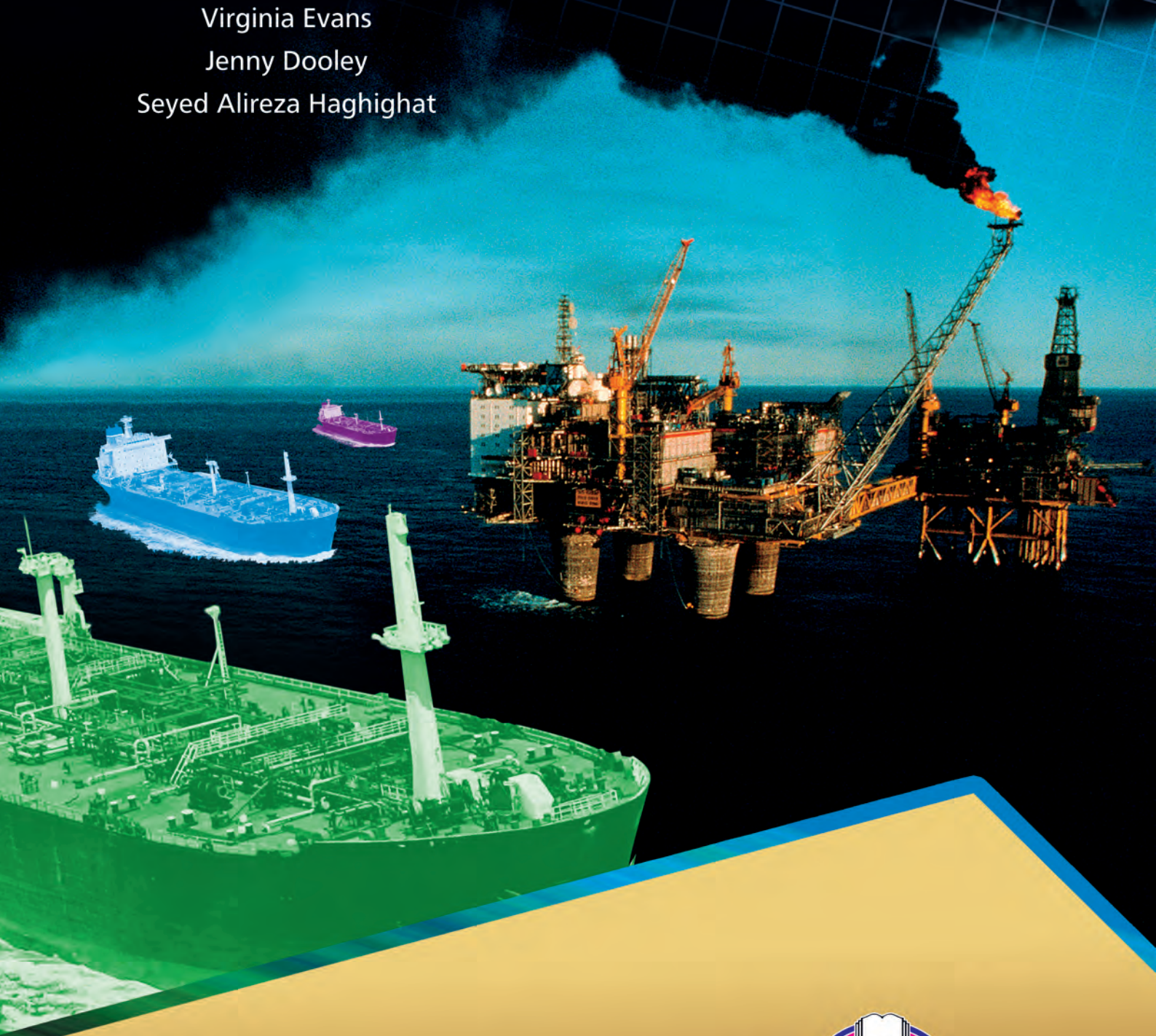


**CAREER  
PATHS**

# Petroleum II

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Express Publishing

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A petroleum **seal** is an important part of a reservoir. If seals are not present, petroleum traps are not created. Instead the petroleum migrates to the surface. Seals are made from rocks and minerals such as **limestone**, **halite**, and **mudrock**. These make good seals because they have small pores. The petroleum cannot flow through them easily. **Faults** can also be seals if they occur in the right kind of rock.

**Capillary seals** do not let petroleum pass through unless pressure in the reservoir causes leakage. There are two types of capillary seals. The types are based on how petroleum leakage occurs. **Membrane seals** leak when the pressure becomes too great. The pressure pushes petroleum through the rock pores. After the pressure level drops, the seal closes up again. **Hydraulic seals** leak when the pressure in the reservoir **accumulates**. This causes **fractures** in the seal. Once enough pressure is released, the fractures mend and the rock reseals.

How Petroleum Seals Work



Vocabulary

3 Place the words from the word bank under the correct heading.



halite hydraulic membrane  
capillary mudrock limestone

Seal types	Rock/Mineral types
_____	_____
_____	_____
_____	_____

Get ready!

- 1 Before you read the passage, talk about these questions.
  - 1 What are some types of rock where seals form?
  - 2 What does excessive pressure cause to happen to seal rock?

Reading

- 2 Read the webpage. Then, mark the following statements as true (T) or false (F).
  - 1 \_\_\_ Seals need to be present for petroleum traps to form.
  - 2 \_\_\_ Hydraulic seals leak when the seal fractures.
  - 3 \_\_\_ Faults are a type of capillary seal.

- 4 Match the words (1-4) with the definitions (A-D).
  - 1 \_\_\_ fracture
  - 2 \_\_\_ seal
  - 3 \_\_\_ fault
  - 4 \_\_\_ accumulate
  - A a break that occurs in a rock
  - B a divide in a rock formation caused by the earth's movement
  - C a rock that keeps petroleum moving upward to the surface
  - D to grow or increase over a period of time

- 5 Listen and read the webpage again. What causes a membrane seal to leak?

## Listening

- 6 Listen to a conversation between a geologist and an oil field worker. Choose the correct answers.

- What is the purpose of the conversation?
  - to explain how faults work as seals
  - to describe how faults are created
  - to compare the structure of petroleum traps
  - to discuss the types of rocks that form seals
- What will the software show the woman?
  - where the fault is located
  - how much petroleum is in the trap
  - which kind of rock is creating the seal
  - how the petroleum is moving

- 7 Listen again and complete the conversation.

- Oil Field Worker:** Hey, Sasha. What are you doing out in the field?
- Geologist:** I'm conducting an analysis of the 1 \_\_\_\_\_.
- Oil Field Worker:** I just don't understand how a fault can be a seal. I mean, it's a 2 \_\_\_\_\_ in the ground.
- Geologist:** Well, faults are often in rocks that are already seals, 3 \_\_\_\_\_.
- Oil Field Worker:** So how does that help?
- Geologist:** If the rock is 4 \_\_\_\_\_, even with the fault, it remains a seal.
- Oil Field Worker:** Okay, that makes sense.
- Geologist:** But faults change the structure of the 5 \_\_\_\_\_.
- Oil Field Worker:** Is that why you're analyzing it?
- Geologist:** Yes, the computer software shows how the hydrocarbons are 6 \_\_\_\_\_ around the fault. It also shows the potential for the fault seal to leak.

## Speaking

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

### USE LANGUAGE SUCH AS:

*I'm doing an analysis of ...*  
*What kind of ...?*  
*The computer software shows ...*

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

- what work is going on
- the seal type
- why he or she is analyzing the seal

**Student B:** You are a geologist. Talk to Student A about seals.

## Writing

- 9 Use the webpage and the conversation from Task 8 to fill out the geologist's notes.



## Field Notes

Location: \_\_\_\_\_

Type of seal: \_\_\_\_\_

Type of rock: \_\_\_\_\_

Reason for analysis: \_\_\_\_\_

Equipment used: \_\_\_\_\_