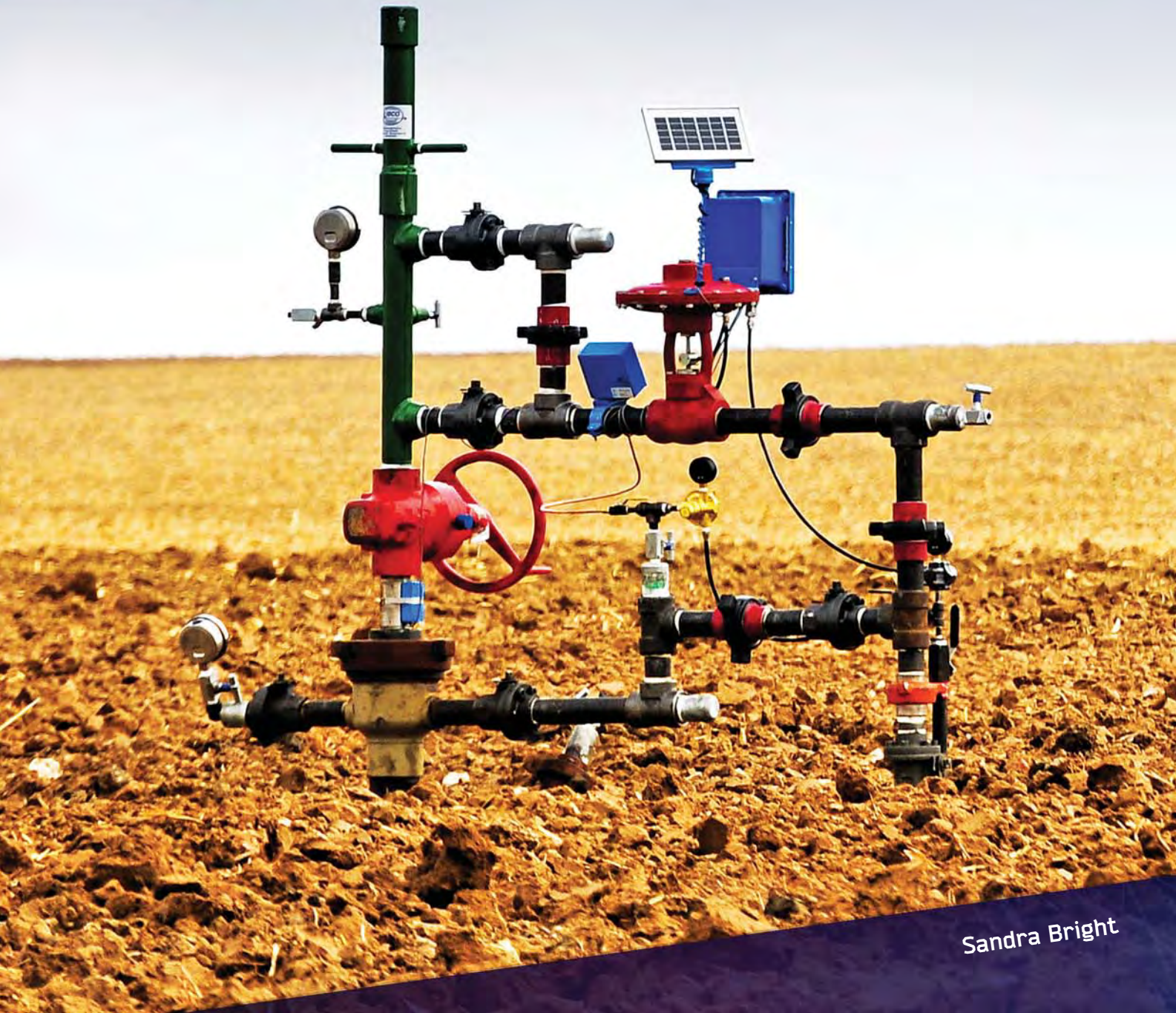
Examining Energy

Examining Natural Gas



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Contents

CHAPTER 1

Natural Gas: For Yesterday, Today, and Tomorrow

Have you heard people talking about the high cost of energy? Does your family discuss the cost of heating your home? Right now, a lot of the world's energy comes from non-renewable sources. These non-renewable sources, such as oil, can have negative effects on the environment, and the sources will eventually run out.

Scientists are constantly looking for ways to improve our sources of energy. They want to use energy in ways that are more efficient, less expensive, and better for the environment than how our current energy sources are used. One source of energy we might make better use of is natural gas. People

Do you use natural gas at your house?

already use natural gas every day to heat their homes, cook, and even fuel their cars. Businesses and industries use it, too. The United States has a large supply of natural gas that we could find even more uses for.

Natural gas is a fossil fuel. It forms from organic materials buried underground for millions of years. All fossil fuels cause pollution, and their supply is limited. But natural gas pollutes

less than the other two fossil fuels, oil and coal. Right now, natural gas makes up about 25 percent of the United States' energy usage. Some people believe we should increase the amount of natural gas that we use compared to our other energy sources.

EXPLORING NATURAL GAS

In this book, it is your job to learn about natural gas and its place in our energy future. Where does natural gas come from? When did people begin using it as fuel? What do we use it for today? What might we use natural gas for tomorrow?

Taylor Anderson is researching natural gas for a presentation for his science class. He is meeting with scientists and other energy innovators who will help him learn more about natural gas and how it can help meet our energy needs. Reading Taylor's journal will help you conduct your own research.

CHAPTER 2

Prehistoric Power

I learned from Ms. Schuler in science class that it's good to come up with questions when researching something. I wrote down two questions for my research today: Where does natural gas come from? When did people start using natural gas as a fuel?

I decide to start by interviewing Ms. Schuler herself after school one day. "Natural gas has been around for a long time," she tells me. "Most of the natural gas we find today is millions of years old, so it is buried deep inside the earth."

She explains that natural gas is a fossil fuel, like oil and coal. Fossil fuels are made from organic material. "Believe it or not," she says, "natural gas actually comes from sea creatures. Tiny plants and animals lived hundreds of millions of years ago. When the plants and animals died, they ended up at the bottom of the ocean. Over a really long time—many millions of years—layer upon layer of sand and silt covered the organic remains.

Natural gas comes from ancient creatures that have been buried underground for hundreds of millions of years.

This buried them deeper and deeper in the earth. There, heat and pressure changed the buried organic matter into oil, coal, and gas."

Ms. Schuler tells me that natural gas has not only been around for a long time, but also that people have been using it for thousands of years. People living in the Middle East discovered natural gas seeps in Iran between 6000 and

2000 BCE. Seeps are spots where the fuel leaks through the earth and escapes. Sometimes, lightning would set the gas on fire. Because the gas was seeping from the earth, it would continue burning, sometimes for years. People who saw the fire didn't understand what was happening. In some cultures, people thought these fires were magical or divine. They became an important part of religions in Persia (present-day Iran), India, and Greece. A famous temple in Delphi, Greece, was even built around one of these flames.

Ms. Schuler says, "In 211 BCE, the Chinese created the first known natural gas well. They drilled down into the earth 500 feet (150 m) and then inserted bamboo poles into the well. Because bamboo is naturally hollow, the bamboo directed the fuel where the Chinese wanted it to go."

I learn that people in the Western Hemisphere discovered and used

Ancient Greeks considered the natural gas seeps in Delphi to be sacred.

natural gas much later than in China or the Middle East. In 1659, natural gas was discovered in England. But the English did not have much use for natural gas. "At least not right away," Ms. Schuler quickly adds. "They began using gas in homes and in streetlights in 1785. But that was a gas manufactured from burning coal, not the gas that comes from the ground."

Ms. Schuler goes on, "The city of Baltimore, Maryland, also used gas manufactured from coal to fuel streetlamps as early as 1816. And Fredonia, New York, was the first U.S. city to use natural gas commercially, thanks to gunsmith William Hart. In 1821, he dug the first U.S. natural gas well outside the city. People in Fredonia began using the gas for cooking and for lighting their homes and businesses."

But, Ms. Schuler tells me, there was still the challenge of getting natural gas to people who didn't live near natural gas wells. The first U.S. pipeline was built in 1891. It was 120 miles (193 km) long and ran from Indiana to Illinois. From the 1940s to the 1960s, thousands of miles of pipeline were laid to

URENGOY, RUSSIA

Natural gas exists around the world. Locations where natural gas is concentrated are called gas fields. Urengoy, located in western Siberia, a part of Russia, is one of the world's largest gas fields. It has 15 reservoirs. Most of the gas is located 3,600 to 4,100 feet (1,100 to 1,250 m) below ground. Russia has other gas fields, including Yamburg and Orenburg. Most of Russia's natural gas is exported to other European countries.

Natural gas pipelines helped make natural gas a more practical energy source.

transport the fuel. The pipeline made gas more accessible to more people.

Then, in the late 1960s and early 1970s, an oil shortage led to a worldwide energy crisis. People began looking for other fuels. That's when natural gas really took off as an energy source. Today, natural gas is the second-most-used energy source in the United States, after petroleum. One-fourth of U.S. energy was supplied by natural gas in 2011.

I think I've got a really good start on my project. Next, I'll look at how we use natural gas.