

Customs/Census Bureau Petroleum Imports Data Comparisons to EIA Data¹²

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Introduction

Considering the limited resources of EIA and likely continued limited growth in available resources to the agency, it is thought wise to evaluate less resource intensive methods for collecting data. Or, at a minimum, EIA is always interested in discovering alternative viable means for cross checking its own data collections with those of other reputable data sources. One such possible means for saving resources, while collecting viable data or cross checking for editing purposes, concerns the use of petroleum imports data.

For a number of years, EIA through its Office of Oil and Gas (OOG) has been collecting petroleum import data directly from respondents. These respondents are required to complete Form EIA-814, "Monthly Imports Report." These data are disseminated on the "Petroleum Navigator" web page in a timely manner (e.g., November 2006 data were available in February 2007). It should also be noted that the data provided by EIA are very comprehensive.

The Department of Homeland Security through its Customs and Border Protection (CBP) collects duties on imports in accordance with current policies and laws. In so doing, the CBP collects detailed data on each importation transaction. These transactions are made public through the Census Bureau with company-level identifying information removed. However, in aggregate form, these data could potentially prove useful in dissemination or editing EIA's petroleum imports data. In fact, EIA has introduced macro editing procedures and adjustment procedures in petroleum supply data in the past several years.

Limiting respondent burden is also a consideration in avoiding needless surveys to be conducted if alternative means are available for collecting essentially the same information. Survey respondents question the need for EIA to be collecting the same information that CBP collects. It should also be noted that CBP has a very active auditing and compliance process designed to capture complete reporting of U.S. imports, including petroleum product imports. So, CBP data should be very reliable in consideration of their data collection and compliance goals – principally the enforcement

¹ This is a working document prepared by the Energy Information Administration (EIA) in order to solicit advice and comment on statistical matters from the American Statistical Association Committee on Energy Statistics. This topic will be discussed at EIA's spring 2007 meeting with the Committee to be held April 19 and 20, 2007.

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of U. S. laws governing international trade. However, it may also be true that CBP has a statistical mission to collect international trade information.

Historically, EIA has justified its collection of petroleum imports data based upon the following rationale:

- EIA reports weekly import volumes not available from CBP.
- Product classifications in CBP data are often suspected of being unreliable. For example, EIA has noted many cases of gasoline (i.e., motor fuel) being reported to CBP as special naphtha (i.e., solvents). CBP reports that classification errors are identified and corrected later and handled through a revision process.
- Revision processing in CBP data is not always consistent with EIA revision policies. For example, it is questionable if CBP applies revisions to the month in which an import actually occurred; CBP may apply some or all revisions to the month in which the revision took place.
- EIA import data are published on a company-identifiable basis; companies cannot be identified in CBP transaction data.
- Unlike EIA data, CBP import data do not have a product classification of “unfinished oils³.”

Overall Goal and other Objectives

The overall goal of this work is to determine if CBP petroleum import data can be used as a substitute for EIA data collections on petroleum imports or if some of these CBP data could be used to improve or enhance the editing process employed by EIA for its petroleum import data collections. In order to shed light on these broad goals, it was necessary to conduct a number of analyses which involved attempting to attain a number of other related objectives:

- To determine to what extent EIA data are quantitatively comparable on a monthly basis with the data provided by the CBP through the Census Bureau.
- To determine to what extent EIA petroleum product definitions are comparable to the CBP petroleum product definitions.
- To determine to what extent geographical coverage is the same or similar between the two data sources.
- To determine the practicality of substituting EIA’s data collections on petroleum imports with CBP data (e.g., cost, timeliness).

³ EIA makes a distinction on the products that require further processing from those that do not. This distinction is not made by U.S. Customs forms declarations. For example, if an imported commodity is reported to U.S. Customs on Form-7501 as a residual or distillate fuel oil and this commodity is intended for further processing by a refinery, it would be reported to EIA as an “unfinished oil.” See Table 1 for a volumetric comparison; EIA shows over 12 million bbls of unfinished oil for January 2005.

CBP Petroleum Imports Data

At nominal cost to subscribers, the Census Bureau provides monthly data on a CD-ROM for all import and export⁴ transactions. These CD-ROMs are available in a timely fashion during the month following the month in which the transaction took place. The number of petroleum import transactions in a typical month is about 700 out of a total of approximately 45,000 import transactions for all products. The transaction month is based upon the “entry date,” as specified on the U.S. Customs Form CF7501, “Entry Summary.”

The file is laid out in such a way that one record constitutes one transaction. There are separate files for exports and imports. Regarding petroleum imports, the fields of interest are the following: entry month, type of product, country of origin, district of entry, whether the product entered a foreign trade zone, and the quantity of product imported.

A definition of each petroleum product is provided by the Census Bureau. The definitions are usually based upon the physical and/or chemical properties of the product. Additionally, a conversion factor for non-liquid products is provided to convert the units provided on the CD-ROM to units of barrels of oil equivalency.

CBP Petroleum Import Data Comparisons with EIA Data

EIA collects company-level data on petroleum imports on a monthly basis through its EIA-814 survey and disseminates this data on its web site stratified in various ways: by petroleum product, by country of import, and by company for its largest importers. Since the data are collected at the company level, EIA also possesses data for edit follow-ups and any data needed to select proper samples.

Since EIA’s product definitions are based upon the intended or actual use of the petroleum product, its definitions are not an exact match against those of the CBP. Moreover, the CBP has defined some petroleum products on an intended usage basis much more narrowly than does EIA. For example, the CBP shows 13 products labeled “Lubricants,” based upon fine gradations of end usage, while EIA has only one. See list of CBP petroleum product definitions in Appendix A and EIA’s corresponding list in Appendix B.

CBP petroleum import data was compared with corresponding EIA data for January 2005 on a product by product basis. Data from the CBP were modified to delete imports into Puerto Rico and the Virgin Islands since EIA data do not include these imports. There were also comparisons made for some aggregated data and for the overall sum totals. See Table 1. The highlighted lines show products or product sums in which the resultant data

⁴ EIA presently uses petroleum export data from the Census Bureau CD-ROM instead of actually collecting petroleum export data. It has been suggested that since EIA already successfully uses CBP data on exports that it may be possible to find a way of using the import data.

are worthy of note (i.e., the differences in the data are reasonably small and the definitions are similar). The noteworthy products are the following: crude oil, finished motor gasoline (reformulated), finished motor gasoline (unleaded, not reformulated/conventional), total motor gasoline, kerosene-type jet fuel, residual (fuel oils #5 & 6), propane and propylene, motor gasoline blending components and overall total of petroleum products.

Moreover, data from selected months in 2005 were compared with the comparable EIA data for the corresponding months to determine if these similarities in some products continued through a number of months (see Table 2). It will be noticed that only the data for crude oil appear to have reasonably comparable results over the 9-month period shown. The EIA data for crude oil appear to be consistently higher (in 8 of the 9 months) with the greatest difference being only 7.3% higher (in July 2005) than the comparable CBP data for that month. The average monthly absolute percentage difference was only 2.5% during that time period. One specific question that was considered important prior to this study was the question of whether or not EIA respondents were consistently failing to report imports entering foreign trade zones (FTZs)⁵. The similarities in the data reported to the CBP and to EIA with respect to crude oil indicated that this was probably not a significant problem.

Other Considerations

The Weekly Survey Frame

It should also be noted that the monthly data collected by EIA on the EIA-814 survey provides the means for selecting the frame to serve as the basis for the weekly survey. The weekly survey is a sample rather than a census of importing companies. Due to the fact that EIA also collects company-level data which would be unavailable if the EIA-814 were discontinued, EIA would also need to develop a mechanism for identifying companies to respond to the weekly survey.

Strategic Petroleum Reserve Data

On the EIA-814 survey form, EIA collects data on the volume of crude oil being imported that enters into the Strategic Petroleum Reserve (SPR) each month. Moreover, when EIA disseminates these data, they are broken down into separate components: SPR and non-SPR. On the other hand, there do not appear to be any means for identifying

⁵ There are concerns in the OOG that survey instructions for the EIA-814 need more careful thought and revision so that it is clearer to respondents what is to be reported as an import. The following example is cited. For example, the Louisiana Offshore Oil Port (LOOP) completes CBP Form-214 when they enter crude oil into their FTZ, but they do not report imports because they often do not have information to show the processing refinery. Some companies report the imports that enter LOOP using the entry date when the crude oil entered the U.S. at LOOP. Other companies report their imports as of the date when they actually arrive at the processing refinery. EIA informs respondents to exclude stocks of foreign origin held in bond, but that is not what is really wanted because that would mean crude oil transported by pipeline between FTZs would disappear from EIA's inventory and then reappear when it arrived at the destination refinery.

SPR versus non-SPR importations on the Census Bureau CD-ROM. Appendix C shows the SPR and non-SPR import data for January 2006 through January 2007 as it appears in the *Monthly Energy Review February 2007*. These data are shown in this publication on a monthly basis for the last three years, on an annual basis for the ten prior years and on a five-year basis for earlier time periods.

Preservation of the Continuity of EIA Petroleum Supply Forms

EIA conducts two other petroleum supply surveys (the EIA-812, Monthly Product Pipeline Report and the EIA-813, Monthly Crude Oil Report) that together with the EIA-814 present a unified picture of the supply situation at any given time. Imports plus stock changes are important measurements that EIA needs to estimate in order to assess the supply situation. If the EIA-814 survey were discontinued, this may impede the analysis of supply conditions.

Questions for the Committee

- The general question that EIA is trying to answer is the following: Is there any way in which EIA could benefit from data comparisons with the CBP petroleum import data either through use of their data as a substitute or for use in edit checking? EIA welcomes the committee's thoughts on this issue and is particularly interested in whether the committee thinks there is any further research that could be done in order to help answer this question.
- Since the data on crude oil appear the most comparable among the petroleum products, one approach is for EIA to begin by substituting CBP crude oil data. This change would result in a break in the series. Suggestions from the committee are welcome on how to present a bridge in the series, which could also be used if other CBP data are substituted for EIA data.

Table 1: A Comparison of Customs with EIA Data for Petroleum Products (January 2005)

Customs Product Code	Customs Description	Customs (w/o Virg.Is./ Puerto Rico) (bbls)	EIA Data (bbls)	EIA Description
2709001000	Crude Oil (sum of codes)	310,693,211	309,901,000	Crude Oil
2709002090				
2709002010	Condensate Pentanes +	7,790,824	1,561,000	Pentanes Plus
2710111510	Fin Mot Gasoline (Leaded)	1,585		
2710111514	Fin Motor Gasoline (Ref)	6,398,413	6,929,000	Fin Mot Gasoline (Ref)
2710111519	Fin Mot Gasoline (Unl, not ref.)	8,889,423	8,112,000	Fin Mot Gasoline -- Conventional
	Total Motor Gasoline	15,287,836	15,041,000	Total Motor Gasoline
2710111520	Jet Fuel - Naphtha Type	80,319		
2710111550	Other Motor Fuel	3,663,153		
			417,000	Special Naphthas
2710193010	Lubricants	41,925		
2710193020	Lubricants	416,799		
2710193030-70	Lubricants	9,098		
2710114545	Lubricants	11,248		
2710114590	Lubricants	3,011,731		
2710194590	Lubricants	105,154		
2710193080	Lubricants	268,182		
2710194530,40,45	Lubricants	50,037		
	Total Lubricants	3,914,174	497,000	Lubricants

2710191005	DFO < 15 ppm (#2&3, not diesel)	43,270		
2710191002	DFO < 15 ppm (#2&3, diesel)	1,223,777		
2710191011	DFO < 15 ppm	-		
2710191015	DFO Low (fuel oil #4)	-		
	Total Low Sulfur DFO	1,267,047	49,000	DFO < 15 ppm (#1,2,4)
2710191003	DFO 15 - 500 ppm (#2&3, diesel)	385,052		
2710191007	DFO 15 - 500 ppm (#2&3, not diesel)	2,364,228		
2710191013	DFO 15 - 500 ppm	45,695		
	Total Med Sulfur DFO	2,794,975	4,147,000	DFO 15 to 500 ppm (1,2,4)
2710191014	DFO 500+ ppm (light fuel oils)	102,657		
2710191008	DFO High (#2&3, not diesel)	5,085,126		
2710191004	High DFO (#2&3, diesel)	359,874		
2710191025	DFO High (fuel oil #4)	771,077		
2710190515	High DFO (fuel oil #4)	96,525		
	Total High Sulfur DFO	6,415,259	6,762,000	DFO > 500 ppm (diesel, f.o. #1,2,4)
	Total DFO	10,477,281	10,958,000	Total DFO

2710191500	Residual (Kerosene-type jet fuel)	3,270,103	3,269,000	Kerosene-Type Jet Fuel
2710190550	Residual	2,379,649		
2710190525	Residual (Fuel Oil #5)	-		
2710190530	Residual (Fuel Oil #6)	16,271,253	14,302,000	Residual (Fuel oils #5,6)
2710190535	Residual (Fuel Oil not #5 or 6)	5,722,305		
2710191050	Residual	2,595,222		
	Total Residual	30,238,532		

2710192100	Kerosene (Motor fuel, not jet fuel)	-		
2710192300	Kerosene (not motor fuel or blend stk)	117,499		
	Total Kerosene	117,499	105,000	Kerosene
2710194000	Lubricant Grease	1,889		
2710193500	Lubricant Grease	868		
2710999000	Waste Oils	19,271		
2710993100	Waste Oils	8,437		
2710993900	Waste Oils	138		
2711190020	Other Gases	258,457		
2711130020	Butane	1,980,339		
2711140040	Butane	158,297		
2711290025	Butane	-		
2711130010	Butane	279,412		
2711140020	Propylene	392,124	499,000	Propylene
2711140030	Butylene	73,048		
2711120010, 20, 90015	Propane	7,033,623	7,995,000	Propane
2711120020				
2711290015				
	Total Propane, Butane, Propylene, Butylene	9,916,843	10,169,000	Total LPGs
2712100000	Misc. non-fuel use	87,900		
2712902000	Wax	87,543		
2712200000 (2)	Wax	180,490		
	Total Wax	268,033	134,000	Waxes

2713120000	Petroleum Coke	83,767		
2713110000	Petroleum Coke	685,351		
	Total Petroleum Coke	769,118	808,000	Petroleum Coke
2713200000	Asphalt	774,283		
2714900000	Asphalt	62,906		
2715000000	Asphalt	68,824		
	Total Asphalt	906,013	772,000	Asphalt and road oil
2207200000	Ethanol	18,932	392,000	Oxygenates -- Fuel Ethanol
2905141000	Tert-Butyl Alcohol	139		
2909191400	MTBE	923,000	788,000	Oxygenates -- MTBE
2909191800	ETBE	1,909		
2710111890	Motor Fuel Blend -- Oth	5,851		
2710111805	RBOB	302,151		

12,561,000 Unfinished Oils

111,000 Oxygenates -- Other

2707100000	Benzene	246,612		
2707200000	Toluene	64,661		
2707995090	Xylenes	11,597		
2707300040	Xylenes	6,290		
2710112500	Spec. Naphtha	9,161,810		

Sub-Total (Blending Components)

9,490,970 10,512,000

MG Blend Comp: naphthas,benzene,toluene,xylene,reformate

4,707,000 Naphtha for Petrochem Feedstock
4,657,000 Other Oils for Petrochem Feedstock
3,000 Misc. Products

392,000

Fin Aviation Gasoline

Total Sums

405,244,333

402,057,000

Table 2: Customs and EIA Data for Comparable Petroleum Products
(Selected months in 2005, Units of 1,000 bbls)

Code	Description	Jan '05	Feb '05	Mar '05	Apr '05	May '05	July '05	Aug '05	Sep '05	Oct '05	Total
2709001000, 2709002090	Crude Oil	310,693	284,577	313,032	300,365	308,403	299,838	318,374	267,366	287,128	2,689,776
EIA	Crude Oil	309,901	286,124	317,497	306,734	323,400	321,697	322,526	274,650	292,751	2,755,280
Difference		792	-1547	-4465	-6369	-14997	-21859	-4152	-7284	-5623	-65504
%Diff		0.25%	-0.54%	-1.43%	-2.12%	-4.86%	-7.29%	-1.30%	-2.72%	-1.96%	-2.44%
2710111514	Fin Motor Gasoline (Ref)	6,398	6,375	4,944	6,708	6,606	5,372	4,881	5,073	6,987	53,344
EIA	Fin Motor Gasoline (Ref)	6,929	7,311	5,407	8,428	6,245	6,744	8,510	8,513	9,559	67,646
Difference		-531	-936	-463	-1720	361	-1372	-3629	-3440	-2572	-14302
%Diff		-8.30%	-14.68%	-9.36%	-25.64%	5.46%	-25.54%	-74.35%	-67.81%	-36.81%	-26.81%
2710111519	Fin Motor Gasoline (unl, Not Ref.)	8,889	8,439	11,610	10,651	11,113	9,315	8,375	11,161	15,444	94,997
EIA	Fin Motor Gasoline (Conv.)	8,886	9,427	11,901	10,824	12,908	11,315	7,343	10,814	17,297	100,715
Difference		3	-988	-291	-173	-1795	-2000	1032	347	-1853	-5718
% Diff		0.03%	-11.71%	-2.51%	-1.62%	-16.15%	-21.47%	12.32%	3.11%	-12.0%	-6.02%
	Total Motor Gasoline (unl)	15,287	14,814	16,554	17,359	17,719	14,687	13,256	16,234	22,431	148,341
EIA	Total Motor	15,815	16,738	17,308	19,252	19,153	18,059	15,853	19,327	26,856	168,361

	Gasoline										
Difference		-528	-1924	-754	-1893	-1434	-3372	-2597	-3093	-4425	-20020
% Diff		-3.45%	-12.99%	-4.55%	-10.91%	-8.09%	-22.96%	-19.59%	-19.05%	-19.73%	-13.50%
2710191500	Residual (Kerosene- type JF)	3,270	2,160	2,605	2,749	1,359	2,494	4,006	5,635	9,754	34,032
EIA	Kerosene- type Jet Fuel	3,269	3,912	5,394	4,036	4,660	5,404	4,562	8,573	11,497	51,307
Difference		1	-1752	-2789	-1287	-3301	-2910	-556	-2938	-1743	-17275
% Diff		0.03%	-81.11%	-107%	-46.82%	-243%	-117%	-13.88%	-52.14%	-17.87%	-50.76%
2710190525, 30	Resid (Fuel Oils #5,6)	16,271	15,805	14,814	14,635	15,199	20,367	21,235	19,814	22,400	160,540
EIA	Resid (Fuel Oils #5,6)	14,302	16,509	12,738	12,747	13,009	16,426	17,949	19,462	19,916	143,058
Difference		1969	-704	2076	1888	2190	3941	3286	352	2484	17482
% Diff		12.1%	-4.45%	14.01%	12.90%	14.41%	19.35%	15.47%	1.78%	11.09%	10.89%
	Propylene & Propane	7,426	6,027	5,697	5,620	5,703	5,656	4,452	8,591	8,619	57,791
EIA	Propylene & Propane	8,494	6,832	5,084	5,370	5,425	6,820	5,301	7,680	11,687	62,693
Difference		-1068	-805	613	250	278	-1164	-849	911	-3068	-4902
% Diff		-15.18%	-14.22%	11.62%	4.81%	5.27%	-23.24%	-21.11%	10.91%	-35.62%	-9.0%
	Tot Blending Components	9,492	11,963	12,964	12,536	12,905	16,250	15,731	12,532	11,067	115,440
EIA	Tot Blending Components	10,512	15,131	14,735	16,546	17,171	15,306	16,439	17,258	18,844	141,942
Difference		-1020	-3168	-1771	-4010	-4266	944	-708	-4726	-7777	-26502
% Diff		-10.75%	-26.48%	-13.66%	-31.99%	-33.06%	5.81%	-4.50%	-37.7%	-70.3%	-23.0%

Appendix A: Customs and Border Protection (CBP) Petroleum Product Definitions

Code	Petroleum Product	Definition
2207200000	Ethanol	Denatured ethyl alcohol
2707100000	Benzene	Oil and other products of the distillation of high temperature coal tar; similar products in which the weight of the aromatic constituents exceeds that of the non-aromatic constituents: Benzene
2707200000	Toluene	Oil and other products of the distillation of high temperature coal tar; similar products in which the weight of the aromatic constituents exceeds that of the non-aromatic constituents: Toluene
2707995090	Xylenes	Oil and other products of the distillation of high temperature coal tar; similar products in which the weight of the aromatic constituents exceeds that of the non-aromatic constituents: other than Phenols, creosote oils, light oil, picolines, carbazole, or carbon black feedstocks.
2707300040	Xylenes	Oil and other products of the distillation of high temperature coal tar; similar products in which the weight of the aromatic constituents exceeds that of the non-aromatic constituents: Xylenes other than m-Xylene, o-Xylene, or p-Xylene.
2709001000	Crude Oil	Petroleum oils and oils obtained from bituminous minerals, crude: Testing under 25 degrees A.P.I.
2709002090	Crude Oil	Petroleum oils and oils obtained from bituminous minerals, crude: Testing 25 degrees A.P.I. or more, but not condensate derived wholly from natural gas.

2709002010	Condensate Pentanes +	Petroleum oils and oils obtained from bituminous minerals, crude: Testing 25 degrees A.P.I. or more, condensate derived wholly from natural gas.
2710xxxxxx		Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70% or more of petroleum oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; other than waste oils:
2710111510	Leaded Gasoline	Light oils and preparations: motor fuel, gasoline, leaded.
2710111514	Unleaded Motor Gasoline: Reformulated	Light oils and preparations: motor fuel, gasoline, unleaded, reformulated.
2710111519	Unleaded Motor Gasoline: Other than Reformulated	Light oils and preparations: motor fuel, gasoline, unleaded, other than reformulated.
2710111520	Jet Fuel - Naphtha Type	Light oils and preparations: motor fuel, naphtha type - jet fuel.
2710111550	Other Motor Fuel	Light oils and preparations: motor fuel, other than gasoline or naphtha type - jet fuel.
2710112500	Spec. Naphtha	Light oils and preparations: naphthas (except motor fuel or motor fuel blending stock).
2710114545	Lubricants	Light oils and preparations: insulating or transformer oils.
2710114590	Lubricants	Light oils and preparations: other than motor fuel, motor fuel blending stock, naphthas, insulating or transformer oils

2710193010	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: aviation engine lubricating oils.
2710193020	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: automotive, diesel or marine engine lubricating oils.
2710193030	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: turbine lubricating oil, including marine.
2710193040	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: automotive gear oils.
2710193050	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: steam cylinder oils.
2710193070	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: quenching or cutting oils.
2710193080	Lubricants	Other than light oils and preparations: lubricating oils and greases, with or without additives: other oils not listed above.
2710194590	Lubricants	Other than light oils and preparations: other than lubricating oils and greases with or without additives, but are mixtures of hydrocarbons not elsewhere specified or included, which contain by weight not over 50% of any single hydrocarbon compound: other than white mineral oil or insulating or transformer oils.
2710194530	Lubricants	Other than light oils and preparations: other than

		lubricating oils and greases with or without additives, but are mixtures of hydrocarbons not elsewhere specified or included, which contain by weight not over 50% of any single hydrocarbon compound: medicinal grade white mineral oil.
2710194540	Lubricants	Other than light oils and preparations: other than lubricating oils and greases with or without additives, but are mixtures of hydrocarbons not elsewhere specified or included, which contain by weight not over 50% of any single hydrocarbon compound: white mineral oil, but not medicinal grade.
2710194545	Lubricants	Other than light oils and preparations: other than lubricating oils and greases with or without additives, but are mixtures of hydrocarbons not elsewhere specified or included, which contain by weight not over 50% of any single hydrocarbon compound: insulating or transformer oils.
2710191002	DFO < 15 ppm, diesel oil	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Fuel oils #2 and 3, diesel oil, containing not more than 15 ppm of sulfur.
2710191005	DFO < 15 ppm, fuel oils #2 and #3.	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Fuel oils #2 and 3, not diesel oil, containing not more than 15 ppm of sulfur.
2710191015	DFO (#4 fuel oil)	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of more than 45 seconds but

		less than 125 seconds (#4 type fuel oils), containing not more than 15 ppm of sulfur.
2710191003	DFO 15 - 500 ppm, diesel oil	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Fuel oils #2 and 3, diesel oil, containing more than 15 ppm but not more than 500 ppm of sulfur.
2710191007	DFO 15 - 500 ppm, fuel oils #2 and #3	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Fuel oils #2 and 3, not diesel oil, containing more than 15 ppm but not more than 500 ppm of sulfur.
2710191013	DFO 15 - 500 ppm	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Light fuel oils containing more than 15 ppm but not more than 500 ppm of sulfur.
2710191014	DFO 500+ ppm	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Light fuel oils containing more than 500 ppm of sulfur.
2710191008	DFO High	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Fuel oils #2 and 3, not diesel oil, containing more than 500 ppm of sulfur.
2710191004	High DFO	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a

		viscosity at 37.8 deg of less than 45 seconds (light fuel oils). Fuel oils #2 and 3, diesel oil, containing more than 500 ppm of sulfur.
2710191025	DFO High	Distillate and residual fuel oils (including blended fuel oils), testing 25 deg. API or more, having a viscosity at 37.8 deg of more than 45 seconds but less than 125 seconds (#4 type fuel oils), containing more than 500 ppm of sulfur.
2710190515	High DFO	Distillate and residual fuel oils (including blended fuel oils), testing under 25 deg. API, having a viscosity at 37.8 deg of more than 45 seconds but less than 125 seconds (#4 type fuel oils), containing more than 500 ppm of sulfur.
2710191500	Kerosene-type jet fuel	Kerosene-type jet fuel
2710190550	Residual	Distillate and residual fuel oils (including blended fuel oils), testing under 25 deg. API, having a viscosity at 37.8 deg of less than 45 seconds.
2710190530	Residual	Distillate and residual fuel oils (including blended fuel oils), testing under 25 deg. API, having a viscosity at 37.8 deg of more than 45 seconds, but less than 125 seconds (heavy fuel oils), fuel oil #6.
2710190535	Residual	Distillate and residual fuel oils (including blended fuel oils), testing under 25 deg. API, having a viscosity at 37.8 deg of more than 45 seconds, but less than 125 seconds (heavy fuel oils), but not fuel oils #5 or #6.)
2710191050	Residual	Distillate and residual fuel oils (including blended fuel oils), testing above 25 deg. API, having a

		viscosity at 37.8 deg of more than 125 seconds (heavy fuel oils).
2710192100	Kerosene	Kerosene Motor Fuel (except kerosene-type jet fuel)
2710192300	Kerosene	Kerosene (except motor fuel or motor fuel blending stock).
2710193500	Lubricant Grease	Lubricating oils and greases, with or without additives: greases not over 10% by weight of salts of fatty acids of animal or vegetable origin.
2710194000	Lubricant Grease	Lubricating oils and greases, with or without additives: greases that do not meet 2710193500 criteria.
2710993100	Waste Oils	Waste oils: Not containing polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), or polybrominated biphenyls (PBBs) – wastes of lubricating oils (whether or not containing additives).
2710993900	Waste Oils	Waste oils: Not containing polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), or polybrominated biphenyls (PBBs) – wastes of lubricating greases (whether or not containing additives) (other than those containing not over 10% by weight of salts of fatty acids of animal or vegetable origin).
2710999000	Waste Oils	Waste oils: Not containing polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), or polybrominated biphenyls (PBBs) – other than mixtures of hydrocarbons not elsewhere specified or included, which contain not over 50% of any single hydrocarbon

		compound.
2711190020	Other Gases	Petroleum gases and other gaseous hydrocarbons – liquefied: other than propane, butanes, ethylene, propylene, butylene, butadiene, and ethane.
2711130020	Butane	Petroleum gases and other gaseous hydrocarbons – liquefied: butanes that are not butanes with a purity of 90 liquid volume percent or more, but less than 95 liquid volume percent.
2711140040	Butane	Butadiene
2711290025	Butane	Petroleum gases and other gaseous hydrocarbons – in gaseous state: butanes that are not butanes with a purity of 90 liquid volume percent or more, but less than 95 liquid volume percent.
2711130010	Butane	Petroleum gases and other gaseous hydrocarbons – liquefied: butanes with a purity of 90 liquid volume percent or more, but less than 95 liquid volume percent.
2711140020	Propylene	Propylene
2711140030	Butylene	Butylene
2711120010	Propane	Liquefied propane with a minimum purity of 90 liquid volume percent.
2711120020	Propane	Liquefied propane that does not have a minimum purity of 90 liquid volume percent.
2711290015	Propane	Gaseous propane with a minimum purity of 90 liquid volume percent.
2712100000	Misc. non-fuel use	Petroleum jelly
2712902000	Wax	Products in the group defined as petroleum jelly; paraffin wax, microcrystalline petroleum wax, slack wax, ozokerite, lignite wax, peat wax, other mineral waxes and similar products obtained by

		synthesis or by other processes but are not petroleum jelly, paraffin, or montan wax.
2712200000	Wax	Paraffin wax containing by weight less than 0.75% of oil.
2713120000	Petroleum Coke	Calcined petroleum coke
2713110000	Petroleum Coke	Not calcined petroleum coke
2713200000	Asphalt	Petroleum bitumen
2714900000	Asphalt	Products in the group defined as bitumen and asphalt, natural; bituminous or oil shale and tar sands; asphaltites and asphaltic rocks, but are not bituminous or oil shale and tar sands.
2715000000	Asphalt	Bituminous mixtures based on natural asphalt, on natural bitumen, on petroleum bitumen, on mineral tar or on mineral tar pitch (e.g., bituminous mastics, cut-backs)
2905141000	Tert-Butyl Alcohol	Tertiary Butyl alcohol, having a purity of 99% or less by weight
2909191400	MTBE	Methyl tertiary-butyl ether
2909191800	ETBE	Ethyl tertiary-butyl ether
2710111805	RBOB	Motor fuel blending stock – reformulated for oxygenate blending (RBOB)
2710111890	Motor Fuel Blend -- Other	Motor fuel blending stock that is not RBOB.

Appendix B: EIA Petroleum Product Definitions

Imports	Receipts of crude oil and petroleum products into the 50 States and the District of Columbia from foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories.
Unfinished oils	All oils requiring further processing, except those requiring only mechanical blending. Unfinished oils are produced by partial refining of crude oil and include naphtha and lighter oils, kerosene and light gas oils, heavy gas oils, and residuum.
Crude Oil	<p>A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include:</p> <ul style="list-style-type: none"> • Small amounts of hydrocarbons that exist in gaseous phase in natural underground reservoirs but are liquid at atmospheric pressure after being recovered from oil well (casing head) gas in lease separators and are subsequently commingled with the crude stream without being separately measured. Lease condensate recovered as a liquid from natural gas wells in lease or field separation facilities and later mixed into the crude stream is also included; • Small amounts of non-hydrocarbons produced with the oil, such as sulfur and various metals; • Drip gases, and liquid hydrocarbons produced from tar sands, oil sands, gilsonite, and oil shale. <p>Liquids produced at natural gas processing plants are excluded. Crude oil is refined to produce a wide array of petroleum products, including heating oils; gasoline, diesel and jet fuels; lubricants; asphalt; ethane, propane, and butane; and many other products used for their energy or chemical content.</p>
Petroleum Products	Petroleum products are obtained from the processing of crude oil (including lease condensate), natural gas, and other hydrocarbon compounds. Petroleum products include unfinished oils, liquefied petroleum gases, pentanes plus, aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt, road oil, still gas, and miscellaneous products.
Pentanes Plus	A mixture of hydrocarbons, mostly pentanes and heavier, extracted from natural gas. Includes iso-pentane, natural gasoline, and plant condensate.
Liquefied Petroleum Gases (LPG)	A group of hydrocarbon-based gases derived from crude oil refining or natural gas fractionation. They include: ethane, ethylene, propane, propylene, normal butane, butylene, iso-butane, and isobutylene. For convenience of transportation, these gases are liquefied through pressurization.
Oxygenates	Substances which, when added to gasoline, increase the amount of oxygen in that gasoline blend. Ethanol, Methyl Tertiary Butyl Ether (MTBE), Ethyl Tertiary Butyl Ether (ETBE), and methanol are common oxygenates.
Fuel Ethanol	An anhydrous denatured aliphatic alcohol intended for gasoline blending as described in Oxygenates definition.
MTBE (Methyl tertiary butyl ether)	An ether intended for gasoline blending as described in "Oxygenates."
Motor Gasoline Blending	Naphtha which will be used for blending or compounding into finished aviation or motor gasoline (e.g., straight-run gasoline,

Components	alkylate, reformate, benzene, toluene, and xylene). Excludes oxygenates (alcohols, ethers), butane, and pentanes plus.
Reformulated Blend Stock for Oxygenate Blending (RBOB)	Specially produced reformulated gasoline blend stock intended for blending with oxygenates downstream of <i>the refinery where it is produced</i> . Includes RBOB used to meet requirements of the Federal reformulated gasoline program and other blend stock intended for blending with oxygenates to produce finished gasoline that meets or exceeds emissions performance requirements of Federal reformulated gasoline (e.g. California RBOB and Arizona RBOB). Excludes conventional gasoline blend stocks for oxygenate blending (CBOB).
RBOB for Blending with Ether	Motor gasoline blending components intended to be blended with an ether component (e.g. methyl tertiary butyl ether) at a terminal or refinery to raise the oxygen content.
RBOB for Blending with Alcohol	Motor gasoline blending components intended to be blended with an alcohol component (e.g. fuel ethanol) at a terminal or refinery to raise the oxygen content.
Conventional Blend Stock for Oxygenate Blending (CBOB)	Conventional gasoline blend stock intended for blending with oxygenates downstream of <i>the refinery where it was produced</i> . CBOB must become conventional gasoline after blending with oxygenates. Motor gasoline blending components that require blending other than with oxygenates to become finished conventional gasoline are reported as "All Other Motor Gasoline Blending Components." Excludes reformulated blend stock for oxygenate blending (RBOB).
Gasoline Treated as Blend Stock (GTAB)	Non-certified Foreign Refinery gasoline classified by an importer as blend stock to be either blended or reclassified with respect to reformulated or conventional gasoline. GTAB is classified as either reformulated or conventional based on emissions performance and the intended end use.
Aviation Gasoline Blending Components	Naphtha which will be used for blending or compounding into finished aviation gasoline (e.g., straight-run gasoline, alkylate, reformate, benzene, toluene, and xylene). Excludes oxygenates (alcohols, ethers), butane, and pentanes plus. Oxygenates are reported as other hydrocarbons, hydrogen, and oxygenates.
Finished Motor Gasoline	A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in spark-ignition engines. Motor gasoline, as defined in ASTM Specification D 4814 or Federal Specification VV-G-1690C, is characterized as having a boiling range of 122 to 158 degrees Fahrenheit at the 10 percent recovery point to 365 to 374 degrees Fahrenheit at the 90 percent recovery point. Motor Gasoline includes conventional gasoline; all types of oxygenated gasoline, including gasohol; and reformulated gasoline, but excludes aviation gasoline. Note: Volumetric data on blending components, such as oxygenates, are not counted in data on finished motor gasoline until the blending components are blended into the gasoline. Finished motor gasoline includes all ethanol blended gasoline (e.g. E10, E85).
Reformulated Gasoline (RFG)	Finished motor gasoline formulated for use in motor vehicles, the composition and properties of which meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under Section 211(k) of the Clean Air Act. This category includes oxygenated fuels program reformulated gasoline (OPRG) but excludes reformulated gasoline blend stock for oxygenate blending (RBOB).
Conventional Gasoline	Finished motor gasoline not included in the oxygenated or reformulated gasoline categories. Excludes reformulated gasoline blend stock for oxygenate blending (RBOB) as well as other blend stock.
Finished Aviation Gasoline	A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in aviation reciprocating engines. Fuel specifications are provided in ASTM Specification D 910 and Military Specification MIL-

	G-5572. Note: Data on blending components are not counted in data on finished aviation gasoline.
Kerosene-Type Jet Fuel	A kerosene-based product having a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point and a final maximum boiling point of 572 degrees Fahrenheit and meeting ASTM Specification D 1655 and Military Specifications MIL-T-5624P and MIL-T-83133D (Grades JP-5 and JP-8). It is used for commercial and military turbojet and turboprop aircraft engines.
Kerosene	A light petroleum distillate that is used in space heaters, cook stoves, and water heaters and is suitable for use as a light source when burned in wick-fed lamps. Kerosene has a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point, a final boiling point of 572 degrees Fahrenheit, and a minimum flash point of 100 degrees Fahrenheit. Included are No. 1-K and No. 2-K, the two grades recognized by ASTM Specification D 3699 as well as all other grades of kerosene called range or stove oil, which have properties similar to those of No. 1 fuel oil. See Kerosene-Type Jet Fuel.
Distillate Fuel Oil	A general classification for one of the petroleum fractions produced in conventional distillation operations. It includes diesel fuels and fuel oils. Products known as No. 1, No. 2, and No. 4 diesel fuel are used in on-highway diesel engines, such as those in trucks and automobiles, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery. Products known as No. 1, No. 2, and No. 4 fuel oils are used primarily for space heating and electric power generation.
Residual Fuel Oil	A general classification for the heavier oils, known as No. 5 and No. 6 fuel oils, that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations. It conforms to ASTM Specifications D396 and D975 and Federal Specification VV-F-815C. No. 5, a residual fuel oil of medium viscosity, is also known as Navy Special and is defined in Military Specification MIL-F-859E, including Amendment 2 (NATO Symbol F-770). It is used in steam-powered vessels in government service and inshore power plants. No. 6 fuel oil includes Bunker C fuel oil and is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes.
Sulfur	A yellowish nonmetallic element, sometimes known as "brimstone." It is present at various levels of concentration in many fossil fuels.
Petrochemical Feed Stocks	Chemical feed stocks derived from petroleum principally for the manufacture of chemicals, synthetic rubber, and a variety of plastics. The categories reported are "Naphtha Less Than 401° F" and "Other Oils Equal To or Greater Than 401° F."
Naphtha Less Than 401° F	A naphtha with a boiling range of less than 401° F that is intended for use as a petrochemical feedstock.
Other Oils Equal To or Greater Than 401° F	Oils with a boiling range equal to or greater than 401° F which are intended for use as a petrochemical feedstock.
Special Naphthas	Oils with a boiling range equal to or greater than 401° F which are intended for use as a petrochemical feedstock.
Wax	A solid or semi-solid material consisting of a mixture of hydrocarbons obtained or derived from petroleum fractions, or through a Fischer-Tropsch type process, in which the straight chained paraffin series predominates. This includes all marketable wax, whether crude or refined, with a congealing point (ASTM D 938) between 100 and 200° F and a maximum oil content (ASTM D 3235) of 50 weight percent.
Lubricants	Substances used to reduce friction between bearing surfaces or as process materials either incorporated into other materials used as processing aids in the manufacture of other products, or used as carriers of other materials. Petroleum lubricants may be

	produced either from distillates or residues. Lubricants include all grades of lubricating oils from spindle oil to cylinder oil and those used in greases.
Asphalt	A dark-brown-to-black cement-like material containing bitumen as the predominant constituent obtained by petroleum processing; used primarily for road construction. It includes crude asphalt as well as the following finished products: cements, fluxes, the asphalt content of emulsions (exclusive of water), and petroleum distillates blended with asphalt to make cutback asphalts. Note: The conversion factor for asphalt is 5.5 barrels per short ton.
Road Oil	Any heavy petroleum oil, including residual asphalt oil used as a dust palliative and surface treatment on roads and highways. It is generally produced in six grades from 0, the most liquid, to 5, the most viscous.
Other Products	Includes aviation gasoline, aviation gasoline blending components, miscellaneous products, other hydrocarbons and oxygenates, pentanes plus, petroleum coke, and waxes.
Barrel	A unit of volume equal to 42 U.S. gallons.

Appendix C: Crude Oil Overview (from *Monthly Energy Review* February 2007)

Imports

2006	Strategic Petroleum Reserve	Non-Strategic Petroleum Reserve	Total
January	0	9,713	9,713
February	14	9,883	9,897
March	0	9,828	9,828
April	33	9,799	9,832
May	23	10,224	10,247
June	0	10,681	10,681
July	0	10,153	10,153
August	0	10,537	10,537
September	0	10,703	10,703
October	0	10,132	10,132
November	0	9,837	9,837
December	Not Available	Not Available	9,445
Average	“	“	10,083
2007 January	“	“	10,036