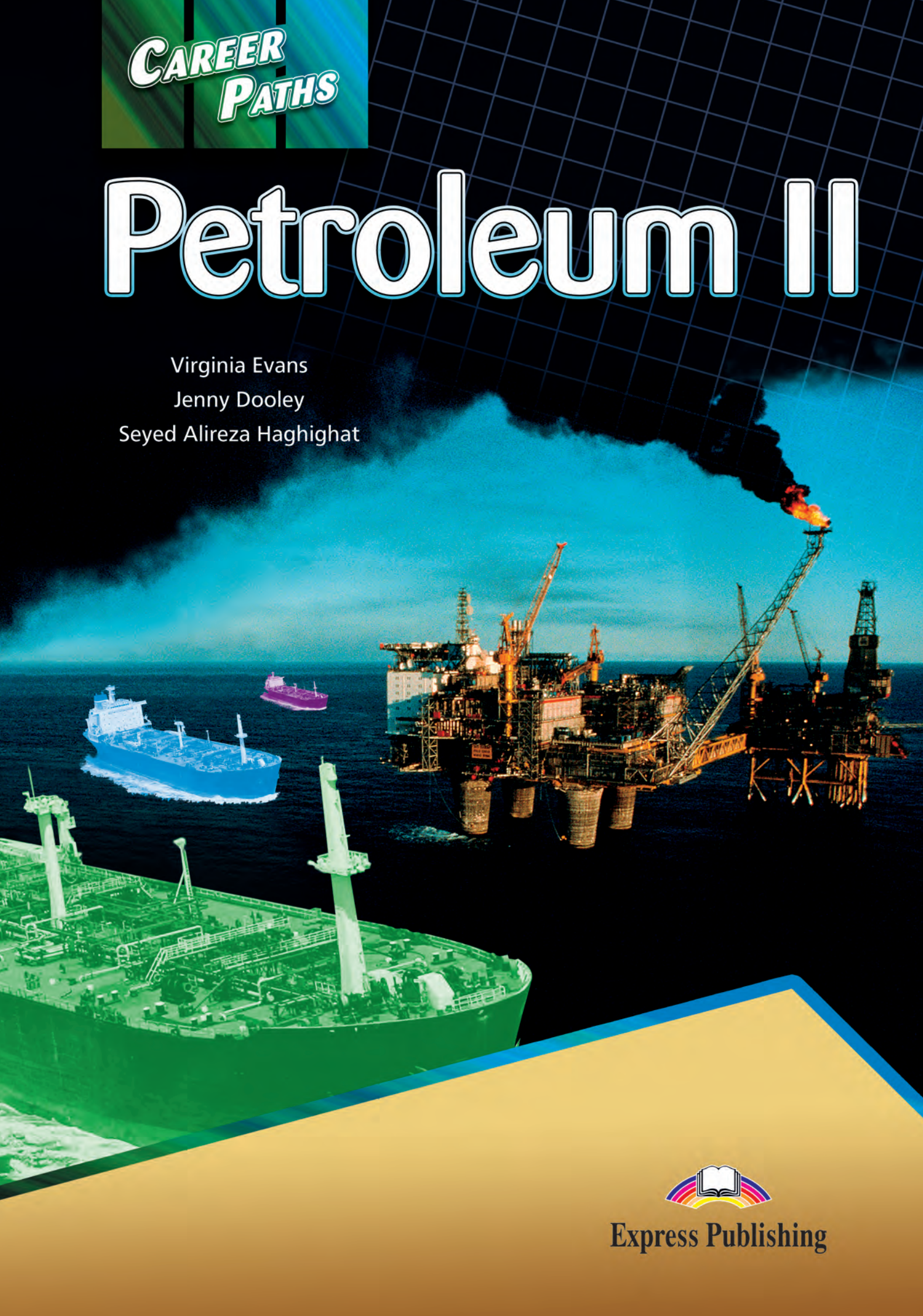


**CAREER  
PATHS**

# Petroleum II

Virginia Evans  
Jenny Dooley  
Seyed Alireza Haghighat



Express Publishing



# Petroleum II

Book  
**1**

Virginia Evans – Jenny Dooley  
Seyed Alireza Haghight



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## Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	Oil Sands	Email	bitumen, clay, deposit, dilute, extract, extraction plant, in situ recovery, mining, oil sands, open pit mining, separation, strip mining, surface mining, synthetic oil, upgrade	Making predictions
2	Oil Shale	Webpage	abundant, combustible, ex situ, oil shale, pyrolysis, retorting, room and pillar mining, shale gas, shale oil, substitute, underground mining	Describing progress
3	Petroleum Reserves	Article	agreement, domestic, embargo, emergency, energy crisis, exporting, global, import, oil supply, stockpile, store, strategic petroleum reserves	Stating total amounts
4	Treating Petroleum in the Field	Webpage	contaminant, demulsifying agent, droplet, electricity, electrostatic heater treater, emulsion, free water knockout vessel (FWKO), gravity, heater treater, oil treating, well stream	Explaining how something works
5	Picking up Oil from Storage Tanks	Memo	buyer, circumference, gauged, meter prover, offloading line, perfect, sealed, seller, storage tank, strapping crew, divert	Making introductions
6	Measuring Petroleum	Passage	calibrating, count, counter, gear, lease automatic custody transfer, piston, positive displacement meter, transmit, turbine, turbine meter, vane	Giving measurements
7	The Licensing Process	Email	annual fee, appraise, authority, bid, define, develop, exploration, financial bid, license, ministry, revert, technical bid	Confirming details
8	Licensed Areas	Report	alpha-numeric coding system, block, boundary, concession, grid, hierarchical coding system, latitude, longitude, numerical coding system, quadrant, settlement	Examining something
9	Acquiring Leases	Reference guide	bid process, deplete, discover, government-owned, landowner, lease, obtain, private, profit, sequester, tract	Expressing an opinion
10	Exploration Damages	Letter	access road, accountable, condition, crop, damage settlement, damages, livestock, personal property, prior, provision, restore	Discussing details
11	Lease Agreements for Private Property	Passage	cash bonus, delay rental, hold by production, primary term, royalty, secondary term, share, shut-in royalty, standard lease, termination	Explaining a term
12	Petroleum Engineers	Job posting	academic, assignment, drilling engineer, facilities engineer, oversee, petrophysicist, production engineer, reservoir engineer, structural engineer, title	Describing job experience
13	Construction and Maintenance Employees	Flyer	carpenter, driver, electrician, instrument technician, mechanic, metalworker, pipe fitter, plumber, proficient, talented	Making an appointment
14	Well Types	Excerpt	appraisal well, evaluate, flowing well, injection well, naturally, offset well, production well, regulation, sample, satellite well, spacing, stimulate	Asking for clarification
15	Wildcatting	Article	business venture, exploratory, high-risk, independent, invest, partnership, prospect, return, speculate, vicinity, wildcatter	Ending a conversation

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# Petroleum II

Book  
**2**

Virginia Evans – Jenny Dooley  
Seyed Alireza Haghightat



**Express Publishing**

## Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	The Chemistry of Petroleum	Textbook excerpt	atom, carbon, chemistry, compound, hydrogen, molecule, nitrogen, organic compound, oxygen, physical property, saturated, sulfur, unsaturated	Making comparisons
2	Properties of Petroleum	Field guide	aromatic, centipoise (cp), color, colorless, high vis, low vis, odor, pour point, sour, sweet, viscosity, watery	Expressing surprise
3	Impurities in Petroleum	Passage	concentration, consideration, contaminate, corrosion, damage, dissolved, eliminate, excess, impurity, metal, pollutant, reside, value	Describing severity
4	Petroleum Seals	Webpage	accumulate, fault, fracture, halite, hydraulic seal, limestone, membrane seal, mudrock, seal	Expressing confusion
5	Indicators of Petroleum: Seepage	Email	basin, breach, capillary failure, detect, dissipation, extent, fracture failure, indicator, leakage, seal failure, seepage, stage, tertiary migration	Requesting more information
6	Indicators of Petroleum: Seismic Data	Plan	AWD truck, background noise, bounce, DHI, dynamite, geophone, open area, recording truck, reverberation, signal, sound wave, subsurface, vibroseis	Providing options
7	Indicators of Petroleum: Marine Seismic Data	Report	air gun, analog, chirp, digital, fire, research vessel, rhythmic repetition, sea floor, secondary pulse, streamer, vessel, water gun	Discussing risk
8	Core Samples	Instructions	accurate, core, core barrel, core catcher, core plug, coring bit, full diameter core, hollow, native state core, oriented core, potential, sidewall coring	Giving a reminder
9	Fluid Samples	Webpage	carry out, continuous, drillstem testing, fluid sample, jack, lower, packer, perforation gun, point of interest, portion, production testing, sufficient, wireline formation testing	Making an apology
10	Automated Driller's Cabins	Brochure	camera, consolidate, control panel, data processing system, driller's cabin, focus, joystick, manipulate, monitor, remote access, touch screen, work station	Describing new technology
11	Drillships	Webpage	anchor, current, design specification, drillship, dynamic positioning system (DPS), fleet, mobility, modify, mooring, riser pipe, thruster	Clarifying information
12	Heatstroke	Poster	coma, cramp, dehydration, fever, heat exhaustion, heatstroke, humidity, life-threatening, light-headed, nausea, seizure, sweat, vomiting, weakness	Giving advice
13	Fatigue	Email	accident, balance, cognitive fatigue, consecutive, extended, fatigue, implement, mental fatigue, overtime, physical fatigue, risk, risk management, software	Expressing confidence
14	First Aid	Advertisement	bandage, bone fracture, burn, certified, CPR, cut, defibrillator, first aid, first aid kit, heart attack, medical emergency, scrape, splint, sprain, treat	Describing a process
15	Hydrogen Sulfide Exposure	Pamphlet	asphyxiation, dizziness, exposure, flammable, headache, hydrogen sulfide (H <sub>2</sub> S), inhale, odorless, self-contained breathing apparatus (SCBA), sour gas, toxic, unconscious	Getting someone's attention

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# Petroleum II

Book  
**3**

Virginia Evans – Jenny Dooley  
Seyed Alireza Haghightat



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## Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	Petroleum Reservoir Estimates	Textbook excerpt	assumption, decline, diversity, equation, fraction, graph, materials balance method, oil in place, production data, production decline curve method, recovery factor, reserve growth, reserve number, statistically significant, volumetric method	Identifying an error
2	Reservoir Modeling	Advertisement	commercial software, computer model, costly, forecast, geological model, one-dimensional, porous, predict, reservoir modeling, reservoir simulation, resolution, shared earth model, three-dimensional, time-consuming, two-dimensional	Asking about price
3	Natural Reservoir Drive Mechanisms	Article	aquifer, artificial, bubble point, compressed, drive mechanism, expand, gas cap, gas cap drive, maintain, pressure point, push down, push up, solution gas drive, virgin reservoir, water drive	Adding information
4	Artificial Lift: Beam Pumping	Webpage	barrel, beam pumping, downstroke, limitation, plunger, pump jack, standing valve, subsurface positive displacement pump, sucker rod, traveling valve, upstroke	Describing a process
5	Artificial Lift: Submersible Pumping	Brochure	centripetal, electric submersible pump (ESP), electrical cable, impeller, mass producer, power source, pump shaft, receptacle, stationary, submerge, tubing string	Stating possibilities
6	Artificial Lift: Gas Lift	Webpage	annulus, compressor, continuously, density, deploy, gas lift, gas lift valve, insufficient, intermittently, mandrel, optimal, production tubing, tubing retrievable, wireline retrievable	Agreeing with an opinion
7	Well Problems	Work order	brush, collapse, coning, gravel pack, mechanical failure, plug back, plugging, scale, scraper, soluble, temporary, water out, water-bearing interval, wax	Expressing confidence
8	Refined Product Pipelines	Report	breach, control center, feeder line, free flowing, gap, interface, isolate, junction, real-time, sample house, sensor, shut down, transmix, trunk line	Assigning responsibilities
9	Pipeline Pigging	Employee manual	buildup, conjunction, flow assurance, gel pig, inspection pig, launcher, magnetic flux leakage, pig trap, pigging, receiver, sealing pig, specialty pig, ultrasonics, utility pig, wear and tear	Correcting yourself
10	Pipeline Pumping Stations	Company webpage	booster pump, destination, full head pump, half stage pump, house, inlet, main line, momentum, outlet, personnel, position, proximity, pumping station, throughput	Describing new technology
11	Offshore Pipelines	Article	bottom tow, buckle, J-lay installation, mid-depth tow, off-bottom tow, pipelay vessel, S-lay installation, stern, stinger, surface tow, tension, touchdown point, tow-in installation	Expressing doubt
12	Disposal of Drilling Waste 1	Pamphlet	biodegrade, bioreactor, bioremediation, burial, composting, drilling waste, land application, land farming, land treatment, landfill, microorganism, nontoxic, pit, reserve pit, vermiculture	Giving compliments
13	Disposal of Drilling Waste 2	Webpage	annular injection, brine, combust, convert, disposal well injection, incineration, regulatory agency, salt cavern, slurry, slurry injection, solution mining, subfracture injection, thermal desorption, thermal treatment, vaporize	Explaining what is needed
14	Doing Business in the Petroleum Industry	Article	acquisition, competitor, giant, headquarters, joint venture, key competitive advantage, market leader, market share, merger, subcontractor, subsidiary, supplier, supply and demand, track record	Talking about pros and cons
15	Petroleum Company Strategy Models	Report	accessors, acumen, apply, breakthrough, brownfield, bureaucracy, cost-effective, fast follower, first mover, innovation, politics, relationship, scavenger, sovereign, sustainable	Making a recommendation

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## Measuring Petroleum

Petroleum is expensive. As a result, buyers and sellers need accurate petroleum measurements. Workers use several devices to measure petroleum.

The **positive displacement meter** is the most common. To measure the volume of petroleum, these meters use **pistons, gears, or vanes**. Then, they **transmit** numbers to electronic **counters**.

**Turbine meters** are less accurate than positive displacement meters. In addition, the petroleum often damages the **turbines**. Also, the meters often need **calibrating**. Otherwise, the **count** is off.

Finally, some companies use **lease automatic custody transfers**. These devices are expensive, but they are the most accurate.

### Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are some devices used to measure petroleum flow?
- 2 What must workers do to ensure measurements are accurate?

### Reading

2 Read the passage. Then, mark the following statements as true (T) or false (F).

- 1 \_\_\_ Positive displacement meters transfer information to counters.
- 2 \_\_\_ Turbine meters must be calibrated frequently.
- 3 \_\_\_ Lease automatic custody transfers do not produce reliable measurements.

### Vocabulary

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

- |                   |  |
|-------------------|--|
| 1 ___ counter     | 6 ___ turbine meter                    |
| 2 ___ vane        | 7 ___ gear                             |
| 3 ___ turbine     | 8 ___ lease automatic custody transfer |
| 4 ___ calibrating |  |
| 5 ___ transmit    |  |

- A to send or move information
- B a machine that measures oil from a drill
- C a flat piece of metal in a turbine
- D a wheel with metal teeth
- E a device that uses a turbine to measure liquid
- F a device that uses flowing liquid to create energy
- G a device that records amounts
- H to examine or adjust a piece of equipment

**4** Read the sentences and choose the correct words.

- 1 Turbine meters / Positive displacement meters use gears.
- 2 The counter / piston fits into the cylinder in the machine.
- 3 The counter / turbine showed an accurate oil count.

**5** Listen and read the passage again. Which device is the least accurate?

## Listening

**6** Listen to a conversation between two oil field workers. Choose the correct answers.

- 1 What task do the workers need to accomplish?  
A measure the oil being transferred  
B repair a broken turbine meter  
C determine the volume of a storage tank  
D order a new measuring device
- 2 What will the man likely do next?  
A calibrate the meter for accuracy  
B start transferring oil to the tank  
C put in a work order for the turbine meter  
D get the positive displacement meter

**7** Listen again and complete the conversation.

- Worker 1:** Are we ready to start transferring the oil to the 1 \_\_\_\_\_ ?
- Worker 2:** Sure. Which device do you want to use to 2 \_\_\_\_\_ ?
- Worker 1:** How about the 3 \_\_\_\_\_ ?
- Worker 2:** That's 4 \_\_\_\_\_. One of the turbines is broken.
- Worker 1:** Hmm ... we can use the 5 \_\_\_\_\_, then.
- Worker 2:** I agree. It's probably better than using the turbine meter anyway.
- Worker 1:** How so?
- Worker 2:** The counter makes it more 6 \_\_\_\_\_ for measuring volume. I'll go grab it.

## Speaking

**8** With a partner, act out the roles below based on Task 7. Then, switch roles.

**USE LANGUAGE SUCH AS:**

- Are we ready to start ...?*  
*Which device do you want to use to ...?*  
*It's probably better than ...*

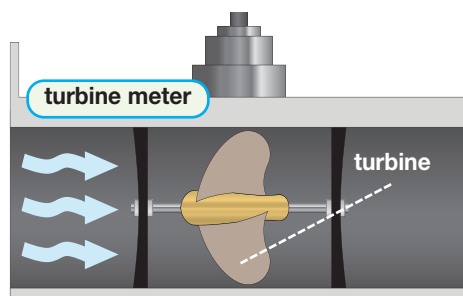
**Student A:** You are an oil field worker. Talk to Student B about:

- what you need to measure
- what device to use

**Student B:** You are an oil field worker. Talk to Student A about measuring oil.

## Writing

**9** Use the passage and the conversation from Task 8 to fill out the oil executive's notes.



Western Oil Field

## Field Worker's Report

Job description: \_\_\_\_\_

Tools used: \_\_\_\_\_

Additional notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are some pumps found in pipeline pumping stations?
- 2 Who can be housed in a pumping station?

## Reading

2 Read the company webpage. Then, choose the correct answers.

- 1 What is the main idea of the webpage?
  - A to convince companies to use half stage pumps
  - B to describe types of pumps and services offered
  - C to offer employment to potential safety personnel
  - D to sell booster pumps for the safe transporting of oil
- 2 Which of the following is NOT offered as a type of pump?
  - A full head
  - B booster
  - C half stage
  - D main line
- 3 According to the webpage, what helps to push oil forward?
  - A maintaining and monitoring the pressure
  - B positioning the pumping station accurately
  - C proximity of pumping stations to the pipeline
  - D calling on personnel in the pumping station

www.pipelineservices.com

# PIPELINE SERVICES

Pipeline Services will monitor the important **pumping stations** placed along pipelines. These pumping stations are necessary as oil loses its **momentum** during travel. They can adjust pressure, monitor information, and pump the oil to keep it moving.

Pumping stations can increase the **throughput** as well. More stations can be added to increase throughput as needed. They can be **positioned** in close **proximity** to other important equipment. They may also be placed in areas where oil has difficulty moving. They help push the oil forward.

Several different types of pumps are offered at the pumping stations. The **full head pump** has one **inlet** and one **outlet**. However, the **half stage pump** has two inlets and two outlets. The half stage pumps handle two times the amount of flow as full head pumps. The **booster pump** moves the oil from storage tanks to the **main line**.

The pumping stations may also store safety equipment for emergencies. They may even **house** safety **personnel** who are needed to repair any problems.

Pumping stations can help your product safely and quickly reach its **destination**. Pipeline Services is here to help monitor the process for you.

## Vocabulary

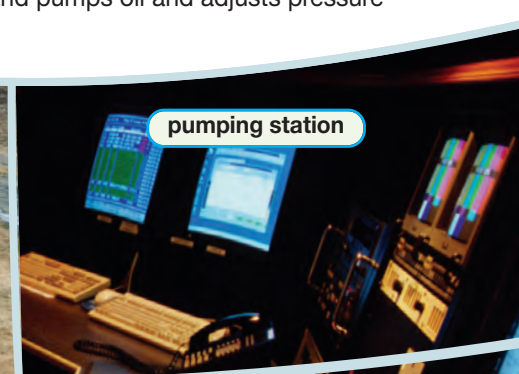
3 Match the words (1-8) with the definitions (A-H).

- |                       |                       |
|-----------------------|-----------------------|
| 1 ___ outlet          | 5 ___ throughput      |
| 2 ___ inlet           | 6 ___ full head pump  |
| 3 ___ main line       | 7 ___ half stage pump |
| 4 ___ pumping station | 8 ___ booster pump    |

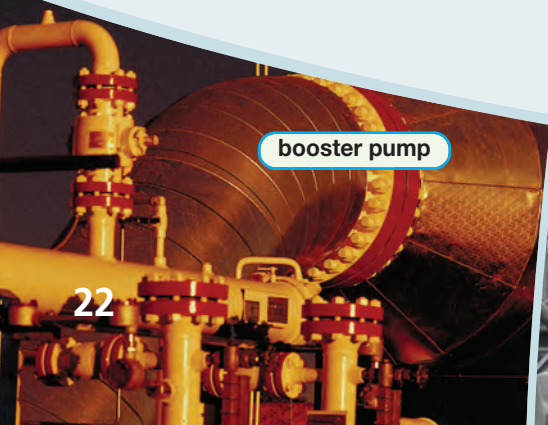
- A the amount of oil moved through a pipeline
- B a two-stage pump with one inlet and one outlet
- C a pump with two inlets and two outlets
- D an object that strains the oil as it is sucked into the pump
- E a device that discharges oil from the pump
- F a device that moves oil from storage tanks to the main line
- G the pipeline carrying the main supply of the oil
- H a structure that monitors and pumps oil and adjusts pressure



outlet



pumping station



booster pump



full head pump

**4** Read the sentence pairs. Choose which word or phrase best fits each blank.

**1 momentum / proximity**

- A The oil in the pipeline lost \_\_\_\_\_ as it crossed the mountains.  
 B There is a pipeline in close \_\_\_\_\_ to the town.

**2 destination / personnel**

- A The secretary made sure the office \_\_\_\_\_ received the memo.  
 B Mary finally reached her \_\_\_\_\_ after hours of traveling.

**3 positioned / housed**

- A The workers were \_\_\_\_\_ in quarters built by the company.  
 B The pipeline was \_\_\_\_\_ so it crossed mostly flat areas.

**5** Listen and read the company webpage again. What are some different types of pumps used at pumping stations?

## Listening

**6** Listen to a conversation between a new employee and an old employee at a pumping station. Mark the following statements as true (T) or false (F).

- 1 \_\_\_ Only full head pumps are used.  
 2 \_\_\_ The man will be housed in the pumping station.  
 3 \_\_\_ The man is one of the new safety personnel.

**7** Listen again and complete the conversation.

- Old Employee:** You must be one of the new **1** \_\_\_\_\_. Welcome to Pipeline Services!
- New Employee:** Thanks. I'm a bit nervous about what to expect.
- Old Employee:** Oh, **2** \_\_\_\_\_. You'll get the hang of it.
- New Employee:** So, do you guys use **3** \_\_\_\_\_ here?
- Old Employee:** Yes, and we also have half stage pumps and **4** \_\_\_\_\_.
- New Employee:** **5** \_\_\_\_\_ are the most powerful, right?
- Old Employee:** Yes. They can take up to two times more flow than the full head.
- New Employee:** That's good. So, where will I be staying?
- Old Employee:** You'll be housed in the **6** \_\_\_\_\_.

half stage pump

## Speaking

**8** With a partner, act out the roles below based on Task 7. Then, switch roles.

**USE LANGUAGE SUCH AS:**

*I'm a bit ...*  
*What kind of ...?*  
*Where will I ...?*

**Student A:** You are a new employee at a pumping station. Talk to Student B about:

- type(s) of pumps used
- booster pumps
- where you will stay

**Student B:** You are an experienced employee at a pumping station. Talk to Student A about his or her new job.

## Writing

**9** Use the company webpage and the conversation from Task 8 to write notes for the new employee. Include: the types of pumps used at the pumping station, housing information, and how to get more information about the position.



personnel

# Glossary

- abundant** [ADJ-U2] If something is **abundant**, there is a lot of it available.
- academic** [ADJ-U12] If something is **academic**, it is relating to education.
- access road** [N-COUNT-U10] An **access road** is a road that allows vehicles or people to get to a specific place.
- accountable** [ADJ-U10] If someone is **accountable**, he or she is held responsible for something.
- agreement** [N-COUNT-U3] An **agreement** is a verbal or written contract made by two sides.
- alpha-numeric coding system** [N-COUNT-U8] An **alpha-numeric coding system** is a way of naming and ordering things using numbers and letters.
- annual fee** [N-COUNT-U7] An **annual fee** is a payment you make every year.
- appraisal well** [N-COUNT-U14] An **appraisal well** is a well used to find out information and do tests.
- appraise** [V-T-U7] If you **appraise** something, you examine it to judge how successful it is.
- assignment** [N-COUNT-U12] An **assignment** is a task or duty that is given to a specific person.
- authority** [N-COUNT-U7] An **authority** is a department which has power.
- bid** [N-COUNT-U7] A **bid** is an offer of money as payment for something. Usually several people make bids and the highest bid wins.
- bid process** [N-COUNT-U9] The **bid process** is the method of obtaining new ownership of land.
- bitumen** [N-UNCOUNT-U1] **Bitumen** is a black sticky form of petroleum. It is used for making roads and roofs.
- block** [N-COUNT-U8] A **block** is an offshore area which can be licensed for oil exploration. It is part of a quadrant.
- boundary** [N-COUNT-U8] A **boundary** is the edge of an area.
- business venture** [N-COUNT-U15] A **business venture** is a business project that involves risk.
- buyer** [N-COUNT-U5] A **buyer** is a person or company who buys a product from a seller.
- calibrating** [N-UNCOUNT-U6] **Calibrating** is the process of examining or adjusting a piece of equipment to compare it to a standard.
- carpenter** [N-COUNT-U13] A **carpenter** constructs furniture and buildings from wood.
- cash bonus** [N-COUNT-U11] A **cash bonus** is a type of up-front payment that covers the first year's rent. For oil leases, it is calculated on a per acre basis.
- circumference** [N-COUNT-U5] **Circumference** is the measurement of the distance around the outside of a circle.
- clay** [N-UNCOUNT-U1] **Clay** is thick, heavy soil that is soft when wet, and hard when dry. It is often used to make bricks and containers.
- combustible** [ADJ-U2] If something is **combustible**, it catches fire and burns easily.
- concession** [N-COUNT-U8] A **concession** is the right to use land for a specific purpose. It is granted by a government, company, or other authority.
- condition** [N-UNCOUNT-U10] **Condition** is the physical state that something is in.
- contaminant** [N-COUNT-U4] A **contaminant** is a material or substance that makes something unclean or polluted. Contaminants of oil are substances like sand, salt, water, and sediment.
- count** [N-COUNT-U6] A **count** is a total or a measurement.
- counter** [N-COUNT-U6] A **counter** is a device that counts things.
- crop** [N-COUNT-U10] A **crop** is a type of plant that farmers grow. It is used as food.
- damage settlement** [N-COUNT-U10] A **damage settlement** is an agreement that a party will take responsibility for damage caused to another party's property and restore it or pay compensation.
- damages** [N-PLURAL-U10] **Damages** are a fee that one person is required by law to pay to another person, as compensation for breaking the terms of a contract, or for causing harm to the person or their property.
- define** [V-T-U7] If you **define** something, you explain the meaning and the limits of something.
- delay rental** [N-COUNT-U11] A **delay rental** is when the year's rent is paid at the end of the first year of the primary term, and is paid to keep the lease intact because production has not begun.

# Petroleum II

**Career Paths: Petroleum II** is a new educational resource for petroleum industry professionals who want to improve their English communication in a work environment. Incorporating career-specific vocabulary and contexts, each unit offers step-by-step instruction that immerses students in the four key language components: reading, listening, speaking, and writing. **Career Paths: Petroleum II** addresses topics including jobs in the industry, types of oil rigs, petroleum mapping, oil rig mechanical systems, and the drilling process.

The series is organized into three levels of difficulty and offers a minimum of 400 vocabulary terms and phrases. Every unit includes a test of reading comprehension, vocabulary, and listening skills, and leads students through written and oral production.

**Included Features:**

- A variety of realistic reading passages
- Career-specific dialogues
- 45 reading and listening comprehension checks
- Over 400 vocabulary terms and phrases
- Guided speaking and writing exercises
- Complete glossary of terms and phrases

The **Teacher's Book** contains a full answer key and audio scripts.

The **Teacher's Guide** contains detailed lesson plans, a full answer key and audio scripts.

The **audio CDs** contain all recorded material.



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