO_3) and Ammonia (NH_3), are **extremely important / ancillary** in industrial processes **and / but not** for businesses that work in sectors like renewable energy, environmental management, and chemical manufacturing.

3. Inert Gases

Inert gases are **known / reportedly infamous** for their lack of chemical reactivity, making them unique among the various types of gas. These gases, which include Helium, Neon, Argon, Krypton, Xenon, and Radon, are colorless, odorless, tasteless, and non-flammable. Their inertness allows them to be used in applications where reactions must be strictly controlled, such as in the preservation of sensitive materials or in controlled atmospheres for chemical reactions. The use of inert gases spans various industries, including electronics and food packaging. **A thorough / Through** understanding of inert gases is beneficial for businesses focused on innovation and quality control in their operations.

4. Toxic Gases

Toxic gases pose a significant risk to health and safety, making their understanding crucial for any business involved in hazardous materials. These gases can adversely **affect / effect** the central nervous system and require careful storage and ventilation to minimize exposure. Examples of toxic gases include Ammonia, Arsine, Boron Trichloride, Carbon Monoxide, Chlorine, and Sulfur Dioxide. Knowledge of these gases' **properties / ownership** and safe handling practices is vital for industries like chemical manufacturing and waste management. Businesses **must / can** invest in safety protocols and training to protect employees and the environment from the dangers posed by these toxic gases. Awareness of the risks associated with toxic gases helps **ensure / reach** compliance with safety regulations and enhances community trust.

5. Natural Gas

Natural gas is a naturally occurring mixture of hydrocarbon gases formed beneath the Earth's surface. It is colorless and odorless, with a highly flammable nature, making it a popular choice as a clean-burning fuel source. The primary components of natural gas include methane, ethane, propane, and butane, **which / what** can be transformed into various products. Businesses utilize natural gas in the manufacturing of plastics and chemical products, **contributing to / interfering with** its importance in many supply chains. Understanding the production, transportation, and utilization of natural gas can provide businesses with a competitive edge in energy management and sustainability practices.

6. Biogas

Biogas is a renewable energy source produced by the anaerobic digestion of organic matter, primarily in landfills and wastewater **treatment facilities / purification stations**. This type of gas consists mainly of methane, carbon dioxide, and small amounts of hydrogen sulfide. Biogas serves **multiple / several** purposes, including vehicle fuel, cooking, and electricity generation, making it **an attractive option / lucky chance** for businesses looking to implement sustainable practices. Its

production not only helps in waste management but also contributes to energy conservation and greenhouse gas emissions **reduction / recycling**. As the demand for renewable energy sources grows, understanding biogas technology becomes increasingly critical for companies aiming to align with eco-friendly initiatives.

7. Liquefied Petroleum Gas (LPG)

Liquefied Petroleum Gas, or LPG, is a flammable mixture of hydrocarbon gases that remain in liquid form under pressure. Commonly used for cooking and as a vehicle fuel, LPG's versatility makes it an active player in the global energy market. Businesses often rely on LPG for heating and power generation, given its efficiency and cleanliness compared to other fossil fuels. The properties and applications of LPG can help companies **optimize / improve** their energy usage and contribute to reducing carbon footprints. The alternative fuels gaining popularity, the importance of LPG in the transition toward sustainable energy sources **stands out / pays off**.

8. Compressed Natural Gas (CNG)

Compressed Natural Gas (CNG) is primarily **composed of / differs from** methane and stored under high pressure for use as an alternative vehicle fuel. As businesses seek eco-friendly alternatives to gasoline, CNG has emerged as a reasonable choice due to its lower emissions and non-toxic characteristics. Its energy efficiency and cost-effectiveness make CNG appealing for fleet operators and transportation services. **Apprehension / disregard** of the infrastructure and technologies associated with CNG can empower companies to make decisions on their energy consumption and emissions reduction strategies. The transition to CNG can significantly enhance corporate **sustainability / breakthrough** efforts and lead to cost savings in the long term.

9. Real Gas

Real gases **differ from / rival** ideal gases in that they do not strictly adhere to the ideal gas laws **due to / matching** their molecular attractions and volume. Unlike ideal gases, which are simplified models that assume no intermolecular forces, real gases exhibit compressibility and variable specific heat capacity under different conditions. This distinction is vital for industries relying on gas behavior for process optimization and safety management. Businesses must account for real gas behavior when designing equipment and processes involving gases in order to prevent inefficiencies and enhance safety. A thorough study and recognition of gas properties **helps / attains** companies achieve better planning and execution in their operations.

10. Ideal Gas

The concept of an ideal gas is a theoretical model that helps scientists and engineers predict / gas behavior under various conditions. An ideal gas is **defined / speculated by** its adherence to the ideal gas equation, showcasing a direct relationship between volume, pressure, and temperature. While real gases exhibit deviations from this behavior, the ideal gas laws provide a simplified **framework / manual** for understanding the basic principles governing gas behavior. Businesses in industries such as transportation and chemical manufacturing can leverage these principles to enhance product efficiency and reliability. Recognizing the **limitations / boundaries** of the ideal gas model while utilizing its principles in practical applications is crucial for forward-thinking enterprises.

11. Elemental Gas

Elemental gases consist solely of one type of **stable / well known** element, such as Nitrogen (N₂) and Oxygen (O₂). Stability of these gases can vary depending on environmental conditions **like / of** temperature and pressure. Understanding the behavior of elemental gases is essential for industries that rely on specific atmospheric conditions, such as agriculture, pharmaceuticals, and waste management. Businesses must ensure that they maintain optimal conditions for the storage and use of elemental gases to guarantee product quality and safety. **A deep / some** knowledge of elemental gases can also inspire innovations lead to improved efficiency and effectiveness.

12. Gases Consisting of Different Elements

Gases that are **composed / based** of different elements serve various purposes across multiple industries. Carbon Dioxide (CO₂), Water vapor (H₂O), Nitrogen Oxides (NO_x), and Sulfur Oxides (SO_x) are prime examples of gases that combine different elemental compositions. These mixed gases can affect environmental conditions and influence climate change, contribute in the air quality management. Comprehension of the effects of behavior and impact of these gases in general is imperative for businesses focused on environmental **responsibility / prospects** and regulatory compliance. Awareness of the ecological implications of these gases can help companies develop effective strategies for mitigating their environmental footprint and encouraging sustainable practices.

Conclusion

In conclusion, it's important to **outline / outperform** the differences between real and ideal gases. While real gases demonstrate complex behaviors that deviate from ideal conditions, ideal gases provide a foundational understanding of gas laws that can be applied across various fields of science and business. **Moreover / however**, the specification of CNG and LPG as types of gas highlights the significance of fuel choice in transportation and energy management. Businesses that prioritize a comprehensive understanding of gas types will position themselves as leaders in sustainability and innovation.

4. Arrange the following words and expressions according to their communicative function in a text. One word or expression may have more than one use.

Additionally, moreover, due to, firstly, contrastingly, however, they say, in my view, in fact, furthermore, owing to, because of, therefore, as far as I know, secondly, finally, reportedly, allegedly, opposingly, then, as, subsequently, consequently, for that reason, as a result of, leading to, it is for sure, after that, despite the fact, although

1. Author wants to add extra information or strengthen his arguments.
2. Author wants to show the order of or rank the arguments / events.
3. Author wants to emphasize causality.
4. Author wants to underline specific value of the opinion or statement (relevance).
4. Author wants to express concession.
5. Author wants to express contrast.

5. Match the meaning to the abbreviation.

1. CPR _____ a. liquefied petroleum gas
2. LDC _____ b. Good Delivery Practice
3. GDP _____ c. European Medical Agency
4. EMA _____ d. Food and Drug Administration
5. FDA _____ e. Local Distribution Company
6. LPG _____ f. cardiopulmonary resuscitation
7. IMO _____ g. catalytic fluid cracking
8. cv _____ h. International Maritime Organization
9. CFC _____ i. calorific value
10. VLCC _____ j. Ultra Large Crude Carrier
11. ULCC _____ k. Very Large Crude Carrier

6. Read the lines, cross out the odd word.

1. magnesium, Magna Carta, Mindeleev, molecular.
2. nitrogen, neutral, valence, voluntary.
3. sour, a la cart, sweet, desalinated.
4. shale, liquefied, maritime, natural, rich.

5. API, BTU, OPEC, FDA

6. underground storage, conventional reserves, international convention, seismic data, production zone.

7. capacity, bolted tank, thief hatch, cleanout plate, route.

8. oil spill, oil leak, oil seepage, oil production.

7. Match

2. ethane ['i: θeɪn] — b. бутан (C₄H₁₀)

3. pentane ['penteɪn] — c. метан (CH₄)

4. butane ['bjʊ: teɪn] — d. этан (C₂H₆)

5. methane ['mi: θeɪn] — e. пентан (C₅H₁₂)

6. propane ['prɒspeɪn] — f. гексан (C₆H₁₄)

8. Use discourse markers from exercise 4 to change the following sentences. Use a dictionary to vary your vocabulary and find more language means to emphasise coherence. Pay attention to the words in box below.*

*Example: It is a fact that crude oil is classified by density and sulfur content, and these properties directly affect transportation methods. — It is a fact that crude oil is classified by density and sulfur content and this, **therefore**, directly affects oil and gas transportation methods.*

*Example 2: Barges are often used for short-sea and inland waterway transport of oil products. — **On the one hand**, barges are often used for short-sea transportation, **on the other hand**, for inland waterway transport of oil products.*

*Example 3: In coastal and shallow-water areas, smaller vessels and barges provide flexible logistics solutions. — **Not only** barges provide flexible logistics solutions in coastal and shallow-water areas, **but also** smaller vessels.*

1. Light crude oil has a lower density and flows more easily; it can be moved via pipelines or standard tankers with fewer complications. 2. Heavy crude oil is viscous and requires heating or dilution with lighter hydrocarbons before it can be pumped or loaded into tankers. 3. High-sulfur (sour) crude oil is more corrosive, which means tanker tanks and pipeline sections need special protective coatings. 4. Bitumen, an extremely viscous form of heavy oil, is often transported by rail in heated tank cars or by specialized trucks rather than by conventional marine tankers. 5. Natural gas is mainly methane and is transported either as pipeline gas (in gaseous form) or as LNG (in liquid form) depending on the distance and infrastructure. 6. For long-distance overseas transport, natural gas is cooled to —160° C to become LNG, which drastically reduces its volume and makes sea shipping feasible. 7. LPG (liquefied petroleum gas), which includes propane and butane, is transported under pressure or refrigeration, and LPG carriers are designed differently from LNG carriers. 8. The difference in boiling points between propane/butane and methane means that LPG and LNG need separate storage and handling systems. 9. Shale gas and associated gas from oil fields may contain higher levels of impurities. They require processing before they can be safely transported by pipeline or ship. 10. Condensate, a light hydrocarbon liquid produced with gas, behaves like a light crude and can be shipped in product tankers, but it is highly volatile and needs careful handling. 11. The wax content in some crude oils can cause blockages in pipelines at low temperatures, so heating stations are installed along the route. 12. In cold climates, the choice between rail, heated tank cars, and insulated marine vessels depends on the pour point of the specific crude grade. 13. Blending different crude types at terminals allows operators to adjust viscosity and sulfur levels, making the mixture easier and safer to transport. 14. Selecting the right transport mode always starts with analyzing the oil or gas grade. This depends on properties like viscosity, sulfur content, and volatility which determine the required equipment and safety measures. 15. Loading operations at the terminal are coordinated

by the stevedore team, which ensures that cargo is stowed safely and according to the vessel's stability plan. 16. Before loading begins, the ship's chief officer verifies the cargo manifest and checks that all items match the documentation. 17. Crude oil is pumped into the tanker's cargo tanks via submerged loading arms to minimise vapour emissions and reduce the risk of static ignition. 18. The loading rate is carefully controlled because excessive flow can cause overpressure in the cargo tanks or lead to spills at the manifold connections. 19. Not only must the weight be evenly distributed across the tanks, but also the sequence of loading has to follow the ship's tank plan to maintain the vessel's trim and stability. 20. Ballast water is discharged simultaneously with loading in order to keep the ship at the required draft and prevent excessive stress on the hull. 21. Once the loading is completed, the chief officer records the final quantities, seals the tanks, and signs the bill of lading as proof of receipt. 22. Although modern terminals use automated flow meters and remote monitoring systems, manual checks by the ship's crew are still required for safety and compliance. 23. In case of an emergency stop, the loading system is designed to shut down automatically, and emergency valves isolate the cargo lines within seconds. 24. Due to strict environmental regulations, any residual cargo or tank washing water must be collected in slop tanks and disposed of through approved shore facilities rather than being discharged at sea. 25. Ro-Ro loading uses a ramp so that wheeled cargo can be driven directly onto the vessel. 26. Lo-Lo loading relies on cranes to lift containers and heavy units onto the deck.

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