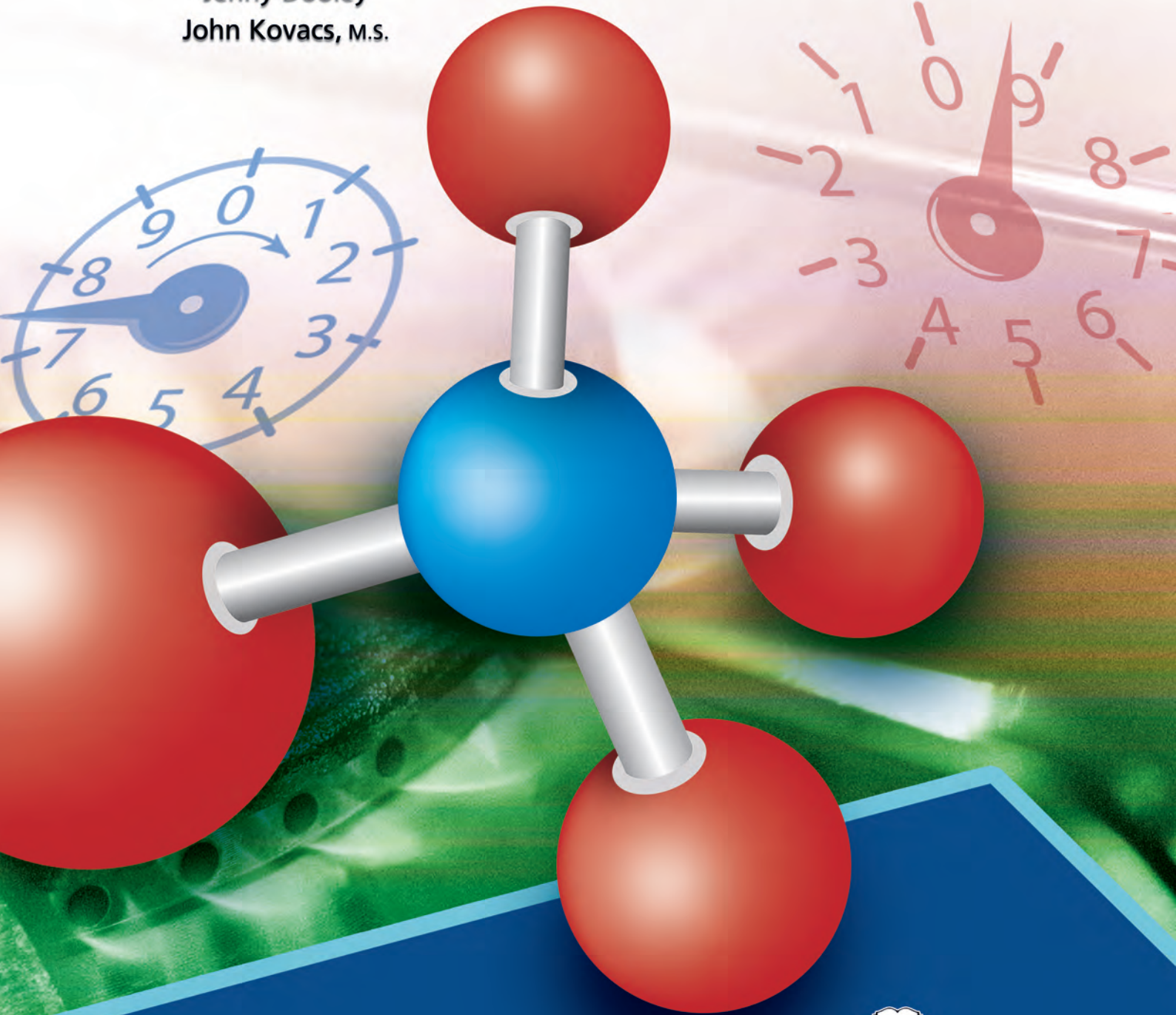


**CAREER  
PATHS**



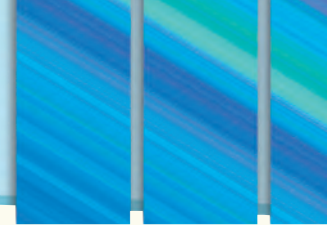
# Natural Gas I

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Express Publishing

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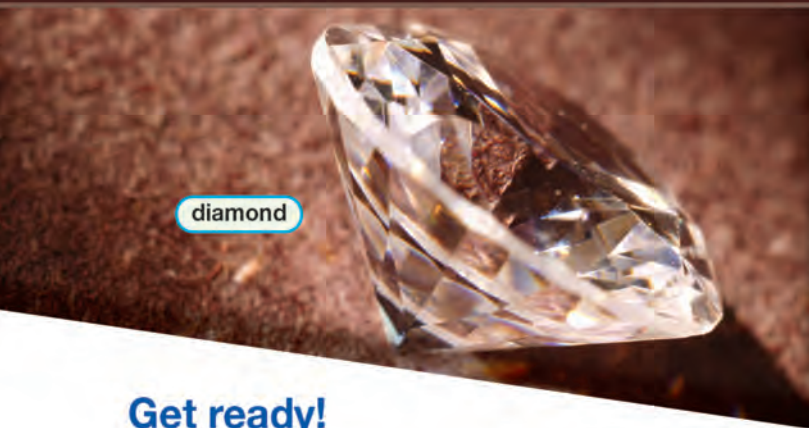
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**CHOOSING THE RIGHT BIT FOR THE JOB**

By Edward Hale



tungsten carbide



diamond

Drill bits are essential for natural gas drilling operations. However, choosing the wrong one leads to trouble. **Steel tooth rotary bits** are the most commonly used. These bits have three **cones** that **rotate** along a **tip**. They drill easily through rock and soil. However, drillers also often use bits that are **hybrids**. They never really know what they'll encounter below surfaces. Sometimes, **steel** just can't cut it, so they need bits made of extra materials. For the toughest rock, drillers use **polycrystalline diamond compact bits**. These **insert bits**, made of **diamonds** and **tungsten carbide**, are good for offshore drilling. Diamonds in compact bits are usually **synthetic**, but just as sturdy as real ones. **Mill bits** and **core bits** are great underwater. Mill bits cut into metal pipes. Core bits are especially unique. With their bullet-like shapes and **rigid teeth**, they're used wet or dry. **Fishtail bits** are the last essentials. They're used to scoop up softer materials like sand.

**Get ready!**

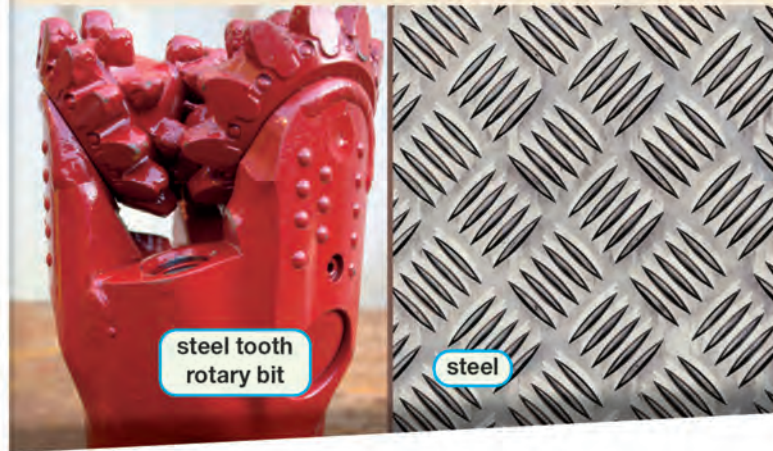
1 Before you read the passage, talk about these questions.

- 1 What kinds of materials can be used to make drill bits?
- 2 What are some problems that drillers run into if they use the wrong bit?

**Reading**

2 Read the trade magazine article. Then, complete the table.

Type of Drill Bit	Functions and Characteristics
Steel tooth bit	_____
Polycrystalline diamond compact bit	_____
Mill bit	_____
Core bit	_____
Fishtail bit	_____



steel tooth rotary bit

steel

3 Match the words (1-6) with the definitions (A-F).

- 1 \_\_ steel
- 2 \_\_ rotate
- 3 \_\_ hybrid
- 4 \_\_ diamond
- 5 \_\_ synthetic
- 6 \_\_ tungsten carbide

- A a gray powder used to make tools and jewelry
- B to turn along a point
- C a material made of iron and carbon
- D an instrument made of two parts
- E a mineral made of crystallized carbon
- F a chemically-produced material used to replace another

- 4 Place the words and phrases in the correct box: *tip, insert, teeth, cone, core, steel tooth rotary, mill, fishtail, polycrystalline diamond compact.*

Types of drill bits	_____
	_____
	_____
	_____
Drill bit parts	_____
	_____
	_____
	_____

- 5 Listen and read the trade magazine article again. Why do drillers need hybrid drill bits?

## Listening

- 6 Listen to a conversation between a worker and a supervisor. Choose the correct answers.

- What is the conversation mainly about?
  - whether core bits are better than mill bits
  - which drill bit to use for tough rock layers
  - whether tungsten carbide bits are harder than diamond bits
  - whether steel is stronger than tungsten carbide
- Which drill bits does the woman confuse?
  - steel bits and tungsten carbide bits
  - steel bits and diamond-tipped bits
  - mill bits and core bits
  - tungsten carbide bits and diamond-tipped bits

- 7 Listen again and complete the conversation.

**Supervisor:** If you're digging through especially deep and hard rock layers, you need something with a 1 \_\_\_\_\_.

**Worker:** I thought that a 2 \_\_\_\_\_ would work just fine.

**Supervisor:** I'd try something much harder.

**Worker:** How about a 3 \_\_\_\_\_?

**Supervisor:** 4 \_\_\_\_\_? Not in this instance.

**Worker:** Sorry, 5 \_\_\_\_\_ "diamond-tipped" I always confuse those two.

**Supervisor:** A diamond bit definitely helps. But if you hit water, switch to a 6 \_\_\_\_\_.

## Speaking

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

### USE LANGUAGE SUCH AS:

*I'm trying to ...*

*... are a little stronger than ...*

*If you hit water, switch to ...*

**Student A:** You are a worker on a drilling site. Talk to Student B about:

- what problem you are having
- the characteristics of different drill bits
- which drill bit you think you ought to use

**Student B:** You are a supervisor on a drilling site. Talk to Student A about different types of drill bits.

## Writing

- 9 Use the trade magazine article and the conversation from Task 8 to fill out the work log.

# Work LOG

Date: \_\_\_\_\_

Activity: \_\_\_\_\_

Which drill bits did you use today? \_\_\_\_\_

Did you encounter any difficulties? Y/N