

# Explanatory Notes

The following Explanatory Notes are provided to assist in understanding and interpreting the data presented in the Detailed Statistics section of this publication.

- Note 1. Petroleum Supply Reporting System
- Note 2. Monthly Petroleum Supply Reporting System
- Note 3. Technical Notes for Detailed Statistics Tables
- Note 4. Domestic Crude Oil Production
- Note 5. Export Data
- Note 6. Quality Control and Data Revision
- Note 7. Frames Maintenance
- Note 8. Practical Limitations of Data Collection Efforts
- Note 9. 2004 Changes in the Petroleum Supply Monthly

## Note 1. Petroleum Supply Reporting System

The Petroleum Supply Reporting System (PSRS) represents a family of data collection survey forms, data processing systems, and publication systems that have been consolidated to achieve comparability and consistency throughout. The survey forms that comprise the PSRS are listed below:

<u>Form</u>	<u>Name</u>
EIA-800	"Weekly Refinery Report"
EIA-801	"Weekly Bulk Terminal Report"
EIA-802	"Weekly Product Pipeline Report"
EIA-803	"Weekly Crude Oil Stocks Report"
EIA-804	"Weekly Imports Report"
EIA-805	"Weekly Terminal Blenders Report"
EIA-810	"Monthly Refinery Report"
EIA-811	"Monthly Bulk Terminal Report"
EIA-812	"Monthly Product Pipeline Report"
EIA-813	"Monthly Crude Oil Report"
EIA-814	"Monthly Imports Report"
EIA-815	"Monthly Terminal Blenders Report"
EIA-816	"Monthly Natural Gas Liquids Report"
EIA-817	"Monthly Tanker and Barge Movement Report"
EIA-819	"Monthly Oxygenate Report"
EIA-820	"Annual Refinery Report"

Forms EIA-800 through 805 comprise the Weekly Petroleum Supply Reporting System (WPSRS). A sample of all petroleum companies report weekly data to the Energy Information Administration (EIA) on crude oil and petroleum product stocks, refinery inputs and production, and crude oil and petroleum product imports. The sample of companies that report weekly is selected from the universe of companies that report on the comparable monthly surveys. Data collected from the WPSRS are used to develop estimates of the most current monthly quantities in the Summary Statistics section of the *Petroleum Supply Monthly* (PSM) and which appear in the *Weekly Petroleum Status Report* (WPSR).

Forms EIA-810 through 817, and 819 comprise the Monthly Petroleum Supply Reporting System (MPSRS). These surveys are used to collect detailed refinery/blender, natural gas plant, and oxygenate operations data; refinery/blender, bulk terminal, natural gas plant, oxygenate producers and pipeline stocks data; crude oil and petroleum product imports data; and data on movements of petroleum products and crude oil between Petroleum Administration for Defense (PAD) Districts. A description of the MPSRS forms follows in Explanatory Note 2.

Data from these surveys are published in preliminary form in the *PSM*. They are published in final form in the *Petroleum Supply Annual* (PSA), Volumes 1 and 2.

Summary information on the revision error between preliminary and final data is published once a year in the *PSM* feature article entitled, "Accuracy of Petroleum Supply Data." The last article was published in the October 2005 issue and evaluated the accuracy of the data for the current year compared with the previous year.

The Form EIA-820, "Annual Refinery Report," is used to collect data on the consumption of purchased steam, electricity, coal, and natural gas; refinery receipts of crude oil by method of transportation; operable capacity for atmospheric crude oil distillation units and downstream units; and production capacity and storage capacity for crude oil and petroleum products. This survey is the primary source of data in the Refinery Capacity section of the *PSA*, Volume 1.

## Note 2. Monthly Petroleum Supply Reporting System

The Monthly Petroleum Supply Reporting System (MPSRS) was implemented in January 1983 as the result of an extensive effort by the Energy Information Administration (EIA) to integrate the collection and processing of petroleum supply data that had been

collected on other survey forms for many years. The collection of monthly petroleum supply statistics began as early as 1918 when the U.S. Bureau of Mines began collecting data on refinery operations, crude oil stocks and movements. The collection systems were further expanded in 1925 to include natural gas plant liquids production and storage, imports of crude oil and petroleum products and storage and movement of petroleum products in 1959, and tanker and barge movements of crude oil and petroleum products in 1964. Since their inception, each survey has undergone numerous changes, but the MPSRS was the first effort to make them all consistent and comparable. The forms that comprise the MPSRS are:

<u>Form Number</u>	<u>Name</u>
EIA-810	"Monthly Refinery Report"
EIA-811	"Monthly Bulk Terminal Report"
EIA-812	"Monthly Product Pipeline Report"
EIA-813	"Monthly Crude Oil Report"
EIA-814	"Monthly Imports Report"
EIA-815	"Monthly Terminal Blenders Report"
EIA-816	"Monthly Natural Gas Liquids Report"
EIA-817	"Monthly Tanker and Barge Movement Report"
EIA-819	"Monthly Oxygenate Report"

### Respondent Frame

Form EIA-810, "Monthly Refinery Report" - Operators of all operating and idle petroleum refineries located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam and other U.S. possessions. There are approximately 156 respondents on the Form EIA-810.

Form EIA-811, "Monthly Bulk Terminal Report" - Every bulk terminal operating company located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and other U.S. possessions. A bulk terminal is primarily used for storage and/or marketing of petroleum products and has a total bulk storage capacity of 50,000 barrels or more, and/or receives petroleum products by tanker, barge, or pipeline. Bulk terminal facilities associated with a product pipeline are included. Approximately 228 respondents report on the Form EIA-811.

Form EIA-812, "Monthly Product Pipeline Report" - All product pipeline companies that carry petroleum products (including interstate, intrastate, and intra-company pipelines) in the 50 States and the District of Columbia. Approximately 72 respondents report on the Form EIA-812.

Form EIA-813, "Monthly Crude Oil Report" - All companies which carry or store over 500 barrels or more of crude oil. Included in this survey are gathering and trunk pipeline companies (including interstate, intrastate, and intra-company pipelines), crude oil producers, terminal operators, storers of crude oil (except refineries), and companies transporting Alaskan crude oil by water

in the 50 States and the District of Columbia. Approximately 141 respondents report on the Form EIA-813.

Form EIA-814, "Monthly Imports Report" - All companies, including subsidiary or affiliated companies, that import crude oil or petroleum products (1) into the 50 States and the District of Columbia, (2) into Puerto Rico, the Virgin Islands and other U.S. possessions (Guam, Midway Islands, Wake Island, American Samoa, and Northern Mariana Islands), and (3) from Puerto Rico, the Virgin Islands and other U.S. possessions into the 50 States and the District of Columbia. Imports into Foreign Trade Zones located in the 50 States and the District of Columbia are considered imports into the 50 States and the District of Columbia and must be reported. A report is required only if there has been an import during the month unless the importer has been selected as part of a sample to report every month regardless of activity. Approximately 257 respondents report on the Form EIA-814.

Form EIA-815, "Monthly Terminal Blenders Report" - All storage terminals which produce finished motor gasoline through the blending of various motor gasoline blending components, natural gas liquids, and oxygenates. Approximately 280 respondents report on the Form EIA-815.

Form EIA-816, "Monthly Natural Gas Liquids Report" - Operators of all facilities that extract liquid hydrocarbons from a natural gas stream (natural gas processing plant) and/or separate a liquid hydrocarbon stream into its component products (fractionator). Approximately 398 respondents report on the Form EIA-816.

Form EIA-817, "Monthly Tanker and Barge Movement Report" - All companies that have custody of crude oil or petroleum products transported by tanker or barge between Petroleum Administration for Defense (PAD) Districts or between the Panama Canal and the United States. For purposes of this report, custody is defined as physical possession of crude oil or petroleum products on a company-owned tanker or barge. Also, companies that lease vessels or contract for the movement of crude oil or petroleum products on a tanker or barge between PAD Districts or between the Panama Canal and the United States are considered to have custody. Approximately 40 respondents report on the Form EIA-817.

Form EIA-819, "Monthly Oxygenate Report" - All operators of facilities that produce (manufacture or distill) oxygenates (including MTBE plants), fuel ethanol plants, petrochemical plants, and refineries that produce oxygenates as part of their operations. Approximately 93 respondents report on the Form EIA-819.

### Description of Survey Forms

The Form EIA-810, "Monthly Refinery Report," is used to collect data on refinery input and capacity, sulfur content and API gravity of crude oil, and data on supply (beginning stocks, receipts, and

production) and disposition (inputs, shipments, fuel use and losses, and ending stocks) of crude oil and refined products.

The Form EIA-811, "Monthly Bulk Terminal Report," is used to collect data on end-of-month stock levels of finished petroleum products by State in the custody of the bulk terminal regardless of ownership. All domestic and foreign ending stocks held at bulk terminals and in-transit thereto, except those in-transit by pipeline are included. Petroleum products in-transit by pipeline are reported by pipeline operators on Form EIA-812, "Monthly Product Pipeline Report."

The Form EIA-812, "Monthly Product Pipeline Report," is used to collect data on end-of-month stock levels and movements of petroleum products transported by pipeline. Intermediate movements for pipeline systems operating in more than two PAD Districts are included.

The Form EIA-813, "Monthly Crude Oil Report," is used to collect data on end-of-month stock levels of crude oil held at pipeline and tank farms (associated with the pipelines) and terminals operated by the reporting company. Also, crude oil consumed by pipelines and on leases as pump fuel, boiler fuel, etc., is reported. Data are reported on a PAD District basis.

Total Alaskan crude oil stocks in-transit by water (including stocks held at transshipment terminals between Alaska and the continental United States) to the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands are also reported by the transporting company having custody of the stocks.

Inter-PAD District movements of crude oil by pipeline are collected by the shipping and receiving PAD District. Intermediate movements for pipeline systems operating in more than two PAD Districts are not included.

The Form EIA-814, "Monthly Imports Report," is used to collect data on imports of crude oil and petroleum products (1) into the 50 States and the District of Columbia, (2) into Puerto Rico, the Virgin Islands, and other U.S. possessions (Guam, Midway Islands, Wake Island, American Samoa, and Northern Mariana Islands), and (3) from Puerto Rico, the Virgin Islands, and other U.S. possessions into the 50 States and the District of Columbia. Imports into Foreign Trade Zones located in the 50 States and the District of Columbia are considered imports into the 50 States and the District of Columbia.

The type of commodity, port of entry, country of origin, quantity (thousand barrels), sulfur percent by weight, API gravity, and name and location of the processing or storage facility are reported. Sulfur percent by weight is requested for crude oil, crude oil burned as fuel, and residual fuel oil only. API gravity is requested for crude oil only. The name and location of the processing or storage facility is requested for crude oil, unfinished oils, other hydrocarbons/hydrogen/oxygenates and blending components only.

The Form EIA-815, "Monthly Terminal Blenders Report," is used to collect data on blending of natural gas liquids, oxygenates, finished motor gasoline and motor gasoline blending components, and production of finished motor gasoline.

The Form EIA-816, "Monthly Natural Gas Liquids Report," is used to collect data on the operations of natural gas processing plants and fractionators. Beginning and end-of-month stocks, receipts, inputs, production, shipments, and plant fuel use and losses during the month are collected from operators of natural gas processing plants. End-of-month stocks are collected from fractionators.

The Form EIA-817, "Monthly Tanker and Barge Movement Report," is used to collect data on the movements of crude oil and petroleum products between PAD Districts. Data are reported by shipping and receiving PAD District and sub-PAD District. Shipments to and from the Panama Canal are also included if the shipment was delivered to the Canal.

The Form EIA-819, "Monthly Oxygenate Report," is used to collect data on production and stocks of oxygenates. Data on end-of-month stocks are reported on a custody basis regardless of ownership. Data are reported on a PAD District basis.

### **Collection Methods**

Survey forms for the MPSRS can be submitted by mail, facsimile, or electronic transmission. Completed forms are required to be postmarked by the 20th calendar day following the end of the report month. Receipt of the reports is monitored using an automated respondent mailing list. Telephone follow-up calls are made to nonrespondents prior to the publication deadline.

### **Response Rate**

The response rate is generally 98 to 100 percent. Chronic nonrespondents and late filing respondents are contacted in writing and reminded of their requirement to report. Companies that file late or fail to file are subject to criminal fines, civil penalties, and other sanctions as provided by Section 13(i) of the Federal Energy Administration (FEA) Act.

### **Data Imputation**

Imputation is performed for companies that fail to file Forms EIA-810 through 813, 815, 816, and 819. For such companies, previous monthly values and values reported on the weekly survey forms are used.

Data for nonrespondents on the Forms EIA-814 and 817 are not imputed because these data series, by respondent, are highly variable.

## Confidentiality

The information reported on these forms will be kept confidential and not disclosed to the public to the extent that it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. §552, the DOE regulations, 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905. The Energy Information Administration (EIA) will protect your information in accordance with its confidentiality and security policies and procedures.

The Federal Energy Administration Act requires the EIA to provide company-specific data to other Federal agencies when requested for official use. The information reported on these forms may also be made available, upon request, to another component of the Department of Energy (DOE), to any Committee of Congress, the General Accounting Office, or other Federal agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order. The information may be used for any nonstatistical purposes such as administrative, regulatory, law enforcement, or adjudicatory purposes.

Company specific data are also provided to other DOE offices for the purpose of examining specific petroleum operations in the context of emergency response planning and actual emergencies.

Disclosure limitation procedures are not applied to the statistical data published from these surveys information. Thus, there may be some statistics that are based on data from fewer than three respondents, or that are dominated by data from one or two large respondents. In these cases, it may be possible for a knowledgeable person to estimate the information reported by a specific respondent.

## Note 3. Technical Notes for Detailed Statistics Tables

The detailed statistics tables in the *Petroleum Supply Monthly* (PSM) provide complete supply and demand information for the current year. The tables are organized to locate National and Petroleum Administration for Defense (PAD) District summary data at the front followed by tables on crude oil and petroleum product production, import/export data, stocks information, and lastly, data on crude oil and petroleum product movements. To assist in the interpretation of these tables, the following technical notes are provided. Column and row headings are defined in the Glossary.

### Supply

**Field Production** - Field production is the sum of crude oil production, natural gas plant liquids production, and other liquids production.

Crude oil production is an estimate based on data received from State conservation agencies and the Mineral Management Service of the U.S. Department of the Interior. Refer to Explanatory Note 4 for further details.

Field production of natural gas plant liquids is reported on Form EIA-816 and published on a net basis (i.e., production minus inputs) in this column.

Other liquids field production is calculated by forcing the product supplied to be zero; thereby backing into field production.

**Refinery and Blenders Production** - Published production of these products equal refinery and motor gasoline terminal blenders production minus refinery and motor gasoline terminal blenders input. Production of other hydrocarbons, hydrogen and oxygenates, unfinished oils, and motor and aviation gasoline blending components appear on a net basis under "Refinery and Motor Gasoline Terminal Blenders Input." Negative production will occur when the amount of a product produced during the month is less than the amount of that same product that is reprocessed (input) or reclassified to become another product during the same month.

**Adjustments** - This column provides adjustments for crude oil, motor gasoline blending components, fuel ethanol and finished motor gasoline. The crude oil adjustment (formerly called "unaccounted for crude oil") is a balancing item to account for the difference between the supply and disposition of crude oil. The motor gasoline blending components adjustment reclassifies (transfers) the calculated product supplied for motor gasoline blending components to the product supplied of finished motor gasoline. The fuel ethanol adjustment transfers the imbalance between the supply and disposition of fuel ethanol to the product supplied of finished motor gasoline. The finished motor gasoline adjustment is the result of the fuel ethanol and motor gasoline blending components adjustment. The adjustment to finished petroleum products is calculated by adding the amount of fuel ethanol that has been blended into finished motor gasoline, and adding or subtracting the product supplied for motor gasoline blending components to the product supplied for finished motor gasoline. Refer to Explanatory Note 8 for a further discussion of this calculation. A negative adjustment of motor gasoline blending components represents an understatement of the production of finished motor gasoline. A positive adjustment of motor gasoline blending components represents an overstatement of the production of finished motor gasoline.

### Disposition

**Stock Change** - This column is calculated as the difference between the Ending Stocks column of this table and the Ending Stocks column of this table in the prior month's publication. A negative number indicates a decrease in stocks and a positive number indicates an increase in stocks.



**Crude Losses** - The volume of crude oil reported by petroleum refineries as being lost in their operations. These losses are due to spills, contamination, fires, etc., as opposed to refining processing losses or gains.

**Refinery Inputs** - Refinery inputs of crude oil and intermediate materials (unfinished oils, gasoline blending components, other hydrocarbons and oxygenates, liquefied petroleum gases, and pentanes plus) that are processed at refineries to produce finished petroleum products.

Crude oil input represents total crude oil (domestic and foreign) input to atmospheric crude oil distillation units and other refinery processing units (i.e., catalytic cracking units, cokers).

Inputs of natural gas liquids are refinery input of natural gas liquids received from natural gas plants for blending and processing. Published inputs of natural gas liquids are reported on a gross basis.

Inputs of unfinished oils, motor and aviation gasoline blending components, and other hydrocarbons and oxygenates are published on a net basis (i.e., refinery input minus refinery production).

Inputs of finished petroleum products are published on a net basis (i.e., refinery production minus refinery inputs) and displayed under the refinery production column.

**Exports** - Exports include crude oil shipments from the 50 States to Puerto Rico, and the Virgin Islands.

**Products Supplied** - Products supplied is equal to field production, plus refinery production, plus imports, (plus net receipts on a PAD District basis), plus adjustments, minus stock change, minus refinery input, minus exports.

A product supplied value indicates those quantities of petroleum products supplied for domestic consumption. Occasionally, the result for a product is negative because total disposition of the product exceeds total supply. Negative product supplied may occur for a number of reasons: (1) product reclassification has not been reported; (2) data were misreported or reported late; (3) in the case of calculations on a PAD District basis, the figure for net receipts was inaccurate because the coverage of interdistrict movements was incomplete; and (4) products such as gasoline blending components and unfinished oils have entered the primary supply channels with their production not having been reported, e.g., streams returned to refineries from petrochemical plants.

Product supplied for crude oil is the sum of crude oil burned on leases and by pipelines as fuel. Prior to January 1983, crude oil burned on leases and by pipelines as fuel was reported as either distillate or residual fuel oil and was included in product supplied for these products.

## Yields

The refinery yield of finished motor gasoline is calculated by subtracting the inputs of pentanes plus, liquefied petroleum gases, other hydrocarbons/oxygenates and motor gasoline blending components from the production of finished motor gasoline before dividing by the sum of crude oil input and unfinished oils input (net).

The refinery yield of finished aviation gasoline is calculated by subtracting the inputs of aviation gasoline blending components from the production of finished aviation gasoline before dividing by the sum of crude oil input and unfinished oils input (net).

Refinery yields for all products (except finished motor gasoline and finished aviation gasoline) are calculated by dividing the production for each product by the sum of crude oil input and unfinished oils input (net) reported in the U.S. total.

## Stocks

Primary stocks of petroleum products do not include either secondary stocks held by dealers and jobbers or tertiary stocks held by consumers.

## Movements

Movements of crude oil by pipeline between PAD Districts include trunk pipeline companies (interstate, intrastate, and intra-company pipelines). Intermediate movements for crude oil pipeline systems operating in more than two PAD Districts are not included.

Movements of petroleum products by pipeline between PAD Districts include trunk pipeline companies (interstate, intrastate and intra-company pipelines). Intermediate movements for product pipeline systems operating in more than two PAD Districts are included. For example, a shipment originating in PAD District 3, passing through PAD District 2 to PAD District 1, is reported as a movement from PAD District 3 to PAD District 2 and also from PAD District 2 to PAD District 1.

Waterborne movements of crude oil and petroleum products between PAD Districts include all shipments of crude oil or petroleum products for which the transporter has custody at the time of shipment. Custody is defined as physical possession of crude oil or petroleum products on a company-owned tanker and barge.

## Note 4. Domestic Crude Oil Production

The Energy Information Administration (EIA) collects monthly crude oil production data on an ongoing basis. Data on crude oil production for States are reported to the EIA by State government agencies. The Minerals Management Service of the U.S. Department of the Interior and the California Department of Conservation reports data on crude oil production for Federal offshore areas to the EIA.

All States except Michigan, New York, Ohio, and Pennsylvania report production on a monthly basis. These four States report crude oil production on an annual basis. Estimates of monthly crude oil production for these four States are made by the EIA using data reported on Form EIA-182, “Domestic Crude Oil First Purchase Report.” After the end of each calendar year, the monthly crude oil production estimates are updated using annual reports from various State agencies, the Minerals Management Service, and the California Department of Conservation.

Table 25, “Production of Crude Oil by PAD District and State” provides estimates of crude oil production in the latest month for which most State production data are available. There is a time lag of approximately 4 months between the end of the production month and the time when most monthly State crude oil production data become available.

In order to present timelier crude oil production estimates, the EIA prepares a weekly crude oil production estimate, which is used in the *Weekly Petroleum Status Report* (WPSR). At the end of the production month, weekly crude oil production estimates are aggregated into an **original estimate** of monthly crude oil production. The original monthly estimate is used in Tables S1 and S2 of the *Petroleum Supply Monthly* (PSM) until replaced a month later by the **interim estimate**. The interim estimates are based on: (a) data reported by the States (e.g., production data for Alaska are typically reported to the EIA before the interim estimate is made); (b) first purchase data reported on Form EIA-182, “Domestic Crude Oil First Purchase Report;” (c) exponential or hyperbolic curve fitted projections based on recent State data; or (d) constant level projections based on the average production rate during a recent time period.

The interim estimate is used in the PSM Tables 1 through 24, and in Tables S1 and S2 until replaced by the final estimate. The final estimate is published in the *Petroleum Supply Annual* (PSA).

## Note 5. Export Data

Each month the Energy Information Administration (EIA) receives aggregated export statistics from the U.S. Bureau of the Census (EM-522 and EM-594).

Census export statistics used in the *Petroleum Supply Monthly* (PSM) reflect both government and non-governmental exports of domestic and foreign merchandise from the United States (the 50 States and the District of Columbia) to foreign countries and U.S. possessions, without regard to whether or not the exportation involves a commercial transaction. The following types of transactions are excluded from the statistics:

- (1) Merchandise shipped in transit through the United States from one foreign country to another, when documented as such with U.S. Customs.
- (2)

Bunker fuels and other supplies and equipment for use on departing vessels, planes, or other carriers engaged in foreign trade.

## Source of Export Information

The U.S. Bureau of the Census compiles the official U.S. export statistics. Exporters are required to file a “Shipper’s Export Declaration Document” with the U.S. Census Bureau.

## Country and Area of Destination

The country of destination is defined as the country of ultimate destination or the country where the goods are to be consumed, further processed, or manufactured, as known to the shipper at the time of exportation.

If the shipper does not know the country of ultimate destination, the shipment is credited to the last country to which the shipper knows that the merchandise will be shipped in the same form as it was when exported.

## Note 6. Quality Control and Data Revision

### Quality Control

The Energy Information Administration (EIA) monitors the supply and disposition of crude oil, petroleum products, and natural gas liquids in the United States. Through a tracking system, the EIA provides insight into the activities of primary operators and distributors in the petroleum industry. The tracking system, known as the Petroleum Supply Reporting System (PSRS), consists of production, inputs, imports, inventories, movements, and other petroleum-related data collected on weekly, monthly, and annual surveys.

Survey forms are periodically reviewed for completeness, meaningfulness, and clarity. Modifications are made, when needed, to maintain efficient measure of the intended data items and to track product movement accurately throughout the industry. The latest modification to the survey forms was done in January 2004. Through this process, the EIA can maintain consistency among forms, minimize respondent burden, and eliminate ambiguity.

### Sampling and Non-sampling Errors

There are two types of errors usually associated with data produced from a survey: non-sampling errors and sampling errors. Because the estimates for all monthly surveys are based on a complete census of the frame, there is no sampling error in the data presented. The data, however, are subject to non-sampling errors. Non-sampling errors, sometimes referred to as biases, are those which can arise from a number of sources: (1) the inability to obtain data from all companies in the frame or sample (nonresponse and the method used to account for nonresponse), (2) definitional difficulties and/or improperly worded questions

which lead to different interpretations, (3) mistakes in recording or coding the data obtained from respondents, and (4) other errors of collection, response, coverage, and estimation.

Response rates on the monthly surveys are very high. In general, response rates average above 95 percent for the weekly surveys and above 98 percent for monthly surveys. Whenever survey responses are not received in time to be included in published statistics, the data are imputed. Although imputing for missing data may not eliminate the total error associated with nonresponse, it can serve to reduce the error. The data reported in the previous month are used as imputed values for missing data for all surveys except the Forms EIA-814, "Monthly Imports Report," and EIA-817, "Monthly Tanker and Barge Movement Report." There is no imputation procedure for these surveys because these data series, by respondent, are highly variable.

Response error is the major factor affecting the accuracy of PSRS data. Response, or reporting error, is the difference between the true value and the value reported on a survey form. Response error can occur for any number of reasons. For example, figures may be entered incorrectly when written on forms by the respondent, or errors may result from the misunderstanding of survey form instructions or definitions. Response error can also occur from the use of preliminary data when final data are not available. This can result in differences between published preliminary and final data. To help detect and minimize probable reporting errors, automated editing procedures are used to check current data for consistency with past data, as well as for internal consistency (e.g., totals equal to the sums of the parts), and to flag those data elements that fail edit criteria.

Errors can also be introduced during data processing. For example, while creating computer data files, key errors can occur in transcribing or coding the data; or information can be entered into the wrong cell. Using well designed edit criteria, which examine orders of magnitude, cell position, and historical reporting patterns, many of these errors can be identified and corrected.

Monthly data are compared to weekly data on a regular basis. Discrepancies between weekly and monthly data are documented and respondents are called when discrepancies are either large (usually over 300 thousand barrels) or consistent (e.g., weekly data are always lower than monthly data). In addition, a comparison of the data collected on the PSRS with other similar data series from sources outside of the Petroleum Division is performed each year. The results of this data comparison are published once a year in the *Petroleum Supply Monthly* (PSM) feature article, "Comparison of Independent Statistics on Petroleum Supply."

Sampling errors are those errors that occur when survey estimates are based on a sample rather than being derived from a complete census of the frame. Although monthly data are still subject to error, they have been thoroughly reviewed and edited, and are considered to be the most accurate data available.

## Data Revision

With respect to the weekly PSRS data, EIA will disseminate revised data only if the revision is expected to substantively affect understanding of the U.S. petroleum supply. Whether to disseminate a revision to weekly data will be based on EIA's judgment of the revision's expected effect. If a revision is necessary, it will be disseminated in the next regularly scheduled release of the weekly products.

The monthly PSRS data reflect EIA's official data on petroleum supply and are considered to be more accurate than the weekly data because they are generally based upon company accounting records instead of company estimates and EIA has more time to edit and correct anomalous data. With respect to the monthly PSRS data, EIA will disseminate revised data during the year only if the revision is expected to substantively affect understanding of the U.S. petroleum supply. Whether to disseminate a revision during the year will be based on EIA's judgment of the revision's expected effect. At the end of year, the monthly data are revised to reflect all resubmitted data received during the year. These official final monthly petroleum supply data are included in the *PSA*.

The *PSA* reflects EIA's final data on petroleum supply and will be revised only if, in EIA's judgment, a revision is expected to substantively affect understanding of the U.S. petroleum supply.

When EIA disseminates any revised PSRS data, it will alert users to the affected data value(s) that are revised.

## Late Response

Respondents who fail to respond within the prescribed time limit (25th day following the end of the report month) become nonrespondents for that particular report period and are contacted by phone to obtain the current months data. Respondents who are chronically late (i.e., 3 consecutive months) are notified by EIA by certified letter.

## Nonresponse

Follow-up action is taken when a company fails to respond adequately to data requests from the EIA. Preliminary attempts to gather delinquent reports are made by phone. Noncompliance form letters are sent to those companies that have not submitted reports and have not responded to data requests by phone.

## Note 7. Frames Maintenance

The Petroleum Division (PD) maintains complete lists of respondents to its monthly surveys. Each survey has a list of companies and facilities required to submit petroleum activity data. This list is known as the survey frame. Frame maintenance procedures are used to monitor the status of petroleum companies and facilities currently contained in each survey frame as well as to identify new members to be added to the frame. As a result, all



known petroleum supply organizations falling within the definition of “Who Must Submit” participate in the survey.

The activities for frames maintenance are conducted on a monthly and annual basis. Monthly frames maintenance procedures focus on examining industry periodicals that report changes in status (births, deaths, sales, mergers, and acquisitions) of petroleum facilities producing, transporting, importing, and/or storing crude oil and petroleum products. Augmenting these sources are articles in newspapers, notices from respondents, and information received from survey systems operated by other offices. Survey managers review these sources regularly to monitor changes in company operations and to develop lists of potential respondents. These activities assure coverage of the reporting universe and maintain accurate facility information on addresses and ownership.

Annual frames maintenance focuses on re-evaluating the “required and non-required” companies filing the Form EIA-814.

To supplement monthly and annual frames maintenance activities and to provide more thorough coverage, the PD periodically conducts a comprehensive frames investigation. These investigations result in the reassessment and recompilation of the complete frame for each survey. The effort also includes the evaluation of the impact of potential frame changes on the historical time series data published from these respondents. The results of this frame study are usually implemented in January to provide a full year under the same frame.

## **Note 8. Practical Limitations of Data Collection Efforts**

### **Crude Oil Lease Stock Adjustment**

End-of-month crude oil stocks held on leases are reported on the EIA-813, “Monthly Crude Oil Report.” However, only those companies that store 500 barrels or more of crude oil are required to submit a report. Previous frames analysis has shown that crude oil stocks held on leases reported to the EIA are consistently lower than the lease stocks reported to individual states.

Up until 1983, monthly state government data on lease stocks were substituted for EIA data wherever possible in order to rectify the understatement of lease crude oil stocks. State data were available from three states - Texas, New Mexico, and Montana. To calculate the “lease adjustment,” a comparison between EIA reported data and the state government data was made and the difference added to the EIA data for the respective states.

In 1983, the EIA modified the Form EIA-813 to eliminate state data on crude oil stocks and began collecting crude oil stock data by Petroleum Administration for Defense (PAD) District. With this change, the “lease adjustment” could no longer be calculated on a state basis and was changed to a PAD District level.

### **Trans Alaskan Pipeline System Adjustment**

Beginning with the January 1989 data, adjustments are made to refinery inputs and product supplied of natural gas liquids (NGL’s) and refinery inputs of crude oil to account for refiner misreporting. Substantial volumes of NGL’s are produced at natural gas processing plants in Alaska and injected into the crude oil moving in the Trans Alaska Pipeline System (TAPS). Refiners receiving any crude oil commingled with NGL’s are instructed to report the NGL portion of that stream separately from the crude oil portion. This has not been done for Alaskan crude oil because refiners are unable to identify these volumes for accounting purposes. As a result, the NGL production in Alaska has been credited directly toward product supplied and also toward product supplied from refinery production when the refiner processes the crude oil-NGL mixture. In addition, the reporting of the commingled stream as crude oil by the refiner has overstated crude oil inputs and resulted in an increase in unaccounted for crude oil equal to the volume of NGL in the crude oil.

To offset this reporting error, an adjustment is made to refinery input in all PAD Districts receiving Alaskan crude oil. The adjustment reduces the crude oil inputs and increases the NGL inputs by an equal amount. Each PAD District adjustment is a portion of the known Alaskan-NGL production that is proportional to the PAD District’s share of Alaskan crude oil received at all refineries in the United States. The greatest impact occurs in PAD District 5 for butane and pentanes plus.

The reporting problem, which began in 1987, grew as injections of NGL’s into the TAPS increased. Data for 1988 was revised in the *Petroleum Supply Annual* (PSA) to account for the adjustment.

### **Crude Oil Adjustment (Formerly referred to as “Unaccounted for Crude Oil”)**

The crude oil adjustment is a balancing item to account for the difference between the supply and disposition of crude oil. Crude oil supply is the sum of field production and imports. Crude oil disposition is the sum of stock change, losses, refinery inputs, exports, and products supplied. A positive difference indicates that refiners and exporters reported more use of crude oil than was reported to have been available. This occurs, for example, when imports are undercounted due to late reporting or refiners overstate their input of crude oil. This can occur when hydrocarbons such as natural gasoline are injected and commingled with crude oil in pipelines and refiners report this material as receipts and input of crude oil. A negative difference indicates that more crude oil was supplied to refiners and exporters than they reported to have received and input.

### **Finished Motor Gasoline Product Supplied Adjustment**

Beginning with the reporting of January 1993 data, adjustments were made to the product supplied series for finished motor gasoline. It was recognized that motor gasoline statistics published by the EIA through 1992 were underreported because



the reporting system was not collecting all fuel ethanol and motor gasoline blending components being blended downstream from the refinery. The EIA was able to quantify these volumes and make corrective adjustments beginning in 1993 (refer to Table B1). An adjustment for this underreporting is made on a monthly basis.

### Fuel Ethanol Adjustment

The fuel ethanol adjustment transfers the imbalance between the supply and disposition of fuel ethanol to the product supplied for finished motor gasoline. The imbalance is calculated by comparing the supply (production and imports) with the disposition (stock change, exports, and input). Supply has always exceeded demand (reported usage) and the difference is added to finished motor gasoline product supplied. The adjustment is done on a U.S. and PAD District basis.

### Motor Gasoline Blending Component Adjustment

Prior to 1993, the EIA published a “product supplied” value for motor gasoline blending components. Since there is no actual product supplied (demand) for this intermediate product, an adjustment was established in 1993 to reclassify (transfer) this erroneous demand to finished motor gasoline. Beginning in January 2005, this adjustment was reflected in Tables 1 through 24 by adding the calculated “product supplied” for motor gasoline blending components to the column labeled “Adjustments.” Prior to January 2005 the adjustments were made in the “Field Production” column. In addition, with the additional product splits of motor gasoline blending components reported to EIA starting in January 2004, the adjustment is allocated between finished reformulated and conventional motor gasoline.

### Fuel Ethanol Stock Adjustment

The fuel ethanol stock adjustment was eliminated effective January 2004 because preliminary end-of-month stock data were no longer collected. Therefore reconciliation between preliminary and final stock levels are no longer needed.

## Note 9. 2004 Changes in the Petroleum Supply Monthly

Effective with January 2004 data, several changes were made to the petroleum supply monthly data series collected by the EIA. These changes are reflected in tables in the *Petroleum Supply Monthly*. They were made to provide more meaningful petroleum

statistics. The changes primarily affect data reported for motor gasoline blending components, finished motor gasoline, distillate fuel oil, and oxygenates.

Motor gasoline blending components now include five splits to provide coverage of the various types of reformulated and conventional blending components.

“Oxygenated” and “Other” finished motor gasoline were combined into a new category entitled “Conventional” finished motor gasoline.

An ultra-low distillate fuel oil category was also established.

- Table H1, “Petroleum Supply Summary”— This table was eliminated from the PSM. There is a link in the web table of contents to Table H1 that is currently published in the Weekly Petroleum Status Report. The primary purpose of Table H1 is to provide timely release of summary Monthly-From-Weekly data.
- Old Table 1 “U.S. Petroleum Balance”— This table was eliminated. All the data elements found on this table can be found directly or can be generated using other Detail Summary tables.
- New Table 1 “U.S. Supply, Disposition, and Ending Stocks of Crude Oil and Petroleum Products” (Old Table 2) – The “Unaccounted for Crude Oil” header has been renamed “Adjustments.” The motor gasoline blending component adjustment and fuel ethanol adjustment has been moved from the “Field Production” column to the new “Adjustments” column. A line item for “Commercial” and “Strategic Petroleum Reserve” (SPR) has been added to the “Crude Oil” breakout. There is a breakout under SPR for “Imports by SPR” and “Imports into SPR by Others.”
- Refinery Net Input and Net Production Tables - Refinery and motor gasoline blending activity continues to be presented on a combined basis. In addition, blenders activity are presented on a separate basis.
- Import and Export Tables by Country - Import and export tables that show country detail have been expanded to show all products on an individual basis. This change will eliminate the “Other Products” category, which will provide more data for users, but will increase the number of pages for each table.

**Table B1. Finished Motor Gasoline Product Supplied Adjustment, 1993 - Present**  
(Thousand Barrels per Day)

Item/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
<b>1993</b>													
Fuel Ethanol Adj.	61	67	70	61	58	63	62	48	68	69	84	81	66
Motor Gas Blending	-59	-61	15	-32	-3	-5	-19	54	79	-72	-72	48	-10
Products Supplied	6,639	7,112	7,389	7,435	7,585	7,770	7,785	7,864	7,607	7,382	7,533	7,661	7,476
<b>1994</b>													
Fuel Ethanol Adj.	86	73	76	71	69	63	65	73	59	89	82	82	74
Motor Gas Blending	33	-7	27	58	51	82	98	98	81	-16	56	113	57
Products Supplied	6,980	7,275	7,395	7,564	7,644	7,922	7,884	7,975	7,615	7,548	7,464	7,924	7,601
<b>1995</b>													
Fuel Ethanol Adj.	66	66	79	74	58	81	49	36	57	72	91	58	65
Motor Gas Blending	8	37	56	86	131	113	46	110	35	89	28	29	64
Products Supplied	7,163	7,481	7,788	7,651	7,894	8,220	7,888	8,187	7,786	7,781	7,866	7,742	7,789
<b>1996</b>													
Fuel Ethanol Adj.	58	53	49	37	27	14	9	20	23	36	44	38	34
Motor Gas Blending	61	75	(s)	-8	43	48	103	52	21	80	60	43	48
Products Supplied	7,721	7,599	7,792	7,873	8,071	8,088	8,165	8,343	7,662	8,093	7,915	7,794	7,891
<b>1997</b>													
Fuel Ethanol Adj.	39	50	51	46	48	38	59	37	47	69	50	61	50
Motor Gas Blending	-20	61	-27	87	73	113	89	95	115	107	165	80	78
Products Supplied	7,301	7,668	7,796	8,064	8,139	8,288	8,496	8,233	8,023	8,141	7,965	8,065	8,017
<b>1998</b>													
Fuel Ethanol Adj.	66	55	61	55	42	50	49	58	62	71	55	75	58
Motor Gas Blending	84	39	117	140	142	246	111	88	171	89	145	205	132
Products Supplied	7,618	7,711	8,004	8,312	8,279	8,520	8,680	8,568	8,310	8,378	8,167	8,451	8,253
<b>1999</b>													
Fuel Ethanol Adj.	57	52	52	53	50	59	43	54	55	64	66	72	56
Motor Gas Blending	81	-13	20	134	46	214	192	128	102	212	156	165	120
Products Supplied	7,701	8,031	8,128	8,506	8,420	8,886	8,942	8,579	8,305	8,542	8,240	8,859	8,431
<b>2000</b>													
Fuel Ethanol Adj.	60	47	62	62	76	52	68	73	66	74	73	76	66
Motor Gas Blending	255	208	178	158	198	125	80	158	155	107	83	319	169
Products Supplied	7,653	8,291	8,305	8,375	8,661	8,824	8,642	8,921	8,518	8,417	8,384	8,670	8,472
<b>2001</b>													
Fuel Ethanol Adj.	80	65	61	59	64	40	96	52	71	93	63	58	67
Motor Gas Blending	264	121	289	303	196	210	213	245	196	193	175	252	222
Products Supplied	8,099	8,234	8,532	8,575	8,706	8,690	9,023	8,953	8,557	8,655	8,677	8,585	8,610
<b>2002</b>													
Fuel Ethanol Adj.	60	68	40	75	78	66	66	48	56	58	80	62	63
Motor Gas Blending	184	214	174	233	339	287	269	252	177	172	208	235	229
Products Supplied	8,227	8,607	8,655	8,766	9,078	9,140	9,143	9,313	8,687	8,814	8,829	8,893	8,848
<b>2003</b>													
Fuel Ethanol Adj.	13	49	8	45	38	31	29	44	31	35	41	22	32
Motor Gas Blending	109	174	209	265	354	399	314	375	298	324	281	194	275
Products Supplied	8,414	8,525	8,602	8,838	9,042	9,170	9,192	9,411	8,926	9,108	8,946	9,011	8,935
<b>2004</b>													
Fuel Ethanol Adj.	17	21	7	36	36	53	25	32	37	29	25	27	29
Motor Gas Blending	217	393	469	574	464	609	466	493	489	372	347	265	429
Products Supplied	8,705	8,838	9,024	9,126	9,179	9,322	9,357	9,327	9,015	9,097	9,055	9,206	9,105
<b>2005</b>													
Fuel Ethanol Adj.	37	31	24	32	39	54	47	55	40				40
Motor Gas Blending	357	251	200	222	337	310	460	455	382				331
Products Supplied	8,775	8,798	8,996	9,130	9,257	9,380	9,451	9,454	8,897				9,130

Note: Totals may not equal sum of components due to independent rounding.

Source: 1993 -2003, Energy Information Administration (EIA), *Petroleum Supply Annual*, Volumes 1 and 2 (Table 3); 2004, *Petroleum Supply Monthly* (Table 3); 2005, *Petroleum Supply Monthly* (Table 2).