

# 08

GLOSSARY & NOMENCLATURE



## GLOSSARY & NOMENCLATURE

**PRODUCTION FIELDS**

Fields with exploitation wells. These include operating wells, which are divided into injection and production wells, and closed wells with potential to be exploited in the future.

**REFINING CAPACITY**

The daily operating capacity of a plant to produce refined products. Daily operating capacity means the maximum volume to be processed when the plant works without interruption.

**CONDENSATES**

Any mixture of relatively light hydrocarbons that remain liquid at normal temperature and pressure and have a certain quantity of propane and butane. Unlike crude oil, they have low or zero quantity of heavy hydrocarbons that constitute heavy fuel. There are three main sources of condensates: a) liquid hydrocarbons that separate when natural gas is treated, typically consists of C5 to C8, b).liquid hydrocarbons coming from non-associated gas that are recovered at the surface, and c) liquid hydrocarbons coming from gas/condensate basins, which can barely be distinguished from a stabilized light crude oil.

**DRILLING RIGS IN OPERATION**

The daily average number of drilling rigs used for drilling wells or in related activities such as dismantlement, transport and maintenance.

**FLOATING PRODUCTION, STORAGE AND OFFLOADING (FPSO)**

Floating Production, Storage and Offloading vessel (also called a "unit" and a "system"). A floating tank system used by the offshore crude oil and gas industry designed to receive, process, and store crude oil or natural gas produced from nearby platforms, until the product can be offloaded onto waiting tankers. The FSO are not equipped with process systems.

**NATURAL GAS**

Light paraffinic hydrocarbon mixture, mainly methane, small quantities of ethane and propane and in variable proportions nitrogen, carbon dioxide and hydrogen sulfide. Natural gas can be associated with crude oil or be found alone in non-associated natural gas wells.

**DRY GAS**

Natural gas free of heavier liquid hydrocarbons (natural gas liquids) consisting of ethane, propane, butane and natural gasoline.

**SOUR GAS**

Natural gas containing hydrocarbons, hydrogen sulfide and carbon dioxide (the later in concentrations greater than 50 ppm).

**WET GAS**

Natural gas containing more than 3 gallons of liquid hydrocarbons per thousand cubic feet of gas.

**NATURAL GASOLINE**

A highly volatile hydrocarbon mixture heavier than propane. Usually added to automotive gasoline to increase vapor pressure and start gasoline engines at low temperatures. Also used by the petrochemical industry to produce isobutane and isopentane, used in alkylation processes.

**LIQUEFIED PETROLEUM GAS (LPG)**

A gaseous mixture of propane and butane obtained during the fractionation of natural gas liquids or during the fractionation of refined products. It is the lighter fraction of crude oil utilized for domestic use and carburetion.

**SPECIAL TAX ON PRODUCTION AND SERVICES (STPS OR IEPS)**

An indirect tax on domestic sales of gasoline and diesel that Pemex-Refining collects on behalf of the Mexican Government. The difference between the retail price, or final price, and the producer price is the IEPS rate. The final price of gasoline and diesel is established by the Ministry of Finance (SHCP). The producer price of PEMEX is referenced to that of an efficient refinery in the Gulf of Mexico.

**SAN JOSÉ AGREEMENT**

Crude oil cooperation agreement between Mexico and Venezuela that benefits Central America and the Caribbean area and contemplates a collaboration scheme dedicated to finance economic development projects.

**CRUDE OIL**

Oil that comes from a reservoir after separating any associated gas. It does not include condensates and natural gas liquids production. Recovered crude oil is considered heavy or light according to the following approaches:

**Heavy:** crude oil with API gravity less or equal to 27°.

**Light:** crude oil with API gravity between 27° to 38°.

**Extra-light:** crude oil with API gravity greater than 38°.

Three varieties of crude oil are exported:

**Maya:** heavy crude oil with API gravity of 22.0° and 3.3 % sulfur by weight.

**Istmo:** light crude oil with API gravity of 33.6° and 1.3% sulfur by weight.

**Olmecca:** extra-light crude oil with API gravity of 39.3° and 0.8% sulfur by weight.

**WELLS**

Wells are classified according to their purpose or function, into development (including injection wells) and exploration (including wells by stratigraphic probe); and according to their completion grade, into drilled or completed.

**Drilled wells** are those with completed operations with the rotary drill and cemented casing, but have not entered into subsequent operations that allow production.

**Completed wells** are those with completed operations regarding: installation of production pipelines; shots to the pipeline lining to allow communication between the interior of the well and the storing rock; and cleaning and stimulation of the rock to enhance the flow of hydrocarbons.

**Successful exploration wells.** The relationship of currently producing exploration wells that incorporate reserves, divided by total completed wells. Since 2007, Pemex-Exploration and Production adopted the definition of Exploratory Commercial Success derived from international practices which evaluates the performance of exploration activities from an economic point of view.

**PEMEX-REFINING PROCESSES**

**Alkylation.** Process by which an isoparaffine (of short chain) combines chemically with an olefin through a catalyst to form another isoparaffine (of long chain), called alkylate. It's a major aspect of the upgrading of petroleum since it's formed of high-octane compound.

**Cracking.** Process to break large molecules of crude oil into smaller ones: known as thermal cracking when the process is reached by the application of heat; catalytic cracking when a catalyst is used; and hydrocracking, when the process is carried out in a hydrogen atmosphere.

**Distillation.** Process consisting on heating a liquid mixture until the most volatile components pass to the vapor phase, then the vapor is cooled down to recover these components by condensation. The main objectives of distillation are to separate a mixture of several components taking advantage of their different boiling points, or to separate the volatile materials of the non-volatile ones.

**Fractionation.** Distillation process that separates small fractions of a hydrocarbon mixture.

**Hydrodesulfurization.** Process that eliminates sulfur by transforming it to hydrogen sulfide in the gaseous stream, which can be easily separated and converted to elemental sulfur.

**Isomerization.** Process that alters the fundamental arrangement of the atoms of a molecule without adding or subtracting anything to the original molecule. Butane is rearranged as isobutane to be used in the alkylation of isobutene and other olefins for high octane hydrocarbon production.

**Reforming.** Process that improves the antiknock quality of gasoline fractions by modifying their molecular structure: known as thermal reforming when carried out by heat; and as catalytic reforming when using a catalyst.

#### PETROCHEMICAL PRODUCTS

These chemicals are produced from raw materials derived from crude oil and natural gas. According to the governmental resolution published on November 13, 1996, in the Official Gazette of the Federation, the categories of basic petrochemical products are constituted by those derivatives that serve as basic industrial raw materials. These products can only be elaborated by the state through PEMEX and its subsidiary entities:

- 1.- Ethane
- 2.- Propane
- 3.- Butane
- 4.- Pentane
- 5.- Hexane
- 6.- Heptane
- 7.- Carbon black
- 8.- Naphtha

9.- Methane, when it comes from hydrogen carbides, obtained from reservoirs located in Mexican territory and used as raw material in industrial petrochemical processes.

In addition, PEMEX has petrochemical by-products and other products which, according to the generally adopted convention, are not petrochemicals but are elaborated in its petrochemical areas.

#### REGION

A geographical area corresponding to the administrative division of Pemex-Exploration and Production. The regional heads are located along the Gulf of Mexico Coast: Poza Rica, Veracruz (Northern Region), Villahermosa, Tabasco (Southern Region) and Ciudad del Carmen, Campeche. (Northeastern Marine Region and Southwestern Marine Region).

Integral asset. An administrative subdivision of each region. Resulting from the regions' restructure, they are distributed as follows:

#### Northeastern Marine Region:

Cantarell and Ku-Maloob-Zaap.

#### Southwestern Marine Region:

Abkatún-Pol-Chuc and Litoral de Tabasco.

#### Southern Region:

Bellota-Jujo, Cinco Presidentes, Macuspana, Muspac and Samaria-Luna.

#### Northern Region:

Burgos, Poza Rica-Altamira and Veracruz.

#### RESERVES

Estimated amount of hydrocarbons that can be commercially recovered from well-known formations at a specific date. It is worth mentioning all estimated reserves involve some grade of uncertainty.

The SEC permits oil and gas companies, in their filings with the SEC, to disclose only proved reserves that a company has demonstrated by actual production or conclusive formation tests to be economically and legally producible under existing economic and operating conditions. We use certain terms in this document, such as total reserves, probable reserves and possible reserves, that the SEC's guidelines strictly prohibit us from including in filings with the SEC.

#### PROVED RESERVES (1P)

Estimated volumes of hydrocarbons which geological and engineering analysis demonstrates with reasonable certainty will be commercially recoverable in future years from known reservoirs under the prevailing economic conditions and existing operations; for example, prices and costs at the date of estimate. Prices include existing changes or contractual arrangements but are not based on future conditions.

#### PROBABLE RESERVES (2P)

Those reserves which analysis of geological and engineering data suggests are more likely to be recovered than to not being recoverable. If probabilistic methods are employed for evaluation, there is a probability of at least 50% that the amounts to be recovered will be equal to or greater than the sum of proved plus probable reserves, also called 2P reserves.

#### POSSIBLE RESERVES (3P)

Those hydrocarbon reserves which analysis of geological and engineering data suggests are less likely to be recoverable than probable reserves.

According to this definition, when probabilistic methods are employed, there is a probability of at least 10% that the amounts actually recovered will be equal to or greater than the sum of proved, probable and possible reserves, also called 3P reserves.

#### DOMESTIC SALES.

Sales that PEMEX bills to its distributors in Mexican territory or that it carries out directly to national clients for intermediate and end use. The sales value excludes taxes (STPS and VAT) and commissions to distributors.

#### REGIONALIZATION OF SALES OF PETROLEUM PRODUCTS.

Since 2002 sales of petroleum products adopted the economic regionalization used by the executive branch of the Mexican Government.

**Central Region:** Estado. de México, Distrito Federal, Morelos, Tlaxcala, Hidalgo and Puebla.

**Northeastern Region:** Chihuahua, Durango, Coahuila, Tamaulipas and Nuevo León.

**Northwestern Region:** Baja California, Baja California Sur, Sonora and Sinaloa.

**Central-western Region:** Nayarit, Zacatecas, Aguascalientes, Jalisco, Colima, San Luis Potosí, Guanajuato, Querétaro and Michoacán.

**South-southeastern Region:** Veracruz, Guerrero, Oaxaca, Chiapas, Tabasco, Campeche, Yucatán and Quintana Roo.

#### PUBLIC PRICES.

The public prices that are presented correspond to different reference places, which are shown in the following table:

PRODUCT	REFERENTE PLACE
Jet fuel	Mexico City airport
Heavy fuel oil	Producing Center Tula
Acrylonitrile	Producing Center Tula
Ammonia	Producing Center Cosoleacaque
Vinyl chloride	Producing Center Pajaritos
Styrene	Producing Center La Cangrejera
Monoethylene glycol FG	Producing Center Morelos
Hexane	Producing Center La Cangrejera
High density polyethylene	Producing Center Morelos
Low density polyethylene	Producing Center La Cangrejera
Toluene	Producing Center La Cangrejera

## NOMENCLATURE

°C	Celsius degrees
kg/cm <sup>2</sup>	Kilogram per square centimeter
km	Kilometer
m	Meter
bd	Barrels per day
Mbd	Thousand barrels per day
MMb	Million barrels
MMbcoe	Million barrels of crude oil equivalent
Mm <sup>3</sup>	Thousand cubic meters
MMMcf	Billion cubic feet
MMcfd	Million cubic feet per day
Mt	Thousand metric tons
MTBE	Methyl Tertiary Butyl Ether
STPS	Special Tax on Production and Services
INPC	National Consumer Price Index
Ps.	Mexican pesos
CAPEX	Capital expenditure
LD	Low Density
HD	High Density
FG	Fiber grade
VAT	Value Added Tax
CPG	Gas Processing Center
CPQ	Petrochemical Complex
OPEP	Organization of the Petroleum Exporting Countries
PPQ	Pemex-Petrochemicals
PGPB	Pemex-Gas and Basic Petrochemicals
PIDIREGAS	Long-term Productive Infrastructure Projects
ppm	Parts per million
MMUS\$	Million dollars
MM\$	Million pesos
US\$/b	Dollars per barrel
US\$/MMBtu	Dollars per million of Btu
WTI	West Texas Intermediate
\$/kg	Pesos per kilogram
\$/m <sup>3</sup>	Pesos per cubic meter
...	Negligible figure
-	Null value

## Explanations:

- Annual variations are determined based on the original figures before rounding.
- Figures may not total due to rounding.
- Operating figures can be modified by adjustments and complaints that are solved after the accounting settlement, thus variations with respect to accounting figures may appear.
- International trade figures include operations related with PEMEX system.
- The amounts shown in our consolidated financial statements do not express the provisions of Bulletin B-10 under Mexican FRS, which requires to express amounts in thousands of constant pesos.

The statistical yearbook contains PEMEX information as of December 31, 2008.

For information about this publication, please contact the Gerencia de Integración de Información Institucional, at Marina Nacional #329 Floor 31, Col Huasteca, Mexico City 11311 or by calling: [52] 55-19448028.