

# Computation & Problem Solving

PROJECT 4 OIL & GAS FIELD INFORMATION

# Mexico oil reserves

Mexico recently completed a new assessment of its oil reserves and estimated proven and probable oil reserves at approximately 18.7 billion barrels. Mexico’s earlier assessment in 2007 estimated reserves at approximately 12.4 billion barrels in all country resources, but in 2011, the estimate was revised to 15.7 billion barrels to reflect additional exploration findings. Discoveries in the Sigsbee Field increase this figure by an additional 3 billion barrels.

# Sigsbee Field

The Sigsbee Field is one of the largest gas and crude oil fields in the Gulf of Mexico, with new advances in seismic imaging and drilling leading to the discovery of this new field. This offshore oil field is located approximately 150 km southeast from the city of Matamoros on the east coast of Mexico in what is often referred to as the “Grand Canyon under the sea.” Covering an area 30 by 15 square kilometers (12 by 5.8 sq. mi), the Sigsbee discovery is estimated to contain 1.2 trillion cubic meters (42 trillion cubic feet) of gas and up to 3 billion barrels of liquid crude oil. At its largest point, the field contains a gas column that is being drilled in water that is more than 2,000 meters deep. To date, the field has been drilled to a depth of 5,861 meters. Mexico and the United States are involved negotiations to secure access to this source of oil and gas.

# Four integral components

The Sigsbee Field is comprised of the following four integral components: Ojeda, Arana, Quiroga, and Orizba. These components are responsible for the production, processing and transportation of oil and gas from the field.

## Ojeda

Ojeda is an oil and gas processing plant located 32km (20 mi) northeast of San Fernando, Mexico. The facility is 19 km (12 mi) wide and 21 km (13 mi) long. Constructed in 1989, Ojeda is one of the largest crude oil and gas processing plant facilities in Mexico. The city of San Fernando is the main transport hub of Ojeda oil from the Gulf of Mexico Sigsbee Field to inner-lying cities within the country.

## Arana

Arana spar is located on the maritime border between Mexico and the United States, approximately 120 kilometers (75 mi) west of Matamoros. Arana is the second highest producing oil platform in the field, behind the Quiroga, and is the primary point connecting the Sigsbee Field to the Ojeda processing plant. Arana produced 4.6 tons of crude oil in 2010.

## Quiroga

The Quiroga is the highest producing component of the Sigsbee Field, with more than a third of the discovered natural resources being drilled and produced from four wells. The offshore oil rig – a semi-submersible – is located south of the Arana spar and southwest of the Orizba, using a pipeline to connect to the Arana to transport crude oil production back to the Ojeda plant. The Quiroga produced over 5.4 tons of crude oil in 2010, with production continuing to increase at a steady rate as additional wells are added and new techniques, such as water injections, are used to stimulate production.

## Orizba FPSO

The Orizba, an ultra deepwater drillship equipped to drill in 3,048 m (10,000 ft) of water, is located in the deepest part of the Sigsbee Field. At its largest point, the field contains a gas column 1,450 meters (4,760 ft.) deep with a 200 meters (660 ft.) deep oil rim below it, estimated to contain approximately 1.2 trillion cubic meters (42 trillion cubic feet) of gas. The Orizba is positioned directly over this gas column and is set to produce this gas as well as more than 4.2 tons of crude oil per year.