

Chapter GL

GLOSSARY

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Selected terms of particular importance to the USGS assessment of undiscovered resources in total petroleum systems are defined here. The definitions are intended to be generally explanatory rather than strictly technical. No attempt has been made to include a detailed listing of common industry definitions.

**Access Probability:** The probability, expressed as a decimal fraction, of sufficient access (political and physical) to a particular assessment unit within a given time frame for the activities necessary to find a field of minimum size and to add its volume to proved reserves. The time frame for this assessment is 30 years.

**Assessment Unit (AU):** A mappable volume of rock within the total petroleum system that encompasses fields (discovered and undiscovered) which share similar geologic traits and socio-economic factors. The fields within an assessment unit should constitute a sufficiently homogeneous population that the chosen methodology of resource assessment is applicable. A total petroleum system might equate to a single assessment unit. If necessary, a total petroleum system can be subdivided into two or more assessment units in order that each unit is sufficiently homogeneous to assess individually.

**Assessment Unit Probability:** The assessment unit probability, expressed as a decimal fraction, represents the likelihood that, in the assessment unit, at least one undiscovered field of the minimum size exists that has the potential for its volume to be added to proved reserves in a given time frame. The assessment unit probability is the product of the probabilities of the three geologic attributes (charge, rocks, and timing) and the probability of access.

**Associated/Dissolved Gas:** Natural gas that occurs in an oil field, either as a free gas cap or in solution; synonymous with gas in oil fields.

**Barrels of Oil Equivalent (BOE):** A unit of petroleum volume in which the gas portion is expressed in terms of its energy equivalent in barrels of oil. For this assessment, 6,000 cubic feet of gas equals 1 barrel of oil equivalent (BOE).

**Boutique Province:** A geologic province, other than a priority province as defined by the USGS, considered for petroleum-resource assessment. Boutique provinces can be chosen for a variety of geologic, political, technical, and geographic reasons.

**Composite Total Petroleum System:** A mappable entity encompassing all or a portion of two or more total petroleum systems. Composite total petroleum systems were used when fields within an assessment unit were thought to be charged by more than one source rock.

**Continuous-Type Deposit:** A petroleum accumulation that is pervasive throughout a large area, that is not significantly affected by hydrodynamic influences, and for which the chosen methodology for assessment of sizes and number of discrete accumulations is not appropriate. Continuous-type deposits lack well-defined downdip water contacts.

**Conventional Deposit:** A discrete accumulation, commonly bounded by a downdip water contact, which is significantly affected by the buoyancy of petroleum in water. This geologic definition does not involve factors such as water depth, regulatory status, or engineering techniques.

**Conventional Petroleum Endowment:** The sum of the known petroleum volume (cumulative production plus remaining reserves) and the mean of the undiscovered volume. Oil endowment and gas endowment are sometimes used as abbreviated forms of this term.

**Cumulative Petroleum Production:** Reported cumulative volume of petroleum that has been produced. Cumulative oil, cumulative gas, and cumulative production are sometimes used as abbreviated forms of this term.

**Discovery Maturity:** Percentage of the known (discovered) volumes with respect to conventional endowment.

**Field:** A production unit consisting of a collection of oil and gas pools that when projected to the surface form an approximately contiguous area that can be circumscribed.

**Field Growth:** The increases in known petroleum volume that commonly occur as oil and gas fields are developed and produced. The terms field growth and reserve growth are used interchangeably throughout this report.

**Future Grown Petroleum Volume:** The sum of the remaining reserves, the mean of the undiscovered volume, and additions to reserves by reserve growth. Cumulative production does not contribute to the future grown petroleum volume.

**Future Petroleum Volume:** The sum of the remaining reserves and the mean of the undiscovered volume. Cumulative production does not contribute to the future petroleum volume. Future oil volume and future gas volume are sometimes used as variations of this term.

**Gas Field:** A field with a gas to oil ratio of 20,000 cubic feet/barrel or greater.

**Gas in Gas Fields:** Gas volumes in gas fields.

**Gas in Oil Fields:** Gas volumes in oil fields.

**Gas to Oil Ratio (GOR):** Ratio of gas to oil (in cubic feet/barrel) in a field. In this assessment, GOR is calculated using known gas and oil volumes at surface conditions.

**Geologic Province:** A USGS-defined area having characteristic dimensions of perhaps hundreds to thousands of kilometers encompassing a natural geologic entity (for example, sedimentary basin, thrust belt, delta) or some combination of contiguous geologic entities.

**Grown Conventional Petroleum Endowment:** The sum of the known petroleum volume (cumulative production plus remaining reserves), the mean of the undiscovered volume, and additions to reserves by reserve growth.

**Grown Petroleum Volume:** Known petroleum volume adjusted upward to account for future reserve growth. For this assessment, 30 years of reserve growth is considered.

**Known Petroleum Volume:** The sum of cumulative production and remaining reserves as reported in the databases used in this assessment. Also called estimated total recoverable volume (sometimes called "ultimate recoverable reserves" or "estimated ultimate recovery").

**Liquids to Gas Ratio (LGR):** Ratio of total petroleum liquids (including oil, condensate, and natural gas liquids) to gas (in barrels/million cubic feet) in a gas field. The LGR is calculated using known petroleum liquids and gas volumes at surface conditions. This ratio is used to assess the liquid coproducts associated with undiscovered gas in gas fields.

**Minimum Field Size:** The smallest field size (volume of oil in oil fields or volume of gas in gas fields) that is considered in the assessment process. A minimum field

size greater than or equal to 1 million barrels of oil or oil equivalent is defined for each assessment unit.

**Minimum Petroleum System:** The mappable part of a total petroleum system for which the presence of essential elements has been proved by discoveries of petroleum shows, seeps, and accumulations.

**Minimum Pool Size:** The smallest pool size (volume of oil in oil pools or volume of gas in gas pools) that is considered in the assessment process. For this assessment, minimum pool size is 0.5 million barrels of oil or oil equivalent. Minimum pool size is used only for the assessment of Canadian assessment units.

**Natural Gas Liquids (NGL):** Petroleum that occurs naturally as a gas in the reservoir, but as a liquid under surface conditions. Natural gas liquids are typically reported separately from crude oil.

**Natural Gas Liquids to Gas Ratio (for oil fields):** Ratio of natural gas liquids to gas (in barrels/million cubic feet) in an oil field, calculated using known natural gas liquids and gas volumes at surface conditions. This ratio is used to assess the natural gas liquids associated with undiscovered gas in oil fields.

**Nonassociated Gas:** Natural gas that occurs in a gas field. Synonymous with gas in gas fields.

**Oil Field:** A field with a GOR less than 20,000 (in cubic feet/barrel).

**Oil in Gas Fields:** Oil volumes in gas fields. For this assessment, oil in gas fields was calculated along with other liquids rather than separately.

**Oil in Oil Fields:** Oil volumes in oil fields.

**Petroleum:** A collective term for oil, gas, natural gas liquids, and tar.

**Play:** A set of known or postulated oil and gas accumulations sharing similar geologic, geographic, and temporal properties, such as source rock, migration pathway, timing, trapping mechanism, and hydrocarbon type. A play differs from an assessment unit; an assessment unit can include one or more plays.

**Pool:** A producible oil or gas accumulation in a hydrodynamically isolated reservoir in an oil or gas field. Pools data were analyzed only for the assessment of Canadian assessment units.

**Priority Province:** One of 76 non-U. S. geologic provinces defined by the USGS that together contain 95 percent of the world's non-U. S. known petroleum volume. All priority provinces were analyzed for petroleum-resource assessments.

**Region:** One of eight large areas (such as, North America, Europe, or South Asia) used to organize the world petroleum-resource assessment. These regions approximate those used by the U.S. State Department and the U.S. Department of Energy.

**Remaining Petroleum Reserves:** Volume of petroleum in discovered fields that has not yet been produced. For this assessment, remaining reserves were calculated by subtracting cumulative production from known volumes. Remaining reserves is sometimes used as an abbreviated form of this term.

**Reserve Growth:** The increases in known petroleum volume that commonly occur as oil and gas fields are developed and produced. The terms reserve growth and field growth are used interchangeably throughout this report.

**Total Petroleum System (TPS):** A mappable entity encompassing genetically related petroleum that occurs in seeps, shows, and accumulations (discovered or

undiscovered) that have been generated by a pod or by closely related pods of mature source rock, together with the essential mappable geologic elements (source, reservoir, seal, and overburden rocks) that controlled fundamental processes of generation, migration, entrapment, and preservation of petroleum.

**Undiscovered Petroleum Resources:** Resources postulated from geologic information and theory to exist outside of known oil and gas fields.

**USGS Assessed Petroleum Volumes:** The quantities of oil, gas, and natural gas liquids that have the potential to be added to reserves within some future time frame. For this assessment, the time frame is 30 years. The USGS assessed petroleum volumes include those from undiscovered fields, whose sizes are greater than or equal to the stated minimum field or pool sizes, and from the reserve growth of fields already discovered.