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Par Hawaii Refining

91-325 Komohana Street
Kapolei, HI 96707

Certified Mail No. 91 7199 9991 7037 9121 0473

September 23, 2019

Ms. Marianne Rossio, PE
Hawaii Department of Health
Clean Air Branch
2827 Waimano Home Road
Hale Ola Building, Room 130
Pearl City, Hawaii 96782

**Subject: Par East Refinery (Par East) CSP 0212-01-C
Par West Refinery (Par West) CSP 0088-01-C, 0088-02-C, & 0088-03-C
Revised Greenhouse Gas (GHG) Emission Reduction Plan**

Dear Ms. Rossio:

As requested by the Hawaii Department of Health's (HDOH's) letter dated July 9, 2019, enclosed are revised Greenhouse Gas Emission Reduction Plans (GHGERPs) for the Par Hawaii Refining (Par) refineries located at 91-325-Komohana Street in Kapolei (CSP: 0212-01-C), referred to herein as "Par East," and 91-480 Malakole Street Bldg CCB in Kapolei (CSPs: 0088-01-C, 0088-02-C, & 0088-03-C), referred to herein as "Par West", originally submitted to HDOH on May 13, 2019 and April 4, 2019, respectively.

The resubmitted GHGERPs for Par East and Par West rely on the baseline emissions from the Par West legacy boilers (F-5201, F-5202, and F-5203) and show a 16% reduction in GHG emissions, based on partnering between Par facilities.

If you have any questions, please contact Benton Widlansky at 547-3993 or Ted Metrose at 547-3930.

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief. Please feel free to contact me at 547-3991 if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Richard Creamer".

Richard Creamer
Vice President

Attachments

cc: CAB.Emissions@doh.hawaii.gov

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Greenhouse Gas Emission Reduction Plan

**Par East Refinery
91- 325 Komohana Street
Kapolei, HI 96707**

Covered Source Permit Nos. 0212-01-C

September 24 2019



Par Hawaii Refining

91-325 Komohana Street
Kapolei, HI 96707

GHG Emission Reduction Plan September 2019

1.0 Introduction

Par Hawaii Refining (Par) is submitting a revised greenhouse gas emission reduction plan (GHGERP) for its refinery located at 91-325 Komohana St., in Kapolei, HI, referred to herein as “Par East” Refinery. The Par East Refinery operates under Covered Source Permit No. 0212-01-C, and because the refinery has the potential to emit greenhouse gas (GHG) emissions equal to or above 100,000 tons per year CO₂e, Par has prepared a revised GHGERP for the director’s approval, to account for a number of changes.

The Par East Refinery has a capacity of 95,000 bpd (barrels per day) and is located within the Campbell Industrial Park (CIP) at Barber’s Point. The refinery was originally built in 1972 and currently produces a wide range of products including propane, various grades of gasoline; kerosene-based jet aviation fuels; diesel motor fuels; a variety of distillate and residual fuel oils for ocean going ships and power plants; asphalt, and petroleum based feed stock that is converted to synthetic natural gas (SNG) at the Hawaii Gas Company’s SNG Plant.

Since the facility’s original GHGERP was submitted on September 30, 2015, many changes have taken place. In addition to collecting and reporting 3 additional years of GHG emissions from the Par East Refinery, in December of 2018 Par acquired additional refining assets from Island Energy Services (IES) and expanded its overall capacity to process crude oil at both facilities. A new Distillate Hydrotreater was permitted and built at the Par East Refinery. The state’s Renewable Portfolio Standards (RPS), which were intended to increase the amount of renewable fuel used by utilities to generate power have been effective and reduced the demand for fuel oil from the state’s two refineries. In addition to the contributing to the cessation of refining operations by IES, the impacts of the state’s RPS are reflected in a state-wide GHG inventory and projected future statewide emissions¹ report that was issued in January 2019.

2.0 Baseline Emissions

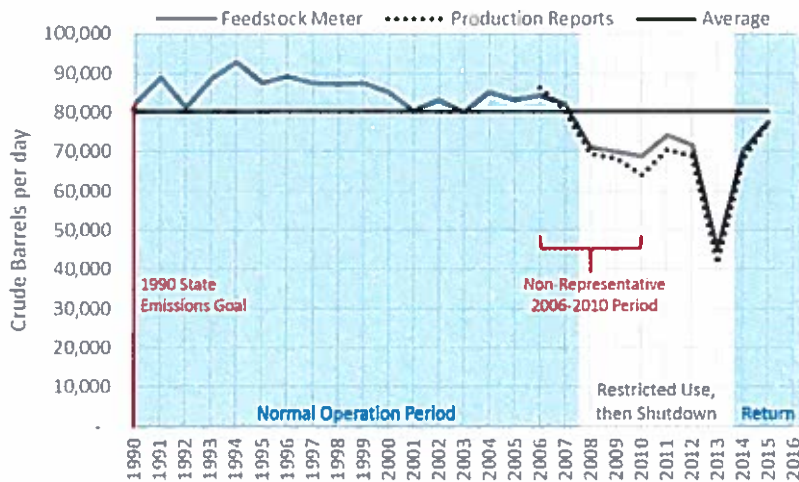
Hawaii Administrative Rules (HAR) Section 11-60.1-204(d)(1) requires that the GHG emission reduction plan specify a facility-wide baseline annual emission rate. According to the rule, the baseline rate would be based on calendar year 2010 unless another proposed baseline period is approved by the HDOH. The regulation allows alternative baselines based on all or select data within the five-year period ending in 2010. Because the refinery had a large-scale shut down during the refinery-wide turn-around beginning in July that year, 2010 is not representative of normal operations and is not a representative year for baseline emissions. As an alternative, Par proposes to use 2007 as the most recent year, representative of operating history, for the facility-wide baseline annual emission rate.

As provided in previous correspondence, Figure 1 shows the Par refinery history of crude run rates since 1990, the basis year for the GHG reduction rule. The proposed baseline year of 2007 is the most recent

¹ Hawaii Greenhouse Gas Emissions Report for 2015, Final Report, January 2019, Prepared for the Hawaii State Department of Health by ICF and UH ERO

year within the period of 2006 to 2010 specified in HAR 11-60.1-204(d)(1) which is excludes the effects of the recession and the refinery-wide turn-around year of 2010.

Figure 1- Crude Processing Rate History



As detailed in Appendix A, baseline direct emissions in 2007, totaled 808,740 short tons (ST) CO₂e (or 733,676 metric tons (MT) CO₂e). The procedures employed to calculate emissions were very similar to the method set by the Federal Mandatory Reporting Rule (40 CFR 98), and were based on fuel consumption records which served as the foundation for annual emission estimates previously submitted to and reviewed by the Hawaii Department of Health.

3.0 Proposed Facility-wide GHG Emissions Cap

The proposed baseline GHG emission levels, as indicated in Appendix A for 2007 are 733,676 MT, equivalent to 808,740 ST of total CO₂e per year. As there are no biogenic emissions in the proposed baseline, pursuant to HAR 11-60.1-204(c), the default facility-wide cap would be 16% less. The Par East refinery proposes to accept this cap of 16% reduction, which would equal 616,288 MT, or 679,341 ST CO₂e per year.

4.0 Feasibility of Available Control Measures

In the initial GHGERP, the facility identified best available control technologies as required by HAR §11-60.1-204(d)(3), as well as an assessment of the technical feasibility of each measure pursuant to HAR §11-60.1-204(d)(4). However, an updated assessment is not included in this revised plan, because Par East does not seek an alternate cap.

5.0 Proposed Control Strategy

Par plans to partner the Par West and Par East facilities to collectively achieve the State's GHG emission reduction target. Because many of the process units will no longer be operated at Par West and because some of the crude oil that Par Hawaii had planned to process at Par East will now be processed at Par West, on a joint basis the two Par refineries will be able to meet the 16 percent reduction.

The combined facility and partnering baseline, and annual GHG emission limit is summarized in Table 1.

Table 1. Partnering Baseline and Proposed GHG Emission Limits

Facility	Permit No.	Emissions (MT)	
		Baseline CO ₂ e	CO ₂ e Cap (16% reduction to Baseline)
Par East	0212-01-C	733,676	616,288
Par West	0088-01-C 0088-02-C 0088-03-C	348,273	292,549
Combined		1,081,949	908,837

The GHG emission limits proposed in Table 1 could be revised modestly downward per the alternate baseline described in the Par West GHGERP and is summarized in Table 2.

Table 2. Alternate Partnering Baseline and Proposed GHG Emission Limits

Facility	Permit No.	Emissions (MT)	
		Baseline CO ₂ e	CO ₂ e Cap (16% reduction to Baseline)
Par East	0212-01-C	733,676	616,288
Par West	0088-01-C 0088-02-C 0088-03-C	326,172	273,984
Combined		1,059,848	890,272

The Par East facility will be the main permit for the partnered facilities. The Total Partnering GHG emissions limit will be listed on CSP 0212-01. The Par West CSPs (which are expected to be consolidated into one), will reference the Par East CSP for its GHG emission limits.

Appendix A -- 2007 Emissions Data

Subpart C Tier 1 Calculations

Hawaii Independent Energy - Refinery Kapolei
GHG 2007 Calendar Year

Subpart C Tier 1 Calculations (Note: facility summary rounds values to significant digits and appropriate decimal place)

Fuel Type:	Fuel Oil No.	Fuel Oil (Reported as Fuel Oil No. 4) <small>(Note: Tier 2 is not used because HHV (though estimated) is not required to be directly measured in accordance with standards for HHV)</small>		Diesel/LSVGO (Reported as Fuel Oil No. 4)	
		gallons/yr	MMBtu/gallon	gallons/yr	MMBtu/gallon
Facility-Wide Fuel Usage for the Reporting Year	15,457,399	14,130,932	0.146	1,326,467	0.146
High Heating Value	0	0.146	MMBtu/gallon	0.146	MMBtu/gallon
CO2 Emission Factor	150	75.04	kg CO2/MMBtu	75.04	kg CO2/MMBtu
CH4 Emission Factor	0	3.00E-03	kg CH4/MMBtu	3.00E-03	kg CH4/MMBtu
N2O Emission Factor	0	6.00E-04	kg N2O/MMBtu	6.00E-04	kg N2O/MMBtu
CO2 Emissions	169349	154816	Metric Tons	14533	Metric Tons
CH4 Emissions	6.77034	6.18935	Metric Tons	0.58099	Metric Tons
N2O Emissions	1.35407	1.23787	Metric Tons	0.11620	Metric Tons
CH4 Emissions (in CO2 Equivalents)	169	155	Metric Tons CO2e	15	Metric Tons CO2e
N2O Emissions (in CO2 Equivalents)	404	369	Metric Tons CO2e	35	Metric Tons CO2e

Hawaii Independent Enei
GHG 2007 Calendar Year
Subpart C Tier 1 Calculations

Fuel Type:	Kerosene-Type Jet Fuel		Propane	
Facility-Wide Fuel Usage for the Reporting Year	gallons/yr	Data from 2007 annual inventory	gallons/yr	Data from 2007 annual inventory
High Heating Value	MMBtu/gallon	(Approximated by Kerosene-Type Jet Fuel) Default High Heat Value from Table C-1 of Subpart C	MMBtu/gallon	(Approximated by Propane) Default High Heat Value from Table C-1 of Subpart C
CO2 Emission Factor	kg CO2/MMBtu	(Approximated by Kerosene-Type Jet Fuel) Default CO2 Emission Factor from Table C-1 of Subpart C	kg CO2/MMBtu	(Approximated by Propane) Default CO2 Emission Factor from Table C-1 of Subpart C
CH4 Emission Factor	kg CH4/MMBtu	(Approximated by Kerosene-Type Jet Fuel) Default CH4 Emission Factor from Table C-2 of Subpart C	kg CH4/MMBtu	(Approximated by Propane) Default CH4 Emission Factor from Table C-2 of Subpart C
N2O Emission Factor	kg N2O/MMBtu	(Approximated by Kerosene-Type Jet Fuel) Default N2O Emission Factor from Table C-2 of Subpart C	kg N2O/MMBtu	(Approximated by Propane) Default N2O Emission Factor from Table C-2 of Subpart C
CO2 Emissions	Metric Tons	Calculated Using Equation C-1 from 40 CFR 98 Subpart C.	Metric Tons	Calculated Using Equation C-1 from 40 CFR 98 Subpart C.
CH4 Emissions	Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.	Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.
N2O Emissions	Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.	Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.
CH4 Emissions (In CO2 Equivalents)	Metric Tons CO2e	CO2 Equivalents	Metric Tons CO2e	CO2 Equivalents
N2O Emissions (In CO2 Equivalents)	Metric Tons CO2e	CO2 Equivalents	Metric Tons CO2e	CO2 Equivalents

Subpart C Tier 1 Calculations

Hawaii Independent Energy
 GHG 2007 Calendar Year
 Subpart C Tier 1 Calculator

Fuel Type:	Naphtha		SNG	
Facility-Wide Fuel Usage for the Reporting Year	0 gallons/yr	Data from 2007 annual inventory	0 scf/yr	Data from 2007 annual inventory
High Heating Value	0.125 MMBtu/gallon	(Approximated by Naphtha (<401 deg F)) Default High Heat Value from Table C-1 of Subpart C	1.03E-03 MMBtu/s cf	(Approximated by Natural Gas) Default High Heat Value from Table C-1 of Subpart C
CO2 Emission Factor	68.02 kg CO2/MMBtu	(Approximated by Naphtha (<401 deg F)) Default CO2 Emission Factor from Table C-1 of Subpart C	53.06 kg CO2/MMBtu	(Approximated by Natural Gas) Default CO2 Emission Factor from Table C-1 of Subpart C
CH4 Emission Factor	3.00E-03 kg CH4/MMBtu	(Approximated by Naphtha (<401 deg F)) Default CH4 Emission Factor from Table C-2 of Subpart C	1.00E-03 kg CH4/MMBtu	(Approximated by Natural Gas) Default CH4 Emission Factor from Table C-2 of Subpart C
N2O Emission Factor	6.00E-04 kg N2O/MMBtu	(Approximated by Naphtha (<401 deg F)) Default N2O Emission Factor from Table C-2 of Subpart C	1.00E-04 kg N2O/MMBtu	(Approximated by Natural Gas) Default N2O Emission Factor from Table C-2 of Subpart C
CO2 Emissions	0 Metric Tons	Calculated Using Equation C-1 from 40 CFR 98 Subpart C.	0.00E+00 Metric Tons	Calculated Using Equation C-1 from 40 CFR 98 Subpart C.
CH4 Emissions	0.000000 Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.	0.00E+00 Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.
N2O Emissions	0.000000 Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.	0.00E+00 Metric Tons	Calculated Using Equation C-8 from 40 CFR 98 Subpart C.
CH4 Emissions (in CO2 Equivalents)	0 Metric Tons CO2e	CO2 Equivalents	0.00E+00 Metric Tons CO2e	CO2 Equivalents
N2O Emissions (in CO2 Equivalents)	0 Metric Tons CO2e	CO2 Equivalents	0.00E+00 Metric Tons CO2e	CO2 Equivalents

Subpart C Tier 3 Calculations

Hawaii Independent Energy - Refinery Kapolei
GHG 2007 Calendar Year

Subpart C Tier 3 Calculations (Note: facility summary rounds values to significant digits and appropriate decimal place)

Refinery Fuel Gas	
Fuel Type:	
Facility-Wide Fuel Usage for the Reporting Year	3,152,932,534 scf/ yr @68F Data from 2007 annual inventory (corrected for P&T). Now also includes WTU TO waste gas.
Annual average carbon content	0.790 kg C / kg fuel Based on same averaging methodology as Equation C-2b as required by equation C-5 (in this case, monthly averaging).
Annual average molecular weight	28.0 kg/ kg-mole Based on same averaging methodology as Equation C-2b as required by equation C-5 (in this case, monthly averaging).
High Heating Value	1.632E-03 MMBtu/ scf @68F Calculated as plan describes (and allowed by Eqn C-8). Note: Default High Heat Value from Table C-1 of Subpart C—Default CO2 Emission Factors and High Heat Values for Various Types of Fuel, but not used b/c Tier 3.
CH4 Emission Factor	3.00E-03 kg CH4/ MMBtu Default CH4 Emission Factor from Table C-2 of Subpart C.
N2O Emission Factor	6.00E-04 kg N2O/ MMBtu Default N2O Emission Factor from Table C-2 of Subpart C.
CO ₂ Emissions	301,595 Metric Tons Calculated Using Equation C-5 from 40 CFR 98 Subpart C. Used 849.5 scf per kg mole (for 68 °F selected as standard temperature).
CH ₄ Emissions	15.4384 Metric Tons Calculated Using Equation C-8 from 40 CFR 98 Subpart C.
N ₂ O Emissions	3.0877 Metric Tons Calculated Using Equation C-8 from 40 CFR 98 Subpart C.
CH ₄ Emissions (in CO ₂ Equivalents)	386 Metric Tons CO ₂ e CO ₂ Equivalents
N ₂ O Emissions (in CO ₂ Equivalents)	920 Metric Tons CO ₂ e CO ₂ Equivalents

Subpart C Tier 3 Calculations

Hawaii Independent Energy - Refinery Kapolei
GHG 2007 Calendar Year

Subpart C Tier 3 Calculations (Note: facility summary rounds values to significant digits and appropriate decimal place)

Fuel Type:		Refinery Fuel Gas		
Monthly Averages				
Month	Molecular Weight	Annual average car	High Heating Value (Btu/scf)	
1	28.9099	0.7930	1709	
2	29.7097	0.7956	1680	
3	30.6448	0.7974	1802	
4	27.1363	0.7893	1620	
5	27.3929	0.7905	1630	
6	28.2809	0.7935	1681	
7	26.7333	0.7904	1598	
8	29.3190	0.7954	1738	
9	28.3535	0.7935	1668	
10	26.3629	0.7894	1578	
11	30.5228	0.7595	1748	
12	23.3700	0.7776	1422	

scf/ mo @68F	Component MW	Component CC	Component HHV
243458921.6	2.235729036	0.061329542	132.1336587
251248944.3	2.371097609	0.063495618	134.0391355
289808949.7	2.821086336	0.073406347	165.8645933
274373953	2.365055175	0.068795102	141.1686409
292711452.1	2.546973945	0.073500935	151.516692
292190439.9	2.624864459	0.073650262	156.0202897
272091855.4	2.310553495	0.068316461	138.082218
295335603.6	2.750507636	0.074623186	163.0095235
274040248.7	2.468134861	0.069071232	145.1622208
289204638.8	2.421844368	0.072519517	144.9454446
158227422.6	1.534097215	0.038171999	87.8683872
215437408	1.599289516	0.053216918	97.3025997
Year Average	28.0492	0.7901	1657.1134

Hawaii Independent Energy - Refinery Kapolei
GHG 2007 Calendar Year

Subpart P: Hydrogen Production (Note: facility summary rounds values to significant digits and appropriate decimal place)

Total Metric Tons CO2/Year: 137,671

Month	Volume used @68F	Avg. carbon content	Avg. molecular weight	Monthly CO2 Based on portion of Equation P-1	Mass of fuel used @68F (New for RY2014)
1	45,524,395 scf	0.793 kg C/ kg	28.910 kg/kg-mole	4,505,002 kg/month	1549.27 metric tons
2	36,478,113 scf	0.796 kg C/ kg	29.710 kg/kg-mole	3,721,606 kg/month	1275.75 metric tons
3	38,611,892 scf	0.797 kg C/ kg	30.645 kg/kg-mole	4,072,497 kg/month	1392.88 metric tons
4	34,068,591 scf	0.789 kg C/ kg	27.136 kg/kg-mole	3,149,782 kg/month	1088.28 metric tons
5	37,248,921 scf	0.791 kg C/ kg	27.393 kg/kg-mole	3,481,488 kg/month	1201.12 metric tons
6	37,190,007 scf	0.794 kg C/ kg	28.281 kg/kg-mole	3,602,374 kg/month	1238.10 metric tons
7	34,393,135 scf	0.790 kg C/ kg	26.733 kg/kg-mole	3,136,862 kg/month	1082.33 metric tons
8	36,812,927 scf	0.795 kg C/ kg	29.319 kg/kg-mole	3,705,687 kg/month	1270.54 metric tons
9	40,036,875 scf	0.793 kg C/ kg	28.354 kg/kg-mole	3,887,862 kg/month	1336.30 metric tons
10	44,589,868 scf	0.789 kg C/ kg	26.363 kg/kg-mole	4,005,347 kg/month	1383.78 metric tons
11	40,370,876 scf	0.759 kg C/ kg	30.523 kg/kg-mole	4,039,390 kg/month	1450.54 metric tons
12	44,092,669 scf	0.778 kg C/ kg	23.370 kg/kg-mole	3,458,711 kg/month	1213.00 metric tons
				44,766,608 kg CO2/Year	15481.90 metric tons

44,767 Metric Tons CO2/Year

Annual CO2 Calculated Using Equation P-1 from 40 CFR 98 Subpart P:

Month	Volume used @68F	Avg. carbon content	Avg. molecular weight	Monthly CO2 Based on portion of Equation P-1	Mass of feedstock used @68F (New for RY2014)
1	47,113,491 scf	0.823 kg C/ kg	52.886 kg/kg-mole	8,849,659 kg/month	2933.08 metric tons
2	35,504,806 scf	0.823 kg C/ kg	52.886 kg/kg-mole	6,669,118 kg/month	2210.37 metric tons
3	38,152,772 scf	0.823 kg C/ kg	52.886 kg/kg-mole	7,166,504 kg/month	2375.22 metric tons
4	30,765,722 scf	0.823 kg C/ kg	52.886 kg/kg-mole	5,778,942 kg/month	1915.34 metric tons
5	36,047,308 scf	0.823 kg C/ kg	52.886 kg/kg-mole	6,771,020 kg/month	2244.15 metric tons
6	37,197,984 scf	0.823 kg C/ kg	52.886 kg/kg-mole	6,987,159 kg/month	2315.78 metric tons
7	29,576,697 scf	0.823 kg C/ kg	52.886 kg/kg-mole	5,555,599 kg/month	1841.31 metric tons
8	34,830,092 scf	0.823 kg C/ kg	52.886 kg/kg-mole	6,542,382 kg/month	2168.37 metric tons
9	41,690,041 scf	0.823 kg C/ kg	52.886 kg/kg-mole	7,830,934 kg/month	2595.44 metric tons
10	49,290,147 scf	0.823 kg C/ kg	52.886 kg/kg-mole	9,258,516 kg/month	3068.59 metric tons
11	39,337,281 scf	0.823 kg C/ kg	52.886 kg/kg-mole	7,388,998 kg/month	2448.97 metric tons
12	43,903,745 scf	0.823 kg C/ kg	52.886 kg/kg-mole	8,246,750 kg/month	2733.25 metric tons
				87,045,580 kg CO2/Year	28849.86 metric tons

87,046 Metric Tons CO2/Year

Annual CO2 Calculated Using Equation P-1 from 40 CFR 98 Subpart P:

Hawaii Independent Energy - Refinery Kapolei
GHG 2007 Calendar Year

Subpart P: Hydrogen Production [Note: facility summary rounds values to significant digits and appropriate decimal place]
Hydrogen Recycle Stream to HGU (HG-F2001, Recycle stream within unit)

Month	Volume used @68F	Avg. carbon content	Avg. molecular weight	Monthly CO2 Based on portion of Equation P-1	Mass of feedstock used @68F (New for RV2014)
1	18,848,925 scf	0.639 kg C/ kg	8.040 kg/kg-mole	418,156 kg/month	178.40 metric tons
2	14,789,720 scf	0.704 kg C/ kg	11.352 kg/kg-mole	510,444 kg/month	197.64 metric tons
3	18,919,047 scf	0.646 kg C/ kg	8.161 kg/kg-mole	430,346 kg/month	181.75 metric tons
4	18,870,635 scf	0.636 kg C/ kg	7.931 kg/kg-mole	411,041 kg/month	176.17 metric tons
5	18,519,586 scf	0.667 kg C/ kg	9.032 kg/kg-mole	481,377 kg/month	196.91 metric tons
6	18,068,815 scf	0.656 kg C/ kg	8.748 kg/kg-mole	447,595 kg/month	186.07 metric tons
7	21,195,585 scf	0.619 kg C/ kg	7.186 kg/kg-mole	407,124 kg/month	179.29 metric tons
8	20,433,615 scf	0.671 kg C/ kg	9.440 kg/kg-mole	558,603 kg/month	227.08 metric tons
9	18,216,536 scf	0.723 kg C/ kg	12.187 kg/kg-mole	692,825 kg/month	261.33 metric tons
10	19,466,754 scf	0.718 kg C/ kg	12.071 kg/kg-mole	727,884 kg/month	276.61 metric tons
11	10,880,787 scf	0.657 kg C/ kg	10.181 kg/kg-mole	314,139 kg/month	130.40 metric tons
12	17,353,430 scf	0.553 kg C/ kg	7.593 kg/kg-mole	314,263 kg/month	155.12 metric tons
				5,713,796 kg CO2/Year	2,346.78 metric tons

Annual CO2 Calculated Using Equation P-1 from 40 CFR 98 Subpart P: 5,714 Metric Tons CO2/Year

Hydrogen Recycle Stream to HGU (HG-F2010, Recycle stream from CRU)

Month	Volume used @68F	Avg. carbon content	Avg. molecular weight	Monthly CO2 Based on portion of Equation P-1	Mass of feedstock used @68F (New for RV2014)
1	1,137,271 scf	0.639 kg C/ kg	8.040 kg/kg-mole	25,230 kg/month	10.76 metric tons
2	214,333 scf	0.704 kg C/ kg	11.352 kg/kg-mole	7,397 kg/month	2.86 metric tons
3	405,269 scf	0.646 kg C/ kg	8.161 kg/kg-mole	9,219 kg/month	3.89 metric tons
4	308,487 scf	0.636 kg C/ kg	7.931 kg/kg-mole	6,719 kg/month	2.88 metric tons
5	305,186 scf	0.667 kg C/ kg	9.032 kg/kg-mole	7,933 kg/month	3.24 metric tons
6	354,270 scf	0.656 kg C/ kg	8.748 kg/kg-mole	8,776 kg/month	3.65 metric tons
7	774,433 scf	0.619 kg C/ kg	7.186 kg/kg-mole	14,875 kg/month	6.55 metric tons
8	354,978 scf	0.671 kg C/ kg	9.440 kg/kg-mole	9,704 kg/month	3.94 metric tons
9	484,388 scf	0.723 kg C/ kg	12.187 kg/kg-mole	18,423 kg/month	6.95 metric tons
10	258,894 scf	0.718 kg C/ kg	12.071 kg/kg-mole	9,680 kg/month	3.68 metric tons
11	401,216 scf	0.657 kg C/ kg	10.181 kg/kg-mole	11,583 kg/month	4.81 metric tons
12	856,251 scf	0.553 kg C/ kg	7.593 kg/kg-mole	15,506 kg/month	7.65 metric tons
				145,046 kg CO2/Year	60.88 metric tons

Annual CO2 Calculated Using Equation P-1 from 40 CFR 98 Subpart P: 145 Metric Tons CO2/Year

Hawaii Independent Energy - Refinery Kapolei
 GHG 2007 Calendar Year

Subpart Y: Flare Calculations (Note: facility summary rounds values to significant digits and appropriate decimal place)

CO2	5,474	Metric Tons	40 CFR 98.253(b)(1)(ii)(A) Eq. Y-1a
CH4	8.725	Metric Tons	40 CFR 98.253(b)(2) Eq. Y-4 for CH4
N2O	0.055	Metric Tons	40 CFR 98.253(b)(3) Eq. Y-5 for N2O
CH4 Emissions (in CO2 Equivalents)	218	Metric Tons CO2e	CO2 Equivalents
N2O Emissions (in CO2 Equivalents)	16.3	Metric Tons CO2e	CO2 Equivalents

Week	Volume of flare gas combusted (scf) @68F	Average carbon content (kg C/ kg)	Average molecular weight of the flare gas (kg/kg-mole)	Weekly Component (before applying assumed combustion efficiency of a flare, and unit conversion factor (metric tons per kilogram)	f _{CH4} (kg C in methane in flare gas/kg C in flare gas)
1	1,541,510	0.550	13.373	48,919	0.208062101
2	1,777,028	0.550	13.373	56,394	0.208062101
3	1,411,940	0.550	13.373	44,808	0.208062101
4	1,476,522	0.550	13.373	46,857	0.208062101
5	2,377,432	0.550	13.373	75,447	0.208062101
6	1,305,119	0.550	13.373	41,418	0.208062101
7	1,478,569	0.550	13.373	46,922	0.208062101
8	1,647,747	0.550	13.373	52,291	0.208062101
9	1,783,796	0.550	13.373	56,608	0.208062101
10	1,740,306	0.550	13.373	55,228	0.208062101
11	1,743,673	0.550	13.373	55,335	0.208062101
12	1,330,953	0.550	13.373	42,237	0.208062101
13	1,556,910	0.550	13.373	49,408	0.208062101
14	1,256,035	0.550	13.373	39,860	0.208062101
15	1,269,017	0.550	13.373	40,272	0.208062101
16	1,280,566	0.550	13.373	40,638	0.208062101
17	1,590,444	0.550	13.373	50,472	0.208062101
18	756,050	0.550	13.373	23,993	0.208062101
19	826,124	0.550	13.373	26,217	0.208062101
20	1,598,765	0.550	13.373	50,736	0.208062101
21	1,182,407	0.550	13.373	37,523	0.208062101
22	929,815	0.550	13.373	29,507	0.208062101
23	2,637,286	0.550	13.373	83,694	0.208062101
24	1,383,494	0.550	13.373	43,905	0.208062101
25	1,634,631	0.550	13.373	51,875	0.208062101
26	2,719,058	0.550	13.373	86,289	0.208062101
27	2,310,484	0.550	13.373	73,323	0.208062101
28	1,181,888	0.550	13.373	37,507	0.208062101
29	3,865,609	0.550	13.373	122,674	0.208062101
30	1,657,757	0.550	13.373	52,609	0.208062101
31	15,088,558	0.550	13.373	478,832	0.208062101
32	2,178,689	0.550	13.373	69,140	0.208062101
33	3,203,525	0.550	13.373	101,663	0.208062101
34	2,139,715	0.550	13.373	67,903	0.208062101
35	2,082,451	0.550	13.373	66,086	0.208062101
36	2,951,694	0.550	13.373	93,671	0.208062101
37	26,532,346	0.550	13.373	841,997	0.208062101
38	3,998,742	0.550	13.373	126,899	0.208062101
39	3,034,896	0.550	13.373	96,312	0.208062101
40	3,103,750	0.550	13.373	98,497	0.208062101
41	3,618,264	0.550	13.373	114,825	0.208062101
42	2,844,590	0.550	13.373	90,272	0.208062101
43	2,673,907	0.550	13.373	84,856	0.208062101
44	2,236,520	0.550	13.373	70,975	0.208062101
45	24,905,512	0.550	13.373	790,370	0.208062101
46	3,154,526	0.550	13.373	100,108	0.208062101
47	8,473,494	0.550	13.373	268,904	0.208062101
48	2,084,002	0.550	13.373	66,135	0.208062101
49	2,413,776	0.550	13.373	76,601	0.208062101
50	4,291,409	0.550	13.373	136,187	0.208062101
51	2,557,967	0.550	13.373	81,176	0.208062101
52	3,178,036	0.550	13.373	100,854	0.208062101
	175,997,305	0.55	13.37		0.208
	Sum	Avg	Avg		avg

DATE RANGE	HYDROGEN PRODUCTION	ADJUSTED VOL% H2	METRIC TONS H2 PRODUCED
1/1/2007 to 1/1/2008	MMSCFD HG:F2189 13.79	See referenced lab data below 94.98	11,253 <i>(excludes contribution of hydrogen embedded in Methane)</i>

Referenced Lab Data					
	Methanator Otit Vol% H2 MOLE% HG:MTOH2q	Methanator Otit Vol% C1 MOLE% HG:MTOc1g	Methanator Otit Vol% CO MOLE% HG:MTOCOq	Methanator Otit Vol% CO2 MOLE% HG:MTOCO2	Adjusted Vol % H2 screens out if total % under 98
<i>Number of Values.</i>	28	28	28	28	98
02-Jan-07 17:30:00	91.50	5.80	-	-	xx
04-Jan-07 02:30:00	91.90	6.10	0.10	-	91.90
01-Feb-07 05:00:00	95.20	4.30	0.10	-	95.20
05-Apr-07 02:30:00	93.50	5.00	0.10	-	93.50
03-May-07 05:00:00	94.50	5.00	0.10	0.30	94.50
07-Jun-07 00:21:00	94.40	5.10	0.10	0.30	94.40
05-Jul-07 06:00:00	97.40	2.50	-	-	97.40
02-Aug-07 02:00:00	94.90	5.00	-	-	94.90
06-Sep-07 02:00:00	94.80	4.80	-	0.20	94.80
05-Oct-07 20:00:00	93.40	6.60	-	-	93.40
01-Nov-07 04:00:00	95.80	0.20	3.70	0.10	95.80
08-Nov-07 13:30:00	97.50	-	2.40	-	97.50
21-Nov-07 11:50:00	96.10	-	3.90	-	96.10
06-Dec-07 05:00:00	95.40	4.60	-	-	95.40

Subpart Y: Flare Calculations

		From Fuel Use Spreadsheet	Used flow-weighted average of 2010-2014			
Start	Stop	Flow Data: (MSCFH)	Average carbon content (kg C/ kg)	Average molecular weight of the flare gas (kg/kg-mole)	f _{CH4} (kg C in methane in flare gas/kg C in flare gas)	
1	1/1/2006	1/8/2006	9.03752994	0.550	13.373	0.208
2	1/8/2006	1/15/2006	10.41832426	0.550	13.373	0.208
3	1/15/2006	1/22/2006	8.277892722	0.550	13.373	0.208
4	1/22/2006	1/29/2006	8.65652163	0.550	13.373	0.208
5	1/29/2006	2/5/2006	13.93835627	0.550	13.373	0.208
6	2/5/2006	2/12/2006	7.651624066	0.550	13.373	0.208
7	2/12/2006	2/19/2006	8.668523227	0.550	13.373	0.208
8	2/19/2006	2/26/2006	9.660374197	0.550	13.373	0.208
9	2/26/2006	3/5/2006	10.45800178	0.550	13.373	0.208
10	3/5/2006	3/12/2006	10.20302912	0.550	13.373	0.208
11	3/12/2006	3/19/2006	10.2227697	0.550	13.373	0.208
12	3/19/2006	3/26/2006	7.803084403	0.550	13.373	0.208
13	3/26/2006	4/2/2006	9.127820913	0.550	13.373	0.208
14	4/2/2006	4/9/2006	7.363853939	0.550	13.373	0.208
15	4/9/2006	4/16/2006	7.439962888	0.550	13.373	0.208
16	4/16/2006	4/23/2006	7.507675284	0.550	13.373	0.208
17	4/23/2006	4/30/2006	9.32442022	0.550	13.373	0.208
18	4/30/2006	5/7/2006	4.432551667	0.550	13.373	0.208
19	5/7/2006	5/14/2006	4.843380581	0.550	13.373	0.208
20	5/14/2006	5/21/2006	9.373205855	0.550	13.373	0.208
21	5/21/2006	5/28/2006	6.932192005	0.550	13.373	0.208
22	5/28/2006	6/4/2006	5.45130147	0.550	13.373	0.208
23	6/4/2006	6/11/2006	15.46182156	0.550	13.373	0.208
24	6/11/2006	6/18/2006	8.111117545	0.550	13.373	0.208
25	6/18/2006	6/25/2006	9.583477551	0.550	13.373	0.208
26	6/25/2006	7/2/2006	15.9412339	0.550	13.373	0.208
27	7/2/2006	7/9/2006	13.54585785	0.550	13.373	0.208
28	7/9/2006	7/16/2006	6.929146508	0.550	13.373	0.208
29	7/16/2006	7/23/2006	22.66321137	0.550	13.373	0.208
30	7/23/2006	7/30/2006	9.719062769	0.550	13.373	0.208
31	7/30/2006	8/6/2006	88.46087333	0.550	13.373	0.208
32	8/6/2006	8/13/2006	12.7731706	0.550	13.373	0.208
33	8/13/2006	8/20/2006	18.78155657	0.550	13.373	0.208
34	8/20/2006	8/27/2006	12.54467372	0.550	13.373	0.208
35	8/27/2006	9/3/2006	12.20894957	0.550	13.373	0.208
36	9/3/2006	9/10/2006	17.30512767	0.550	13.373	0.208
37	9/10/2006	9/17/2006	155.5532663	0.550	13.373	0.208
38	9/17/2006	9/24/2006	23.44373759	0.550	13.373	0.208
39	9/24/2006	10/1/2006	17.79292479	0.550	13.373	0.208
40	10/1/2006	10/8/2006	18.19660045	0.550	13.373	0.208
41	10/8/2006	10/15/2006	21.21308311	0.550	13.373	0.208
42	10/15/2006	10/22/2006	16.6772032	0.550	13.373	0.208
43	10/22/2006	10/29/2006	15.67652571	0.550	13.373	0.208
44	10/29/2006	11/5/2006	13.11222111	0.550	13.373	0.208
45	11/5/2006	11/12/2006	146.0155042	0.550	13.373	0.208
46	11/12/2006	11/19/2006	18.49429012	0.550	13.373	0.208
47	11/19/2006	11/26/2006	49.67822099	0.550	13.373	0.208
48	11/26/2006	12/3/2006	12.21803952	0.550	13.373	0.208
49	12/3/2006	12/10/2006	14.15143358	0.550	13.373	0.208
50	12/10/2006	12/17/2006	25.1595802	0.550	13.373	0.208
51	12/17/2006	12/24/2006	14.99679312	0.550	13.373	0.208
52	12/24/2006	12/31/2006	16.30310557	0.550	13.373	0.208

		Flow weighted -->	0.549774374	13.37342278	0.208062101
Start	Stop	Flow Data: (MSCFH)	Average carbon content (kg C/ kg)	Average molecular weight of the flare gas (kg/kg-mole)	fCH4 (kg C in methane in flare gas/kg C in flare gas)
1/1/2010	1/8/2010	2.017081301	0.769979501	23.25737261	0.068654952
1/8/2010	1/15/2010	1.921450789	0.674407398	19.22661688	0.15745836
1/15/2010	1/22/2010	8.194639036	0.684112458	15.50611096	0.130944961
1/22/2010	1/29/2010	1.230576526	0.693817517	16.57081601	0.104431562
1/29/2010	2/5/2010	1.118595859	0.694330206	18.93288624	0.116479369
2/5/2010	2/12/2010	1.285957531	0.677133077	20.60093903	0.118310914
2/12/2010	2/19/2010	0.874901246	0.68860201	18.82819802	0.103357293
2/19/2010	2/26/2010	1.414091257	0.694650975	18.55525627	0.134962543
2/26/2010	3/5/2010	1.636220742	0.68943891	18.69795516	0.160641273
3/5/2010	3/12/2010	1.108759562	0.432334106	16.60664147	0.186320003
3/12/2010	3/19/2010	0.8450056	0.636160391	21.90029708	0.132801979
3/19/2010	3/26/2010	0.82649706	0.647429206	24.9176149	0.079283954
3/26/2010	4/2/2010	2.192963517	0.720150317	25.23535612	0.068614527
4/2/2010	4/9/2010	0.84514579	0.728273085	21.77305214	0.119939456
4/9/2010	4/16/2010	23.08706478	0.635199976	15.34563682	0.138563042
4/16/2010	4/23/2010	40.31804955	0.502963342	8.860656596	0.157186627
4/23/2010	4/30/2010	2.786107413	0.594411994	13.00396824	0.124140022
4/30/2010	5/7/2010	0.907761104	0.690100345	19.81857304	0.112813772
5/7/2010	5/14/2010	48.27102727	0.704141259	24.80906123	0.108454021
5/14/2010	5/21/2010	162.6172254	0.661234453	16.36848822	0.198144337
5/21/2010	5/28/2010	416.0915851	0.638690346	12.37140977	0.138861062
5/28/2010	6/4/2010	262.3867903	0.696247248	25.83642354	0.073744543
6/4/2010	6/11/2010	4.535874786	0.690533954	28.74084569	0.130215428
6/11/2010	6/18/2010	3.578920268	0.628244265	23.39593791	0.177383968
6/18/2010	6/25/2010	4.476481745	0.686684972	23.58400422	0.148397031
6/25/2010	7/2/2010	0.691549194	0.739219409	24.19056063	0.12220035
7/2/2010	7/9/2010	0.290425179	0.702790185	25.86072006	0.080906606
7/9/2010	7/16/2010	0.460133356	0.704308229	23.56973982	0.151175082
7/16/2010	7/23/2010	0.120565705	0.644405338	22.70947007	0.080025362
7/23/2010	7/30/2010	0	0.511661189	25.1297741	0.080025362
7/30/2010	8/6/2010	0	0.37891704	27.55007813	0.080025362
8/6/2010	8/13/2010	4.986192107	0.344044676	31.82765132	0.008875643
8/13/2010	8/20/2010	382.6805937	0.533264461	11.45415282	0.168208706
8/20/2010	8/27/2010	280.7083968	0.394293702	4.577672681	0.51818181
8/27/2010	9/3/2010	132.5623308	0.428187789	4.740920537	0.381065547
9/3/2010	9/10/2010	8.771213574	0.51482982	7.262649277	0.250703473
9/10/2010	9/17/2010	2.142073397	0.553767081	8.786338815	0.186778807
9/17/2010	9/24/2010	3.888558308	0.568794145	8.218055925	0.223881953
9/24/2010	10/1/2010	1.232291028	0.561357156	8.209375054	0.218606737
10/1/2010	10/8/2010	7.182644123	0.565993826	9.325007704	0.213331522
10/8/2010	10/15/2010	0.586946917	0.632646472	13.15015949	0.123330134
10/15/2010	10/22/2010	0.604385334	0.587208985	10.44841147	0.211027632
10/22/2010	10/29/2010	0.991239976	0.642564172	13.46006405	0.115317596
10/29/2010	11/5/2010	0.534154043	0.56428531	12.93364178	0.187458743
11/5/2010	11/12/2010	0.080592989	0.537498334	10.54637618	0.181636979
11/12/2010	11/19/2010	0.513145979	0.577082579	10.51691992	0.179519591
11/19/2010	11/26/2010	42.9544793	0.494857134	10.04857172	0.175330339
11/26/2010	12/3/2010	5.813722525	0.468775973	9.869306116	0.171141086
12/3/2010	12/10/2010	0.638289952	0.629527965	10.70508736	0.172752498
12/10/2010	12/17/2010	3.723267218	0.603740913	9.856643789	0.192693559
12/17/2010	12/24/2010	0.986727291	0.623445147	11.28613522	0.123884135
12/24/2010	12/31/2010	2.601082107	0.642913319	12.30971198	0.131572587
1/1/2011	1/8/2011	1.575818591	0.086000004	8.479999542	0.866734491
1/8/2011	1/15/2011	2.190868196	0.688000031	10.46000004	0.10149784
1/15/2011	1/22/2011	1.152675457	0.650999985	15.02000046	0.162571852
1/22/2011	1/29/2011	2.057305958	0.693500023	24.40000057	0.094773628
1/29/2011	2/5/2011	4.366680268	0.332999992	15.47999954	0.195261964
2/5/2011	2/12/2011	4.423565418	0.66	12.38000011	0.142269251
2/12/2011	2/19/2011	0.79212935	0.670999985	12.19999981	0.171215297
2/19/2011	2/26/2011	0.648137532	0.622999992	10.86999989	0.217708395
2/26/2011	3/5/2011	5.710098716	0.770999985	27.87999916	0.074424485
3/5/2011	3/12/2011	10.180315	0.622000008	10.61999989	0.318669639
3/12/2011	3/19/2011	7.002227132	0.656000004	12.31500006	0.245166558
3/19/2011	3/26/2011	25.07938214	0.69	14.01000023	0.171663478
3/26/2011	4/2/2011	0.710619107	0.691500015	16.35000038	0.161718578

Start	Stop	Flow Data: (MSCFH)	Average carbon content (kg C/ kg)	Average molecular weight of the flare gas (kg/kg-mole)	fCH4 (kg C in methane in flare gas/kg C in flare gas)
4/2/2011	4/9/2011	2.082614701	0.693000031	18.69000053	0.151773677
4/9/2011	4/16/2011	0.448512159	0.766999969	26.72999954	0.137588451
4/16/2011	4/23/2011	0.018380761	0.725999985	22.31999969	0.120716421
4/23/2011	4/30/2011	1.221227136	0.714000015	20.43000031	0.143720511
4/30/2011	5/7/2011	6.84189082	0.689000015	17.90999985	0.21057441
5/7/2011	5/14/2011	11.71285765	0.686999969	20.57999992	0.103795999
5/14/2011	5/21/2011	11.65494333	0.690999985	19.625	0.127527771
5/21/2011	5/28/2011	32.40000961	0.695	18.67000008	0.151259543
5/28/2011	6/4/2011	0.828135352	0.698000031	18.63999939	0.141622244
6/4/2011	6/11/2011	4.617714268	0.620250015	16.14249992	0.20315821
6/11/2011	6/18/2011	1.833017856	0.735999985	17.37999916	0.140110525
6/18/2011	6/25/2011	0.915724277	0.717249985	18.37749958	0.123173707
6/25/2011	7/2/2011	2.200108905	0.698499985	19.375	0.106236889
7/2/2011	7/9/2011	10.04163824	0.574333331	28.27666664	0.057724987
7/9/2011	7/16/2011	41.38308991	0.756999969	26.28000069	0.075699142
7/16/2011	7/23/2011	0.661430004	0.751999969	25.55999947	0.080548516
7/23/2011	7/30/2011	2.25482484	0.653000031	9.279999733	0.122001829
7/30/2011	8/6/2011	94.40300621	0.41	4.199999809	0.646568733
8/6/2011	8/13/2011	1.372431373	0.71	17.93000031	0.160684224
8/13/2011	8/20/2011	60.62823126	0.690999985	16.60000038	0.17947381
8/20/2011	8/27/2011	1.025632548	0.693249989	16.6875	0.195220005
8/27/2011	9/3/2011	0.648934249	0.695499992	16.77499962	0.210966201
9/3/2011	9/10/2011	28.86854122	0.418000005	9.543333133	0.326066663
9/10/2011	9/17/2011	1.096861562	0.718000031	19.29999924	0.179100033
9/17/2011	9/24/2011	1.615231059	0.721499977	20.14000034	0.16202209
9/24/2011	10/1/2011	0.683848163	0.704500008	18.71999931	0.184723059
10/1/2011	10/8/2011	1.504861904	0.715	18.48999977	0.150301826
10/8/2011	10/15/2011	0.777379195	0.723500023	20.13000011	0.148137183
10/15/2011	10/22/2011	1.093086212	0.719000015	17.53499985	0.186916725
10/22/2011	10/29/2011	0.973605259	0.721500015	22.07500076	0.153467797
10/29/2011	11/5/2011	8.585847106	0.743500023	26.04500008	0.118296278
11/5/2011	11/12/2011	0.96276872	0.686999969	17.82999992	0.179547731
11/12/2011	11/19/2011	1.254512326	0.428999996	14.77499962	0.453460523
11/19/2011	11/26/2011	1.452759411	0.694000015	22.23999977	0.187102659
11/26/2011	12/3/2011	1.007121561	0.705999985	21.19000053	0.135111108
12/3/2011	12/10/2011	1.024833546	0.718500023	21.34500027	0.140940521
12/10/2011	12/17/2011	1.029098158	0.729000015	16.41499996	0.110718558
12/17/2011	12/24/2011	0.536463323	0.721500015	18.22000027	0.159601104
12/24/2011	12/31/2011	0.732882292	0.712000008	20.85000038	0.14939072
1/1/2012	1/8/2012	0.751771444	0.701999969	17.86000061	0.179530266
1/8/2012	1/15/2012	0.58387644	0.650999985	18.15999985	0.19507127
1/15/2012	1/22/2012	7.24743976	0.679666646	20.3233331	0.141060092
1/22/2012	1/29/2012	26.95560133	0.709500008	18.03999996	0.147849039
1/29/2012	2/5/2012	38.59036037	0.705500031	17.77000046	0.152373959
2/5/2012	2/12/2012	0.707529119	0.682999992	15.22333304	0.558551331
2/12/2012	2/19/2012	1.102461411	0.71	16.80999947	0.177800781
2/19/2012	2/26/2012	0.882873865	0.689500008	16.68999958	0.17728779
2/26/2012	3/4/2012	1.092088158	0.720499992	20.57000065	0.155660468
3/4/2012	3/11/2012	23.15171807	0.687999992	15.26500034	0.164202954
3/11/2012	3/18/2012	0.991009166	0.668333333	19.45666695	0.175257879
3/18/2012	3/25/2012	0.93110205	0.650499992	19.39499995	0.182566465
3/25/2012	4/1/2012	3.156575562	0.642499981	21.79500008	0.167724204
4/1/2012	4/8/2012	3.490197661	0.684500008	22.25	0.165329185
4/8/2012	4/15/2012	0.770324805	0.689000015	21.59000015	0.154607031
4/15/2012	4/22/2012	2.3778959	0.719499969	20.88500023	0.189990417
4/22/2012	4/29/2012	1.591520492	0.701499977	22.02500057	0.182142316
4/29/2012	5/6/2012	32.3568324	0.181499996	27.19499969	0.092676856
5/6/2012	5/13/2012	4.460889606	0.385874996	18.57124978	0.119348054
5/13/2012	5/20/2012	102.7328537	0.385874996	18.57124978	0.119348054
5/20/2012	5/27/2012	70.29431281	0.590249996	9.947499871	0.146019253
5/27/2012	6/3/2012	0.376390711	0.631500015	19.24000072	0.175602218
6/3/2012	6/10/2012	26.58578998	0.628500004	21.25	0.159780748
6/10/2012	6/17/2012	1.859125852	0.640999985	19.86999989	0.129588016
6/17/2012	6/24/2012	0.676715372	0.718500023	16.9000001	0.172106993
6/24/2012	7/1/2012	0.549561617	0.714499969	17.375	0.179763801
7/1/2012	7/8/2012	1.236320251	0.723000005	20.6433328	0.167446124

Start	Stop	Flow Data: (MSCFH)	Average carbon content (kg C/ kg)	Average molecular weight of the flare gas (kg/kg-mole)	fCH4 (kg C in methane in flare gas/kg C in flare gas)
7/8/2012	7/15/2012	0.845440207	0.718999977	20.25	0.156967282
7/15/2012	7/22/2012	0.622109529	0.695999985	20.64500046	0.149172261
7/22/2012	7/29/2012	0.54049635	0.721500015	17.45499992	0.13960569
7/29/2012	8/5/2012	0.867561368	0.694499969	18.70000076	0.139763811
8/5/2012	8/12/2012	0.633735316	0.578499985	14.42000008	0.291609638
8/12/2012	8/19/2012	0.648944077	0.71	21.13999939	0.164376796
8/19/2012	8/26/2012	1.064136527	0.537000003	13.89499968	0.144084832
8/26/2012	9/2/2012	1.183396223	0.364000006	6.649999976	0.156149305
9/2/2012	9/9/2012	1.134642001	0.419000015	11.24500036	0.049170663
9/9/2012	9/16/2012	0.506881922	0.556000004	14.80500031	0.263752842
9/16/2012	9/23/2012	0.460040964	0.555	20.75500083	0.269613585
9/23/2012	9/30/2012	7.6171437	0.686999995	17.41666667	0.122026026
9/30/2012	10/7/2012	2.349508494	0.601000004	16.83500004	0.141705949
10/7/2012	10/14/2012	0.608595944	0.736500015	19.74499989	0.156232292
10/14/2012	10/21/2012	1.092379882	0.7325	21.98499966	0.141237695
10/21/2012	10/28/2012	0.900068122	0.709500008	19.27999973	0.171906552
10/28/2012	11/4/2012	0.464185772	0.728499985	18.85499954	0.16716926
11/4/2012	11/11/2012	0.8547962	0.758499985	22.625	0.138668609
11/11/2012	11/18/2012	1.261096178	0.653500023	22.28999996	0.156003945
11/18/2012	11/25/2012	0.826045297	0.738500023	21.81499958	0.149249523
11/25/2012	12/2/2012	1.972431561	0.544768787	19.48228201	0.131655496
12/2/2012	12/9/2012	3.20303359	0.698499985	24.51000023	0.11722168
12/9/2012	12/16/2012	2.80694305	0.727333323	22.263333	0.141965363
12/16/2012	12/23/2012	1.316424845	0.739000015	20.31499958	0.156268554
12/23/2012	12/30/2012	4.494574728	0.569000015	20.59000015	0.06651246
12/30/2012	1/1/2013	8.799463573	0.750999985	33.09000015	0.097458543
1/1/2013	1/8/2013	1.300638531	0.7325	24	0.127252273
1/8/2013	1/15/2013	1.024844365	0.7425	24.30500031	0.121416047
1/15/2013	1/22/2013	2.333535664	0.767999992	27.71500015	0.085546735
1/22/2013	1/29/2013	1.500976166	0.719000015	24.63999939	0.119482106
1/29/2013	2/5/2013	0.719608983	0.738333333	23.27333323	0.141150126
2/5/2013	2/12/2013	0.660536375	0.734000015	22.45500088	0.127903985
2/12/2013	2/19/2013	0.555137565	0.482999992	24.85999966	0.130204716
2/19/2013	2/26/2013	0.842488546	0.728666662	21.21000036	0.13001635
2/26/2013	3/5/2013	1.134180212	0.7275	21.52999973	0.14654257
3/5/2013	3/12/2013	1.538085481	0.696999995	21.21333313	0.167278469
3/12/2013	3/19/2013	1.118737555	0.697999992	23.44999981	0.129983495
3/19/2013	3/26/2013	0.915550403	0.687000008	19.57999992	0.16687718
3/26/2013	4/2/2013	0.577154808	0.711999969	21.49499989	0.155208333
4/2/2013	4/9/2013	0.500970739	0.7025	22.67499924	0.119807404
4/9/2013	4/16/2013	0.680635678	0.748499985	21.64000034	0.119718624
4/16/2013	4/23/2013	1.704675645	0.759000015	21.78999996	0.107954452
4/23/2013	4/30/2013	7.962102858	0.754000015	20.68999958	0.114998009
4/30/2013	5/7/2013	51.15147841	0.669000015	39.75	0.006336811
5/7/2013	5/14/2013	11.24234714	0.186999998	31.93000031	0.005261044
5/14/2013	5/21/2013	1.089659189	0.211499998	32.32833322	0.059217938
5/21/2013	5/28/2013	2.572193801	0.235999997	32.72666613	0.002694528
5/28/2013	6/4/2013	1.529615769	0.152	31.04333337	0.001347264
6/4/2013	6/11/2013	3.890101777	0.068000002	29.36000061	0
6/11/2013	6/18/2013	1.864783474	0.115999999	30.49499989	0
6/18/2013	6/25/2013	1.746784867	0.115999999	30.49499989	0
6/25/2013	7/2/2013	3.820098788	0.115999999	30.49499989	0
7/2/2013	7/9/2013	2.755103076	0.163999996	31.62999916	0
7/9/2013	7/16/2013	3.517345961	0.0265	28.57499981	0
7/16/2013	7/23/2013	1.808566758	0.054750001	28.80250025	0.012992389
7/23/2013	7/30/2013	1.800286765	0.054750001	28.80250025	0.012992389
7/30/2013	8/6/2013	1.199368187	0.054750001	28.80250025	0.012992389
8/6/2013	8/13/2013	0.333220038	0.054750001	28.80250025	0.012992389
8/13/2013	8/20/2013	0.609140564	0.054750001	28.80250025	0.012992389
8/20/2013	8/27/2013	7.794305043	0.054750001	28.80250025	0.012992389
8/27/2013	9/3/2013	2.319043735	0.083000002	29.03000069	0.025984779
9/3/2013	9/10/2013	21.08843433	0.646000004	36.11000061	0.067271294
9/10/2013	9/17/2013	372.1630426	0.459249992	7.647500038	0.228625457
9/17/2013	9/24/2013	304.0607317	0.450249996	5.38499999	0.267124933
9/24/2013	10/1/2013	2.741878016	0.674499989	14.5199995	0.089308437
10/1/2013	10/8/2013	3.545069962	0.648999977	11.09499979	0.102712086

Start	Stop	Flow Data: (MSCFH)	Average carbon content (kg C/ kg)	Average molecular weight of the flare gas (kg/kg-mole)	fCH4 (kg C in methane in flare gas/kg C in flare gas)
10/8/2013	10/15/2013	2.030082242	0.650333316	13.26999982	0.097332548
10/15/2013	10/22/2013	3.029898845	0.692666651	15.30666666	0.073527682
10/22/2013	10/29/2013	19.28824453	0.703428563	22.22142846	0.077005247
10/29/2013	11/5/2013	0.632068455	0.6625	12.29500008	0.110428007
11/5/2013	11/12/2013	0.588129826	0.653499985	12.43499994	0.107527215
11/12/2013	11/19/2013	0.480757957	0.584666659	11.77333323	0.134884487
11/19/2013	11/26/2013	0.317502931	0.661499977	12.56500006	0.10099458
11/26/2013	12/3/2013	0.329826294	0.678000031	12.28999996	0.113737073
12/3/2013	12/10/2013	0.424582556	0.686499977	13.19500017	0.097639039
12/10/2013	12/17/2013	0.441329891	0.675999985	12.50500011	0.091617027
12/17/2013	12/24/2013	0.667185707	0.659000015	12.55000019	0.100511737
12/24/2013	1/1/2014	0.785825553	0.664000015	13.08500004	0.097489099
1/1/2014	1/8/2014	0.280300316	0.68	15.41	0.096803363
1/8/2014	1/15/2014	0.575733651	0.66	13.53	0.105874283
1/15/2014	1/22/2014	1.108507504	0.65	13.36	0.108716391
1/22/2014	1/29/2014	0.82608564	0.66	13.97	0.117293848
1/29/2014	2/5/2014	0.490530874	0.65	13.54	0.124019982
2/5/2014	2/12/2014	0.408494457	0.68	14.16	0.163628424
2/12/2014	2/19/2014	0.426064428	0.61	15.33	0.138828879
2/19/2014	2/26/2014	1.094150252	0.61	13.21	0.130349066
2/26/2014	3/5/2014	0.991102973	0.6	14.38	0.127373739
3/5/2014	3/12/2014	213.9182741	0.59	8.65	0.184479399
3/12/2014	3/19/2014	78.81019535	0.53	13.45	0.2005894
3/19/2014	3/26/2014	4.891506715	0.59	18.08	0.133737632
3/26/2014	4/2/2014	0.51376654	0.595000019	15.56500006	0.154120159
4/2/2014	4/9/2014	0.300792002	0.55	18.03	0.1609665
4/9/2014	4/16/2014	0.309790497	0.39	19.27	0.138258299
4/16/2014	4/23/2014	0.248149088	0.57	16.9	0.161013227
4/23/2014	4/30/2014	0.227684278	0.65	20.46	0.127171881
4/30/2014	5/7/2014	0.249644737	0.65	17.83	0.14432165
5/7/2014	5/14/2014	0.229275374	0.6	18.6	0.138461394
5/14/2014	5/21/2014	0.365301715	0.66	17.32	0.14158519
5/21/2014	5/28/2014	0.87108894	0.66	18.6	0.12786645
5/28/2014	6/4/2014	0.248007396	0.68	18.67	0.124588206
6/4/2014	6/11/2014	0.483208069	0.68	17.44	0.137272387
6/11/2014	6/18/2014	0.269087194	0.63	17.26	0.132756794
6/18/2014	6/25/2014	0.259909614	0.67	18.38	0.130859818
6/25/2014	7/2/2014	2.316563615	0.52	16.94	0.18014087
7/2/2014	7/9/2014	3.126172637	0.71	20.92	0.075995255
7/9/2014	7/16/2014	0.428124884	0.68	18.97	0.105957574
7/16/2014	7/23/2014	0.234967697	0.68	18.77	0.113440034
7/23/2014	7/30/2014	0.274977296	0.67	21.16	0.102392925
7/30/2014	8/6/2014	0.258459227	0.67	23.98	0.083985532
8/6/2014	8/13/2014	0.283360803	0.69	21.53	0.094867837
8/13/2014	8/20/2014	10.86086488	0.55	25.05	0.145545142
8/20/2014	8/27/2014	3.653547436	0.6	23.48	0.170854304
8/27/2014	9/3/2014	13.65381173	0.55	19.69	0.112132905
9/3/2014	9/10/2014	1.569861781	0.59	19	0.144805238
9/10/2014	9/17/2014	8.025964892	0.63	20.74	0.113563381
9/17/2014	9/24/2014	0.943720653	0.6	12.76	0.130894283
9/24/2014	10/1/2014	0.408204802	0.42	20.21	0.15486667
10/1/2014	10/8/2014	0.486585061	0.64	19.3	0.108142765
10/8/2014	10/15/2014	0.303424172	0.62	18.75	0.123450438
10/15/2014	10/22/2014	0	0.61	21.1	0.125458624
10/22/2014	10/29/2014	2.655029407	0.62	19.85	0.119059285
10/29/2014	11/5/2014	0	0.66	18.8	0.117803717
11/5/2014	11/12/2014	0.133664036	0.67	17.96	0.136480199
11/12/2014	11/19/2014	0	0.57	16.05	0.113886184
11/19/2014	11/26/2014	3.187573762	0.65	15.54	0.112667288
11/26/2014	12/3/2014	2.05491026	0.61	15.93	0.146629409
12/3/2014	12/10/2014	1.367137714	0.67	20.19	0.114407367
12/10/2014	12/17/2014	0	0.71	19.61	0.117002016
12/17/2014	12/24/2014	0.003093863	0.66	21.78	0.099784681
12/24/2014	1/1/2015	0	0.684	19.34	0.107020119

Quality Controlled Data for RFG

Flow Data: Estimate from Annual Emissions Inventory			
Date		mmscf	Month
1/1/07 12:00 AM	2/1/07 12:00 AM	44,839	1
2/1/07 12:00 AM	3/1/07 12:00 AM	35,929	2
3/1/07 12:00 AM	4/1/07 12:00 AM	38,030	3
4/1/07 12:00 AM	5/1/07 12:00 AM	33,555	4
5/1/07 12:00 AM	6/1/07 12:00 AM	36,688	5
6/1/07 12:00 AM	7/1/07 12:00 AM	36,630	6
7/1/07 12:00 AM	8/1/07 12:00 AM	33,875	7
8/1/07 12:00 AM	9/1/07 12:00 AM	36,258	8
9/1/07 12:00 AM	10/1/07 12:00 AM	39,434	9
10/1/07 12:00 AM	11/1/07 12:00 AM	43,918	10
11/1/07 12:00 AM	12/1/07 12:00 AM	39,763	11
12/1/07 12:00 AM	1/1/08 12:00 AM	43,428	12

Concentration Data: From Lab Data Spreadsheet					
Sample Date / Time	Molecular Weight	Carbon Content (kg C / kg Fuel)	Month	HHV (Btu/scf)	
1/4/2007	29.52351059	0.795283149	1	1742	
1/10/2007	30.61231989	0.797990482	1	1802	
1/17/2007	28.82090998	0.788834565	1	1691	
1/24/2007	27.91038998	0.7921928	1	1660	
1/31/2007	27.68220955	0.790913368	1	1648	
2/7/2007	30.76443943	0.798338926	2	1681.5	
2/14/2007	31.45689998	0.798709345	2	1681.5	
2/21/2007	28.98716978	0.794668124	2	1715	
2/28/2007	27.63016934	0.790664335	2	1640	
3/8/2007	32.12737986	0.799984313	3	1877	
3/14/2007	29.79775064	0.795427919	3	1761	
3/21/2007	30.54223033	0.79628272	3	1792	
3/28/2007	30.11196016	0.796892	3	1777	
4/4/2007	30.6683601	0.798098757	4	1806	
4/11/2007	24.5279902	0.783431501	4	1489	
4/18/2007	26.75950971	0.787665767	4	1596	
4/25/2007	26.58944003	0.788186965	4	1588	
5/2/2007	26.87163007	0.788846866	5	1604	
5/9/2007	27.79430983	0.792044487	5	1655	
5/16/2007	27.50807012	0.790244463	5	1630	
5/16/2007	27.50807012	0.790244463	5	1630	
5/23/2007	25.79487992	0.786857702	5	1548	
5/30/2007	28.13654005	0.792655032	5	1670	
5/30/2007	28.13654005	0.792655032	5	1670	
Filed data gap	28.65392519	0.794241254	6	1700	
6/13/2007	29.17131034	0.795827476	6	1730	
6/20/2007	28.56686027	0.79374772	6	1692	
6/27/2007	26.73157967	0.790285871	6	1602	
7/4/2007	27.33006027	0.793633822	7	1634	
7/12/2007	26.32925998	0.788221164	7	1573	
Filed data gap	26.53442501	0.789359724	7	1585.5	
7/25/2007	26.73959003	0.790498284	7	1598	
8/1/2007	37.30912008	0.809269691	8	2161	
8/8/2007	27.07385973	0.792271955	8	1620	
8/15/2007	29.48357971	0.797582247	8	1749	
8/22/2007	24.85825983	0.786067489	8	1505	
8/29/2007	27.87036002	0.792037849	8	1653	
9/5/2007	30.83850017	0.79875837	9	1734	
9/5/2007	30.83850017	0.79875837	9	1815	
9/12/2007	28.56689015	0.79458772	9	1696	
9/19/2007	27.25393014	0.791444022	9	1626	
9/27/2007	24.26984009	0.783846947	9	1467	
10/3/2007	25.93501046	0.788163182	10	1550	
10/10/2007	28.66899997	0.795946842	10	1704	
10/17/2007	23.84749006	0.781109877	10	1443	
10/24/2007	25.62676008	0.78639594	10	1538	
10/31/2007	27.73636988	0.795431053	10	1654	
11/9/2007	20.07484013	0.707743126	11	1186	
Filed data gap	29.6811648	0.749441246	11	1695.5	
11/21/2007	39.28748946	0.791139367	11	2205	
Filed data gap	33.04753478	0.789592381	11	1906.5	
12/5/2007	26.80758011	0.788045395	12	1608	
12/12/2007	27.51609997	0.790450318	12	1640	
12/16/2007	24.59585017	0.774922194	12	1470	
12/17/2007	21.08755069	0.772283174	12	1306	
12/18/2007	22.40249036	0.777346627	12	1374	
12/19/2007	20.80533021	0.770059405	12	1289	
12/26/2007	20.37506013	0.770406074	12	1266	

PI Descriptor	TOTAL FG H2001	
PI Limits	scf	
	H-2001	
	HG F2099	
Start	End	H-2001 Monthly
1/1/07 12:00 AM	2/1/07 12:00 AM	44,839,107
2/1/07 12:00 AM	3/1/07 12:00 AM	35,929,001
3/1/07 12:00 AM	4/1/07 12:00 AM	38,030,659
4/1/07 12:00 AM	5/1/07 12:00 AM	33,555,749
5/1/07 12:00 AM	6/1/07 12:00 AM	36,688,206
6/1/07 12:00 AM	7/1/07 12:00 AM	36,630,178
7/1/07 12:00 AM	8/1/07 12:00 AM	33,875,408
8/1/07 12:00 AM	9/1/07 12:00 AM	36,258,775
9/1/07 12:00 AM	10/1/07 12:00 AM	39,434,191
10/1/07 12:00 AM	11/1/07 12:00 AM	43,918,647
11/1/07 12:00 AM	12/1/07 12:00 AM	39,763,165
12/1/07 12:00 AM	1/1/08 12:00 AM	43,428,933

Flow Data: From "HGUfeed-D1317&D501LPS.xls" Monthly tab						Used flow-weighted average of 2010-2014			Volume used @68F	
Start Date	End Date	Month	Days/ Month	Volume used @Op. Cond.		Average MW	Average CC	Average Specific Gravity		
1/1/07 12:01 AM	2/1/07 12:01 AM	1	31	1,087	BBD	52.89	0.82	0.55	47,113,491	scf
2/1/07 12:01 AM	3/1/07 12:01 AM	2	28	907	BBD	52.89	0.82	0.55	35,504,806	scf
3/1/07 12:01 AM	4/1/07 12:01 AM	3	31	880	BBD	52.89	0.82	0.55	38,152,772	scf
4/1/07 12:01 AM	5/1/07 12:01 AM	4	30	733	BBD	52.89	0.82	0.55	30,765,722	scf
5/1/07 12:01 AM	6/1/07 12:01 AM	5	31	832	BBD	52.89	0.82	0.55	36,047,308	scf
6/1/07 12:01 AM	7/1/07 12:01 AM	6	30	887	BBD	52.89	0.82	0.55	37,197,984	scf
7/1/07 12:01 AM	8/1/07 12:01 AM	7	31	682	BBD	52.89	0.82	0.55	29,576,697	scf
8/1/07 12:01 AM	9/1/07 12:01 AM	8	31	803	BBD	52.89	0.82	0.55	34,830,092	scf
9/1/07 12:01 AM	10/1/07 12:01 AM	9	30	994	BBD	52.89	0.82	0.55	41,690,041	scf
10/1/07 12:01 AM	11/1/07 12:01 AM	10	31	1,137	BBD	52.89	0.82	0.55	49,290,147	scf
11/1/07 12:01 AM	12/1/07 12:01 AM	11	30	938	BBD	52.89	0.82	0.55	39,337,281	scf
12/1/07 12:01 AM	1/1/08 12:01 AM	12	31	1,013	BBD	52.89	0.82	0.55	43,903,745	scf

Used for Federal reporting 2010-2014

1/1/2010 0:01	2/1/2010 0:01	1	31	970	BBD	51.49	0.82	0.543		
2/1/2010 0:01	3/1/2010 0:01	2	28	895	BBD	51.49	0.82	0.543		
3/1/2010 0:01	4/1/2010 0:01	3	31	830	BBD	51.9	0.83	0.55		
4/1/2010 0:01	5/1/2010 0:01	4	30	653	BBD	52.32	0.83	0.549		
5/1/2010 0:01	6/1/2010 0:01	5	31	565	BBD	52.33	0.82	0.542		
6/1/2010 0:01	7/1/2010 0:01	6	30	786	BBD	55.19	0.82	0.563		
7/1/2010 0:01	8/1/2010 0:01	7	31	343	BBD	54.51	0.83	0.548		
8/1/2010 0:01	9/1/2010 0:01	8	31	269	BBD	53.5	0.83	0.549		
9/1/2010 0:01	10/1/2010 0:01	9	30	1,004	BBD	52.65	0.82	0.545		
10/1/2010 0:01	11/1/2010 0:01	10	31	989	BBD	53.62	0.82	0.547		
11/1/2010 0:01	12/1/2010 0:01	11	30	952	BBD	52.39	0.82	0.542		
12/1/2010 0:01	1/1/2011 0:01	12	31	762	BBD	52.38	0.82	0.542		
1/1/2011 0:01	2/1/2011 0:01	1	31	744	BBD	54.97	0.83	0.555		
2/1/2011 0:01	3/1/2011 0:01	2	28	909	BBD	52.59	0.82	0.547		
3/1/2011 0:01	4/1/2011 0:01	3	31	936	BBD	54.59	0.82	0.557		
4/1/2011 0:01	5/1/2011 0:01	4	30	842	BBD	52.44	0.82	0.547		
5/1/2011 0:01	6/1/2011 0:01	5	31	741	BBD	55.86	0.83	0.561		
6/1/2011 0:01	7/1/2011 0:01	6	30	919	BBD	53.36	0.82	0.55		
7/1/2011 0:01	8/1/2011 0:01	7	31	564	BBD	58.83	0.83	0.574		
8/1/2011 0:01	9/1/2011 0:01	8	31	638	BBD	55.47	0.82	0.56		
9/1/2011 0:01	10/1/2011 0:01	9	30	675	BBD	52.58	0.82	0.548		
10/1/2011 0:01	11/1/2011 0:01	10	31	684	BBD	50.26	0.82	0.538		
11/1/2011 0:01	12/1/2011 0:01	11	30	729	BBD	58.93	0.83	0.577		
12/1/2011 0:01	1/1/2012 0:01	12	31	885	BBD	37.3	0.83	0.46		
1/1/2012 0:01	2/1/2012 0:01	1	31	783	BBD	53.15	0.82	0.55		
2/1/2012 0:01	3/1/2012 0:01	2	29	903	BBD	51.95	0.82	0.543		
3/1/2012 0:01	4/1/2012 0:01	3	31	888	BBD	52.87	0.82	0.548		
4/1/2012 0:01	5/1/2012 0:01	4	30	763	BBD	51.1	0.82	0.54		
5/1/2012 0:01	6/1/2012 0:01	5	31	350	BBD	54.63	0.82	0.558		
6/1/2012 0:01	7/1/2012 0:01	6	30	755	BBD	52.33	0.82	0.546		
7/1/2012 0:01	8/1/2012 0:01	7	31	751	BBD	52.1	0.82	0.544		
8/1/2012 0:01	9/1/2012 0:01	8	31	769	BBD	50.17	0.82	0.532		
9/1/2012 0:01	10/1/2012 0:01	9	30	557	BBD	52.7	0.82	0.547		
10/1/2012 0:01	11/1/2012 0:01	10	31	743	BBD	52.01	0.82	0.543		
11/1/2012 0:01	12/1/2012 0:01	11	30	836	BBD	51.42	0.82	0.54		
12/1/2012 0:01	1/1/2013 0:01	12	31	792	BBD	51.92	0.82	0.543		
1/1/2013 0:01	2/1/2013 0:01	1	31	811	BBD	52.75	0.8235	0.548		
2/1/2013 0:01	3/1/2013 0:01	2	28	686	BBD	51.38	0.8225	0.54		
3/1/2013 0:01	4/1/2013 0:01	3	31	678	BBD	51.66	0.823	0.542		
4/1/2013 0:01	5/1/2013 0:01	4	30	524	BBD	51.49	0.8228	0.541		
5/1/2013 0:01	6/1/2013 0:01	5	31	13	BBD	52.19	0.8234	0.54		
6/1/2013 0:01	7/1/2013 0:01	6	30	10	BBD	52.19	0.8234	0.54		
7/1/2013 0:01	8/1/2013 0:01	7	31	29	BBD	52.19	0.8234	0.54		

8/1/2013 0:01	9/1/2013 0:01	8	31	24	BBD	52.19	0.8234	0.54
9/1/2013 0:01	10/1/2013 0:01	9	30	387	BBD	52.9	0.824	0.548
10/1/2013 0:01	11/1/2013 0:01	10	31	705	BBD	53.72	0.8243	0.553
11/1/2013 0:01	12/1/2013 0:01	11	30	935	BBD	53.87	0.8245	0.553
12/1/2013 0:01	1/1/2014 0:01	12	31	732	BBD	53.63	0.8244	0.552
1/1/2014 0:01	2/1/2014 0:01	1	31	846	BBD	54.99	0.8253	0.56
2/1/2014 0:01	3/1/2014 0:01	2	28	919	BBD	53.77	0.8245	0.553
3/1/2014 0:01	4/1/2014 0:01	3	31	768	BBD	54.56	0.8245	0.558
4/1/2014 0:01	5/1/2014 0:01	4	30	998	BBD	53.93	0.825	0.555
5/1/2014 0:01	6/1/2014 0:01	5	31	963	BBD	53.9	0.8243	0.555
6/1/2014 0:01	7/1/2014 0:01	6	30	851	BBD	53.2	0.8237	0.551
7/1/2014 0:01	8/1/2014 0:01	7	31	790	BBD	54.26	0.8245	0.556
8/1/2014 0:01	9/1/2014 0:01	8	31	955	BBD	55.09	0.8252	0.56
9/1/2014 0:01	10/1/2014 0:01	9	30	832	BBD	52.68	0.8236	0.548
10/1/2014 0:01	11/1/2014 0:01	10	31	671	BBD	53.48	0.8242	0.551
11/1/2014 0:01	12/1/2014 0:01	11	30	731	BBD	54.09	0.824	0.556
12/1/2014 0:01	1/1/2015 0:01	12	31	702	BBD	53.86	0.8245	0.554

Sample Date / Time	Molecular Weight (g/mol)	Carbon Content (g C/g fuel)	Month
1/1/2007	8.213180192	0.64791687	1
1/1/2007	8.41801743	0.659610035	1
1/1/2007	8.624894567	0.664141832	1
1/24/2007	5.935990277	0.564487115	1
2/1/2007	9.008704063	0.667910724	2
2/1/2007	13.99146543	0.745074214	2
2/14/2007	8.331021512	0.665029512	2
2/14/2007	9.312624696	0.674485473	2
2/28/2007	13.27338598	0.733902673	2
3/1/2007	9.20402361	0.690974767	3
3/14/2007	2.511346901	0.624104417	3
3/1/2007	7.531186417	0.673827351	3
3/18/2007	6.021065224	0.633447028	3
4/1/2007	7.908719315	0.640818906	4
4/11/2007	6.905173643	0.601758316	4
4/18/2007	7.687327718	0.678065113	4
4/25/2007	9.220576869	0.674706156	4
5/2/2007	9.038512415	0.66205004	5
5/9/2007	9.768845409	0.681248279	5
5/16/2007	9.72767279	0.671505954	5
5/23/2007	7.815641798	0.639001346	5
5/30/2007	8.266987664	0.675701816	5
6/6/2007	10.8603703	0.705105093	6
6/13/2007	7.075435446	0.61642487	6
6/20/2007	9.674241583	0.677816649	6
6/27/2007	7.35906933	0.615055944	6
7/4/2007	7.169196176	0.6138132382	7
7/11/2007	6.305736198	0.588516047	7
7/18/2007	9.315258927	0.625515732	7
7/25/2007	9.642065716	0.643311492	7
8/1/2007	7.576867244	0.637450411	8
8/8/2007	8.656672444	0.665162451	8
8/15/2007	7.2453709	0.673261399	8
8/22/2007	12.73356067	0.734800491	8
8/29/2007	10.99968162	0.701150875	8
9/5/2007	12.88124316	0.730972939	9
9/12/2007	12.24736599	0.724676276	9
9/19/2007	11.211771964	0.713031916	9
9/26/2007	12.40100481	0.733447016	9
10/3/2007	13.74091777	0.740253053	10
10/10/2007	13.02186681	0.73040476	10
10/17/2007	8.928450022	0.671214013	10
10/24/2007	10.33306487	0.703089329	10
10/31/2007	14.3302825	0.742343613	10
Missed sample	10.18116025	0.65698367	11
Missed sample	10.18116025	0.65698367	11
Missed sample	10.18116025	0.65698367	11
Missed sample	10.18116025	0.65698367	11
12/16/2007	10.18116025	0.65698367	12
12/17/2007	6.032037994	0.571471709	12
12/18/2007	5.38214911	0.510862548	12
12/19/2007	7.532862714	0.370463837	12
12/26/2007	6.251669024	0.570252723	12

HG.72001

Flow Data: from spreadsheet HGUfeed_013176D5011PS_18 Monthly Lab

Start Date	End Date	Month	Days/Month	Volume used @ Operating Conditions mm3/d	Pressure@Op Cond (lb. #1 Tag -HG.720217)	Temp @Op Cond (Deg. F. #1 Tag)	Avg MW (kg/gmol)	Volume used @60F mm3/d	Volume used @60F @60F scf/mo	Volume used @60F @60F scf/mo
1/1/07 12:01 AM	2/1/07 12:01 AM	1	31	0.931694	397.6	116.6	8.040361326	0.5588	18562696.03	18448925
2/1/07 12:01 AM	3/1/07 12:01 AM	2	28	0.931706	401.0	122.8	11.3521244	0.5202	14565132.33	14789720
3/1/07 12:01 AM	4/1/07 12:01 AM	3	31	0.9081901	399.8	126.3	8.161009719	0.6010	18631753.37	18919047
4/1/07 12:01 AM	5/1/07 12:01 AM	4	30	0.9124324	400.5	126.6	7.9320553291	0.6195	18544076.97	18470633
5/1/07 12:01 AM	6/1/07 12:01 AM	5	31	0.9157272	402.4	129.8	9.032361101	0.5883	18238359.03	18519546
6/1/07 12:01 AM	7/1/07 12:01 AM	6	30	0.9187605	401.7	129.8	8.748196122	0.5531	17794433.08	18054815
7/1/07 12:01 AM	8/1/07 12:01 AM	7	31	0.9006318	379.5	128.0	7.485799494	0.6431	20823221.37	21195585
8/1/07 12:01 AM	9/1/07 12:01 AM	8	31	1.0715459	392.9	134.6	9.440430876	0.6491	20133127.05	20433615
9/1/07 12:01 AM	10/1/07 12:01 AM	9	30	1.1071927	400.6	134.7	12.1868184	0.5580	17939910.4	18716538
10/1/07 12:01 AM	11/1/07 12:01 AM	10	31	1.1378212	405.5	135.5	12.07092519	0.6184	19171143.57	19466754
11/1/07 12:01 AM	12/1/07 12:01 AM	11	30	0.6681241	371.0	133.4	10.18116025	0.3577	10715558.04	10800787
12/1/07 12:01 AM	1/1/08 12:01 AM	12	31	0.8772716	371.8	133.3	7.939496556	0.5513	17089910.85	17354430

HG.72010

Flow Data: from spreadsheet HGUfeed_013176D5011PS_18 Monthly Lab

Start Date	End Date	Month	Days/Month	Volume used @ Operating Conditions mm3/d	Avg MW (kg/gmol)	Temp @Op Cond (Deg. F. #1 Tag)	Avg MW (kg/gmol)	Volume used @60F mm3/d	Volume used @60F scf/mo	Volume used @60F scf/mo
1/1/07 12:01 AM	2/1/07 12:01 AM	1	31	0.907398	8.040361326	116.6	11.20001	0.036129026	1120001	1132721
2/1/07 12:01 AM	3/1/07 12:01 AM	2	28	0.090559	11.3521244	122.8	0.002538523	0.002538523	2110709	214333
3/1/07 12:01 AM	4/1/07 12:01 AM	3	31	0.011186	8.161009719	126.3	0.012874632	0.012874632	399115	405459
4/1/07 12:01 AM	5/1/07 12:01 AM	4	30	0.008985	7.9320553291	126.6	0.010126746	0.010126746	303802	308487
5/1/07 12:01 AM	6/1/07 12:01 AM	5	31	0.0091667	9.032361101	129.8	0.009695716	0.009695716	300552	305186
6/1/07 12:01 AM	7/1/07 12:01 AM	6	30	0.0107660	8.748196122	129.8	0.011659661	0.011659661	344890	344890
7/1/07 12:01 AM	8/1/07 12:01 AM	7	31	0.0187077	7.485799494	128.0	0.024602345	0.024602345	761673	774433
8/1/07 12:01 AM	9/1/07 12:01 AM	8	31	0.0115564	9.440430876	134.6	0.011277025	0.011277025	349548	354978
9/1/07 12:01 AM	10/1/07 12:01 AM	9	30	0.0050682	12.1868184	134.7	0.015901081	0.015901081	477032	484388
10/1/07 12:01 AM	11/1/07 12:01 AM	10	31	0.0105057	12.07092519	135.5	0.008274604	0.008274604	254963	258894
11/1/07 12:01 AM	12/1/07 12:01 AM	11	30	0.0141894	10.18116025	133.4	0.013170782	0.013170782	395123	401216
12/1/07 12:01 AM	1/1/08 12:01 AM	12	31	0.0185777	7.939496556	133.3	0.027201561	0.027201561	843248	846251

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
1/1/07	11.99981594	11.18727207	0	8.004698753
1/2/07	12.01163673	11.4804163	0	9.628668785
1/3/07	9.459701538	11.63687706	0	11.26065826
1/4/07	9.638295174	12.21869564	0	12.1825161
1/5/07	9.458052635	11.42035294	4.597384453	6.098078728
1/6/07	9.770040512	11.91370106	6.146682262	9.369155884
1/7/07	7.986279964	13.04746532	6.916494846	6.808529377
1/8/07	8.125034332	14.00417709	6.789050102	8.736497879
1/9/07	13.52750111	20.40182495	5.826349735	6.292536736
1/10/07	15.13051605	21.77253151	5.651132584	6.661672592
1/11/07	14.56024837	19.28458786	5.426415443	7.277321815
1/12/07	15.0392952	22.81974411	5.605987549	6.041367531
1/13/07	14.95269775	21.72629738	5.921086788	6.747194767
1/14/07	14.958745	19.98633003	4.154430866	5.829425812
1/15/07	14.68537521	20.32881737	4.421659946	6.640862942
1/16/07	15.12858868	19.90580559	4.295479774	6.327531815
1/17/07	15.04405594	21.20792961	3.503550529	6.572935581
1/18/07	14.81405067	19.09639931	3.397740126	5.66260767
1/19/07	14.44717407	18.64109612	3.458646536	5.920975208
1/20/07	11.7290926	15.63287449	5.320800304	6.100729942
1/21/07	11.36126709	15.35360336	5.970710278	6.706862926
1/22/07	12.08806038	19.21321869	0	0
1/23/07	12.00987053	21.96600151	0	0
1/24/07	12.0142107	18.38077354	0	0
1/25/07	12.00004101	17.7520237	0	0
1/26/07	11.02593994	16.4300518	7.0283885	7.117086887
1/27/07	12.20685387	22.20950317	8.568139076	5.14332819
1/28/07	15.50724888	22.01023483	7.435834885	9.072782516
1/29/07	15.64780903	22.28035545	5.272764683	6.147951603
1/30/07	16.99613953	22.84443092	4.839696884	6.861838818
1/31/07	15.39621639	21.88214493	5.926864624	6.48211956
2/1/07	14.04343796	24.94528389	7.315992832	4.48189497
2/2/07	11.73351192	18.30246735	6.41804266	6.248552799
2/3/07	13.95241261	21.90949631	5.647951603	4.88688612
2/4/07	14.5181818	22.43419647	5.071265221	5.6952281
2/5/07	14.12080479	21.71691513	5.575731754	5.089962959
2/6/07	13.58552456	18.29348946	5.481163025	7.425075531
2/7/07	15.29464817	22.77324104	6.369838238	6.537967682
2/8/07	15.23076439	23.66146469	5.602715015	5.361057758
2/9/07	17.58276367	25.42576408	4.553992271	5.872336388
2/10/07	16.48657417	22.53325653	4.352298737	6.285880089
2/11/07	14.88991928	22.59578705	5.550045013	5.634945393

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
2/12/07	16.17448044	21.42357063	4.062177658	6.417045593
2/13/07	16.37530327	22.07415962	3.01639533	5.172631264
2/14/07	15.03913403	24.59922409	3.75399828	2.311204672
2/15/07	14.92690277	24.83904648	3.863630772	1.704153538
2/16/07	16.18800354	25.17266273	4.730443001	4.640034199
2/17/07	15.21960545	22.01968193	3.961952925	5.399526596
2/18/07	14.30796146	19.70632362	4.55717659	5.762077808
2/19/07	14.20065784	22.56889343	5.189185143	4.655303478
2/20/07	14.3118	25.82014084	5.03836441	6.12101078
2/21/07	15.0664444	25.45023155	5.067507744	3.859815598
2/22/07	16.26829529	25.4466629	3.515670776	4.586854458
2/23/07	18.11878014	24.82831192	3.745244026	5.463626862
2/24/07	1.005645871	26.1244545	0	5.401181698
2/25/07	0	27.76973724	0	5.030189991
2/26/07	0	27.36546707	0	4.987334728
2/27/07	0	28.78733635	0	4.896855354
2/28/07	0	Over Range	0	4.276679516
3/1/07	0	29.10602379	0	4.322186947
3/2/07	0	26.02372551	0	9.437957764
3/3/07	12.03008461	25.93837738	4.251533508	9.070435524
3/4/07	15.25501919	21.4166851	4.709223747	6.413552761
3/5/07	12.29469967	15.5992918	7.139605045	9.27388382
3/6/07	11.98026943	16.75750542	7.277008057	8.648262024
3/7/07	13.81997299	24.16382027	7.701429367	5.880495548
3/8/07	17.30340767	25.6360054	5.42078352	6.923575401
3/9/07	18.14844131	21.9826355	5.045739651	9.455641747
3/10/07	18.70486069	22.59061241	4.355926514	8.415513039
3/11/07	17.21243858	22.55140877	5.112185955	7.618770599
3/12/07	17.30265427	23.51805878	5.024180412	7.398678303
3/13/07	13.7620306	22.96481705	5.954038143	4.173724651
3/14/07	15.28570175	23.90690613	6.196932316	5.363933563
3/15/07	15.53959751	21.82661247	5.329663277	6.061112881
3/16/07	15.93239021	22.02521324	6.092002869	7.428596497
3/17/07	15.05742359	20.79639435	6.286370277	7.506569862
3/18/07	15.69313717	20.52063942	4.77500248	7.34853363
3/19/07	15.84500885	21.89881706	5.574841976	6.632161617
3/20/07	15.99074078	24.06187057	0.002709223	0
3/21/07	15.97777462	25.28418541	0	0
3/22/07	16.28247833	23.38832092	0	3.714865446
3/23/07	15.81385517	23.6117897	6.267066479	6.516074181
3/24/07	18.08564186	24.04493141	3.685737371	5.676080227
3/25/07	18.47794533	24.98258972	3.686141729	5.068595886

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
3/26/07	16.76146317	24.11055946	2.497856617	2.260170698
3/27/07	16.66188622	23.19748497	5.329294682	5.564889908
3/28/07	15.08459854	25.70941353	6.560207844	4.045024872
3/29/07	15.88993931	23.16565895	5.450541496	5.975854397
3/30/07	16.00639915	23.42991638	5.417321682	5.754541397
3/31/07	15.33183098	21.82572746	5.758977413	6.83374548
4/1/07	11.14586926	15.35381603	5.575981617	6.322015285
4/2/07	11.23300934	15.02793217	3.87145257	4.30603981
4/3/07	11.04863453	15.06536484	5.09923172	5.619987488
4/4/07	10.97323704	15.60644531	5.874352932	5.997795105
4/5/07	12.92007828	15.28673458	4.491892338	6.853358746
4/6/07	11.97969723	14.06332016	4.990045071	7.087418556
4/7/07	8.504214287	10.33279991	4.897765636	6.012238026
4/8/07	7.999352932	10.47901821	7.148459911	8.123701096
4/9/07	7.98868084	9.548582077	6.98492384	8.453179359
4/10/07	7.854019165	8.938000679	7.138010502	7.743049145
4/11/07	8.531430244	9.73987484	6.005146027	7.051448822
4/12/07	8.315990448	9.072735786	5.956609726	6.88497591
4/13/07	9.014451981	11.29681301	6.103075981	6.558142662
4/14/07	8.30506134	11.26496506	5.894164562	5.799452782
4/15/07	9.13988781	11.13883591	5.055365562	5.669728279
4/16/07	9.075941086	9.405045509	4.494279385	9.604485512
4/17/07	8.705051422	9.979751587	5.326107025	6.74155426
4/18/07	9.053152084	9.420204163	2.640505075	5.556389809
4/19/07	8.932972908	9.550512314	2.743613958	4.869814873
4/20/07	11.87882996	17.50967979	4.058599472	6.462042809
4/21/07	12.00053024	18.68650627	5.030976295	6.35682869
4/22/07	12.76662445	19.56669044	0	0
4/23/07	12.73281002	19.35446167	0	0
4/24/07	12.77231979	19.05118752	0	0
4/25/07	15.06507301	15.99206734	0	7.014989853
4/26/07	12.97306442	18.60531425	0	10.63203239
4/27/07	16.38203049	11.04074764	0	9.588513374
4/28/07	15.19382286	10.30937576	0	9.828977585
4/29/07	14.4971962	12.27612019	0	10.0181284
4/30/07	14.6809063	14.80912781	0.83552897	3.72495985
5/1/07	15.00569534	16.21965599	0	0.032534663
5/2/07	14.94501686	16.81691933	0	0.745062709
5/3/07	15.62658405	17.07643127	4.467401028	9.073705673
5/4/07	15.05857754	18.73958588	4.463438511	6.984968185
5/5/07	15.0568676	18.73632622	3.719777584	5.852748871
5/6/07	15.00105476	18.04345894	3.343290091	5.732489586

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
5/7/07	14.71260738	16.38900566	4.20673275	7.573689461
5/8/07	14.69261646	18.04714966	3.544165373	5.827244759
5/9/07	14.54669762	18.39586258	3.937471151	5.966545105
5/10/07	14.61457062	18.25286102	3.825407743	5.776031017
5/11/07	11.47763157	12.90638447	4.797872543	6.823473454
5/12/07	12.40697098	13.75854683	4.064672947	6.879115582
5/13/07	11.10968399	14.51312923	5.026640892	7.430231094
5/14/07	11.14340687	13.53662014	6.054395676	6.942280769
5/15/07	10.93172932	12.80102539	6.109532356	7.801336288
5/16/07	12.65971565	16.27405357	5.706655979	6.188195705
5/17/07	13.69559002	16.19788742	3.791060686	7.99104166
5/18/07	14.30916595	20.88972855	6.460800171	6.409002304
5/19/07	17.08202553	20.79213905	4.941107273	7.845488548
5/20/07	14.50206757	17.86365509	4.208731174	6.07121563
5/21/07	12.88963985	15.86611176	6.248259544	7.808581829
5/22/07	11.72653675	14.1838665	6.172232151	7.256106853
5/23/07	9.999014854	13.70073795	7.325968266	6.91596508
5/24/07	10.28438568	15.74602509	7.173223019	5.472542763
5/25/07	10.76394367	16.02708817	6.000836372	4.72559309
5/26/07	8.737130165	11.93365288	6.765953541	5.965211391
5/27/07	8.900113106	10.30824471	5.009133339	6.917059422
5/28/07	6.887954712	8.548120499	6.484426975	6.084788799
5/29/07	7.068054199	8.49163723	6.588202	6.636262894
5/30/07	7.981148243	9.923633575	6.13062048	7.34737587
5/31/07	7.940601826	11.22868347	6.278718948	7.626534462
6/1/07	7.957629681	9.840026855	6.037652969	7.883464336
6/2/07	6.958801746	9.059060097	7.132415771	7.021677971
6/3/07	6.910207272	9.423313141	6.492711067	6.848760605
6/4/07	14.3083353	17.43124008	5.048511505	7.370213985
6/5/07	3.814177513	27.36014557	0.00035495	8.06385231
6/6/07	13.77782154	19.61632538	0	0
6/7/07	13.3719902	17.81515121	0	0
6/8/07	12.55531216	17.90621376	0	0
6/9/07	12.70014381	16.14490128	4.004027367	10.56729794
6/10/07	11.7853384	16.99945068	7.113776207	6.396418571
6/11/07	10.69690895	19.1731205	9.069142342	5.49457407
6/12/07	12.2021637	18.1107502	7.807006359	7.825881958
6/13/07	14.1770277	17.08310699	6.540243626	8.937955856
6/14/07	13.76347828	17.04926872	6.947965622	9.089038849
6/15/07	13.06486988	17.94476509	6.914378643	7.714591026
6/16/07	13.11828518	16.89577293	6.71404314	8.375150681
6/17/07	13.29876232	18.32229042	6.126654148	6.839442253

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
6/18/07	13.9914341	19.35850143	6.399680138	6.952116489
6/19/07	14.55765533	20.24646187	5.640696049	6.29209137
6/20/07	11.99159527	16.42155266	5.97688961	6.273931026
6/21/07	14.16402531	18.26919746	4.3390522	7.289298058
6/22/07	14.81707764	19.98754883	4.908489227	5.961268902
6/23/07	14.01144409	21.63088226	5.126636982	5.911158085
6/24/07	14.70821285	18.48247337	3.221003532	5.79523325
6/25/07	14.71438217	19.48343849	4.060398102	6.157475471
6/26/07	14.88781738	19.87398911	3.79165554	5.605159283
6/27/07	14.83192825	21.8820076	5.0923419	6.356583595
6/28/07	15.75746918	21.94384575	5.313081741	5.804136276
6/29/07	16.1871357	22.45788193	4.685396671	5.364213467
6/30/07	15.72712326	21.52519035	4.051764488	5.151076794
7/1/07	8.008119583	12.67586327	4.693374157	4.303870201
7/2/07	10.99987125	15.77069473	4.990494728	6.059506893
7/3/07	10.73185158	15.8936739	5.462749958	4.791680813
7/4/07	0	18.23707581	0	0
7/5/07	0.537614048	17.69023514	0	0
7/6/07	0	17.62046051	0	0
7/7/07	0	15.33850956	0	0
7/8/07	0	14.06910229	0	0
7/9/07	0	22.84960365	0	0
7/10/07	9.349473	14.72697067	0	5.417559624
7/11/07	9.315759659	17.69964027	0	0.439103335
7/12/07	9.356398582	11.49373245	0	1.549428225
7/13/07	9.322634697	10.08865356	0	1.804565787
7/14/07	9.976365089	13.16380119	0	1.329270005
7/15/07	11.42510891	14.18681526	0	1.733579516
7/16/07	10.89295101	12.68823624	0	1.405658126
7/17/07	14.24921417	0	0	1.525266647
7/18/07	13.11857605	0	0	0.992631733
7/19/07	12.94155693	3.48E-05	0	1.111679435
7/20/07	13.2506485	0	0.00274365	0.904931247
7/21/07	10.91692543	0	13.25984669	2.284010887
7/22/07	13.01363945	0	12.05841351	1.427700162
7/23/07	13.31876755	0	12.44275379	1.568208337
7/24/07	11.8770113	0	9.200263023	0.35178864
7/25/07	11.93394184	0	10.6356945	1.045214891
7/26/07	11.97949219	0	12.20306778	1.884866714
7/27/07	11.59513378	0	10.55018997	0.602523386
7/28/07	11.5664711	0	11.07906818	1.873046756
7/29/07	11.28813744	0	11.05057907	2.118374348

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
7/30/07	13.76129055	0	10.85826778	1.504350543
7/31/07	6.080259323	0	5.188832283	1.624495029
8/1/07	10.49461269	13.40372944	7.485503674	8.288216591
8/2/07	11.53610134	14.20658493	6.575734138	7.064170361
8/3/07	10.30885315	11.67427349	7.509805679	9.418519974
8/4/07	10.03481483	11.78034496	7.806310654	8.19274807
8/5/07	9.855834007	10.33037853	7.605949879	9.187847137
8/6/07	9.855243683	10.29522038	7.419334412	8.805906296
8/7/07	9.987329483	12.18682766	8.94918251	10.49616146
8/8/07	10.44874763	11.49545574	8.946520805	12.2797327
8/9/07	10.45083809	12.40758991	9.516314507	13.27416801
8/10/07	10.42619228	14.08691692	8.969257355	9.577319145
8/11/07	10.05908871	10.04596806	6.300105095	9.034098625
8/12/07	10.01859188	10.87855148	5.400732994	7.613677979
8/13/07	9.380001068	12.43461418	6.330511093	6.500908852
8/14/07	10.93173027	14.81093788	5.990342617	6.589678764
8/15/07	10.64634418	12.51715946	4.020493507	4.616265774
8/16/07	9.874617577	8.821008682	4.2308321	7.797357082
8/17/07	7.982716084	8.971427917	4.98250246	5.283012867
8/18/07	8.057979584	10.68252182	5.720823765	5.01225996
8/19/07	7.850943565	9.100117683	6.026642799	6.321087837
8/20/07	7.786529064	10.24359989	4.320309162	6.684357643
8/21/07	9.180030823	10.40451813	4.206366062	4.517939568
8/22/07	9.140675545	10.26285267	4.449898243	4.92341423
8/23/07	9.870721817	11.57778645	3.52749896	4.81486702
8/24/07	9.8578825	10.23043823	3.023521185	6.116299629
8/25/07	9.978507996	10.59902668	3.009053707	5.262611866
8/26/07	9.264691353	10.57978344	4.558803082	4.462170124
8/27/07	12.5531826	18.0502491	5.023206711	3.791938066
8/28/07	12.47650337	15.37030029	4.067412853	4.613892555
8/29/07	12.57160091	14.45482445	3.174687862	4.231476307
8/30/07	12.0747242	14.68006897	3.238720179	5.127124786
8/31/07	11.95128632	13.92493725	3.813422441	4.32306242
9/1/07	12.29605389	13.43893337	2.981315136	5.50341177
9/2/07	11.91637897	15.88859177	4.625080109	4.179149151
9/3/07	12.19774532	14.51245689	4.911782742	5.199970245
9/4/07	10.99573517	13.33416462	4.874068737	5.182043076
9/5/07	11.32523537	12.9940443	3.642401218	4.259649754
9/6/07	11.72396469	12.78138351	0	1.418313622
9/7/07	10.95470047	12.64846516	5.860510349	6.961406231
9/8/07	11.10898113	13.22767353	5.065596581	5.807628632
9/9/07	10.97128487	12.72859955	4.639437675	5.604139328

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
9/10/07	9.991055489	15.31908989	0	1.403145194
9/11/07	12.01609707	14.84637928	0	1.391644001
9/12/07	13.54618359	14.52162552	4.430449009	6.303593159
9/13/07	0.760277092	6.760100365	0	7.358189106
9/14/07	0	6.40289259	0	5.771822929
9/15/07	11.22468376	11.29236698	0	1.408745885
9/16/07	13.79920101	15.28833294	0	1.385989904
9/17/07	15.25887203	15.74569893	0	1.391644001
9/18/07	15.85462666	15.46719646	4.521669388	5.986346245
9/19/07	13.97170925	14.07504654	5.980204105	5.511334896
9/20/07	12.55818748	13.18701744	6.143906593	4.114759445
9/21/07	12.38361359	13.35112953	6.398608208	4.189406395
9/22/07	12.4386158	13.6762352	6.427660942	4.313196182
9/23/07	14.06695747	15.00521755	5.829073906	4.319101334
9/24/07	12.50480843	14.72184277	6.238075256	5.166203499
9/25/07	14.55254364	15.20097923	4.966206074	4.988818169
9/26/07	14.35401058	14.99409199	4.986733913	4.962627888
9/27/07	12.85042858	13.5775938	3.700876951	3.034031391
9/28/07	15.60264111	16.68783379	5.763233185	4.260044575
9/29/07	15.93693352	19.84302139	5.731420994	2.83710146
9/30/07	15.96244717	21.29705238	6.450183868	2.973161936
10/1/07	16.46482277	22.82999039	6.419873714	2.177020788
10/2/07	18.76474762	20.06455421	2.995430231	3.888658285
10/3/07	15.45882225	19.43064499	6.243124485	3.559037924
10/4/07	16.15911293	19.20767212	4.941299438	3.053935528
10/5/07	16.48430252	20.76775932	4.567313194	1.967210889
10/6/07	17.75163841	18.46759415	0	3.969454765
10/7/07	17.89322853	19.23971176	0.00457215	4.191149235
10/8/07	17.96801567	19.12895203	0	4.631257057
10/9/07	17.93198967	18.29634857	0	5.584510326
10/10/07	19.24356461	15.71320248	0	6.683553696
10/11/07	19.63728714	16.30343628	0	6.760500431
10/12/07	20.19244003	18.94550896	0	7.27270937
10/13/07	17.35083199	20.00900459	3.591017246	4.282531738
10/14/07	16.86667633	20.21401024	3.58429718	2.32864356
10/15/07	15.47527695	16.39535522	3.268850088	4.546107769
10/16/07	9.12769413	10.07016182	4.072313786	3.814860821
10/17/07	9.610467911	10.4164238	3.629897118	5.289000511
10/18/07	9.714387894	9.50832653	4.004272461	4.320067883
10/19/07	9.796755791	9.826052666	4.032264233	5.317152023
10/20/07	9.6632967	10.36133194	4.523177147	4.692807198
10/21/07	11.45109272	13.45774746	4.033450127	4.533085823

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
10/22/07	11.40920544	13.34093952	4.031885147	2.512885332
10/23/07	11.40194035	15.19275951	5.026863098	4.140816689
10/24/07	10.10080528	9.374121666	5.521119595	5.593083382
10/25/07	8.953178406	10.3393755	6.060285091	6.342760563
10/26/07	8.859164238	10.21697044	7.593994141	5.156267643
10/27/07	11.08159065	14.06469917	7.516561508	8.867950439
10/28/07	14.48594952	20.9152813	7.564368725	5.146129608
10/29/07	16.4968338	19.04314613	6.96499157	7.268913746
10/30/07	15.37543297	19.75107956	6.957309723	4.409613132
10/31/07	15.33481407	19.87295151	6.875350952	4.474514008
11/1/07	14.72586441	15.83006573	0.000970513	1.355687261
11/2/07	15.60061741	19.65097809	4.690081596	7.001959324
11/3/07	16.06733131	20.35799026	7.177561283	5.088209629
11/4/07	16.91506004	21.93033981	5.803346634	3.205338717
11/5/07	0	0.001500326	0	1.363476038
11/6/07	0	0	0	1.387227654
11/7/07	0	0	0	1.346476674
11/8/07	0	0	0	1.301309228
11/9/07	0	0	0	1.342280507
11/10/07	17.38573456	0	0	1.837973595
11/11/07	8.186590195	0	0.000669233	1.839715838
11/12/07	8.134378433	0	0	1.839655757
11/13/07	15.11363888	0	7.487477779	1.84035635
11/14/07	16.15853882	0	6.54542923	1.826060295
11/15/07	13.94189548	0	7.046861649	1.84087646
11/16/07	12.55049229	0.303559124	11.22324085	1.72102356
11/17/07	14.63068104	0	8.58190155	1.390910029
11/18/07	15.07802391	0	8.339945793	1.351698399
11/19/07	15.68447685	0	8.038295746	1.331705451
11/20/07	12.93652248	0.001507023	9.188764572	1.346476674
11/21/07	0	0.02482694	0	1.25596571
11/22/07	1.576713681	0	0	1.479595184
11/23/07	0	17.49359131	0	1.344080806
11/24/07	0	20.28668213	0	12.66073036
11/25/07	0	19.43336296	0	8.623094559
11/26/07	0	19.80994225	0	9.197468758
11/27/07	0	19.8909111	0	8.194719315
11/28/07	0	18.61702728	0	11.69956207
11/29/07	0	15.9445219	0	7.075362682
11/30/07	0	17.55960464	0	9.419748306
12/1/07	0	17.94527435	0	9.305680275
12/2/07	0	17.93170547	0	8.200642586

Quality Controlled Data for SRU

Amine Acid Offgas to SRP	Sour Water Stripper Offgas to SRP
MSCF	MSCF
236,894	81,745

Flow Data: From Fuel Use Spreadsheet on SRU tab:

	ATU gas total to BR&H137	AMINE ACID GAS TO E-1	SWS gas to BR1371	SRU3 SWS SCRUBBER A.
	MSCF/HR	MSCFH	MSCF/HR	MSCF/HR
Date	SR:F2705	SR:F2805	SR:F2707	SR:F2807
12/3/07	0	18.01717186	0	5.628833771
12/4/07	0	19.09235954	0	6.989710331
12/5/07	0	18.29505539	0	6.985736847
12/6/07	0	19.47597122	0	7.927313805
12/7/07	0.380138546	19.0221405	0	8.293302536
12/8/07	0	21.71778488	0	6.653065681
12/9/07	0.537614048	20.62057686	0	8.072755814
12/10/07	4.220500946	11.34728813	0	9.525536537
12/11/07	12.99679661	0	6.281018734	1.302801967
12/12/07	0	20.80906677	0	6.823795319
12/13/07	0	24.13521194	0	6.046432018
12/14/07	0	23.06528473	0	5.113883495
12/15/07	0	24.38533974	0	4.750385284
12/16/07	1.005645871	25.38517952	0	4.610323906
12/17/07	11.10213661	16.3628273	0	5.469594002
12/18/07	8.275101662	19.84477997	0	1.348757029
12/19/07	12.99532127	19.79713058	0	1.385041118
12/20/07	11.31579208	19.87343216	0	1.382911205
12/21/07	12.04019928	21.29824066	0	1.372737646
12/22/07	13.99943066	21.2607193	0	12.15272236
12/23/07	15.29500198	22.49681664	4.905201912	6.296941757
12/24/07	14.85671616	20.1562233	4.013660908	6.262972832
12/25/07	15.09460831	21.41086388	3.307621479	5.723528385
12/26/07	13.03433704	19.47409058	4.898323536	5.858115196
12/27/07	16.95774651	24.20305443	4.148370743	6.513055325
12/28/07	16.90931511	22.51688194	4.253726006	7.427391529
12/29/07	17.06981659	24.98357773	4.632810593	6.142713547
12/30/07	15.58249283	23.88499641	5.343811989	5.716396332
12/31/07	15.19652653	23.98210716	3.856148481	5.550398827

Emission Unit ID	Process ID No. (Fuel ID No.)	Fuel Type	Annual Process Thruput	Process Thruput Units
FH101A	1	Refinery Fuel Oil	4440.96	E3GAL
FH101B	1	Refinery Fuel Oil	5147.711	E3GAL
FH102A	1	Refinery Fuel Oil	416.8881	E3GAL
FH175	1	Refinery Fuel Oil	2564.639	E3GAL
FH501	1	Refinery Fuel Oil	0	E3GAL
FH502	1	Refinery Fuel Oil	0	E3GAL
FH503	1	Refinery Fuel Oil	0	E3GAL
FH504	1	Refinery Fuel Oil	0	E3GAL
SG1102	1	Refinery Fuel Oil	1064.854	E3GAL
SG1103	1	Refinery Fuel Oil	495.8802	E3GAL
CC2301	2	Diesel	1326.467	E3GAL
FH101A	5	Refinery Fuel Gas	292.6918	E6FT3S
FH101B	5	Refinery Fuel Gas	261.2749	E6FT3S
FH102A	5	Refinery Fuel Gas	54.73002	E6FT3S
FH102B	5	Refinery Fuel Gas	15.74637	E6FT3S
FH175	5	Refinery Fuel Gas	159.8963	E6FT3S
FH401	5	Refinery Fuel Gas	113.8351	E6FT3S
FH402	5	Refinery Fuel Gas	33.67565	E6FT3S
FH501	5	Refinery Fuel Gas	454.489	E6FT3S
FH502	5	Refinery Fuel Gas	352.1924	E6FT3S
FH503	5	Refinery Fuel Gas	162.5785	E6FT3S
FH504	5	Refinery Fuel Gas	79.27983	E6FT3S
FH601	5	Refinery Fuel Gas	178.4322	E6FT3S
FH602	5	Refinery Fuel Gas	272.7592	E6FT3S
FH603	5	Refinery Fuel Gas	308.8468	E6FT3S
FH801	5	Refinery Fuel Gas	21.07807	E6FT3S
FH802	5	Refinery Fuel Gas	0	E6FT3S
FH901	5	Refinery Fuel Gas	206.2635	E6FT3S
FH2001	5	Refinery Fuel Gas	462.352	E6FT3S
SG1103	5	Refinery Fuel Gas	68.55112	E6FT3S
FH1353	5	Refinery Fuel Gas	11.38855	E6FT3S
FH1391	5	Refinery Fuel Gas	13.18675	E6FT3S
SG2301	5	Refinery Fuel Gas	23.61401	E6FT3S
FZ3560	5	Refinery Fuel Gas	14.23304	E6FT3S
FFlare	5	Refinery Fuel Gas	1.99728	E6FT3S
FZ3560	6	Propane	29.6531	E3GAL
CC2301	3	Jet Fuel	11612.61	E3GAL
FH1353	8	Waste Gas - Pit/Merc	0	E6FT3S
FH1391	8	Waste Gas	506.5019	E6FT3S
FZ3560	12	Waste Gas - WTU Off	4.7304	E6FT3S
FFlare	11	Waste Gas - Flare Ga:	173.2732	E6FT3S

Subpart C Reference Tables

Subpart C Tables C-1 and C-2	Table C-1 of Subpart C—Default CO ₂ Emission Factors and High Heat Values for Various Types of Fuel		Table C-2 of Subpart C—Default CH ₄ and N ₂ O Emission Factors for Various Types of Fuel		
	Default High Heat Value	Default CO ₂ Emission Factor (kg CO ₂ /mmBtu)	Default CH ₄ Emission Factor (kg CH ₄ /mmBtu)	Default N ₂ O Emission Factor (kg N ₂ O/mmBtu)	
Coal and Coke					
Anthracite	25.09	mmBtu/shortton	103.69	1.10E-02	0.0016
Bituminous	24.93	mmBtu/shortton	93.28	1.10E-02	0.0016
Subbituminous	17.25	mmBtu/shortton	97.17	1.10E-02	0.0016
Lignite	14.21	mmBtu/shortton	97.72	1.10E-02	0.0016
Coal Coke	24.8	mmBtu/shortton	113.67	1.10E-02	0.0016
Mixed (Commercial sector)	21.39	mmBtu/shortton	94.27	1.10E-02	0.0016
Mixed (Industrial coking)	26.28	mmBtu/shortton	93.9	1.10E-02	0.0016
Mixed (Industrial sector)	22.35	mmBtu/shortton	94.67	1.10E-02	0.0016
Mixed (Electric Power sector)	19.73	mmBtu/shortton	95.52	1.10E-02	0.0016
Natural Gas					
Pipeline (Weighted U.S. Average)	1.026E-03	mmBtu/scf	53.06	1.00E-03	1.00E-04
Petroleum Products					
Distillate Fuel Oil No. 1	0.139	mmBtu/gallon	73.25	3.00E-03	6.00E-04
Distillate Fuel Oil No. 2	0.138	mmBtu/gallon	73.96	3.00E-03	6.00E-04
Distillate Fuel Oil No. 4	0.146	mmBtu/gallon	75.04	3.00E-03	6.00E-04
Residual Fuel Oil No. 5	0.14	mmBtu/gallon	72.93	3.00E-03	6.00E-04
Residual Fuel Oil No. 6	0.15	mmBtu/gallon	75.1	3.00E-03	6.00E-04
Used Oil	0.138	mmBtu/gallon	74	3.00E-03	6.00E-04
Kerosene	0.135	mmBtu/gallon	75.2	3.00E-03	6.00E-04
Liquefied petroleum gases (LPG) ⁽¹⁾	0.092	mmBtu/gallon	61.71	3.00E-03	6.00E-04
Propane ⁽¹⁾	0.091	mmBtu/gallon	62.87	3.00E-03	6.00E-04
Ethane ⁽¹⁾	0.068	mmBtu/gallon	59.60	3.00E-03	6.00E-04
Ethanol	0.084	mmBtu/gallon	68.44	3.00E-03	6.00E-04
Ethylene ⁽²⁾	0.058	mmBtu/gallon	65.96	3.00E-03	6.00E-04
Isobutane ⁽¹⁾	0.099	mmBtu/gallon	64.94	3.00E-03	6.00E-04
Isobutylene ⁽¹⁾	0.103	mmBtu/gallon	68.86	3.00E-03	6.00E-04
Butane ⁽¹⁾	0.103	mmBtu/gallon	64.77	3.00E-03	6.00E-04
Butylene ⁽¹⁾	0.105	mmBtu/gallon	68.72	3.00E-03	6.00E-04
Naphtha (<401 deg F)	0.125	mmBtu/gallon	68.02	3.00E-03	6.00E-04
Natural Gasoline	0.11	mmBtu/gallon	66.88	3.00E-03	6.00E-04
Other Oil (>401 deg F)	0.139	mmBtu/gallon	75.22	3.00E-03	6.00E-04
Pentanes Plus	0.11	mmBtu/gallon	70.02	3.00E-03	6.00E-04
Petrochemical Feedstocks	0.125	mmBtu/gallon	71.02	3.00E-03	6.00E-04
Petroleum Coke	0.143	mmBtu/gallon	102.41	3.00E-03	6.00E-04
Special Naphtha	0.125	mmBtu/gallon	72.34	3.00E-03	6.00E-04
Unfinished Oils	0.139	mmBtu/gallon	74.54	3.00E-03	6.00E-04
Heavy Gas Oils	0.148	mmBtu/gallon	74.92	3.00E-03	6.00E-04
Lubricants	0.144	mmBtu/gallon	74.27	3.00E-03	6.00E-04
Motor Gasoline	0.125	mmBtu/gallon	70.22	3.00E-03	6.00E-04
Aviation Gasoline	0.12	mmBtu/gallon	69.25	3.00E-03	6.00E-04
Kerosene-Type Jet Fuel	0.135	mmBtu/gallon	72.22	3.00E-03	6.00E-04
Asphalt and Road Oil	0.158	mmBtu/gallon	75.36	3.00E-03	6.00E-04
Crude Oil	0.138	mmBtu/gallon	74.54	3.00E-03	6.00E-04
Other Fuels (Solid)					
Municipal Solid Waste ⁽³⁾	9.95	mmBtu/shortton	90.7	3.20E-02	4.20E-03
Tires	29	mmBtu/shortton	85.97	3.20E-02	4.20E-03
Plastics	38	mmBtu/shortton	75	(not provided)	(not provided)
Petroleum Coke	30	mmBtu/shortton	102.41	3.00E-03	6.00E-04
Other Fuels (Gaseous)					
Blast Furnace Gas	9.20E-05	mmBtu/scf	274.32	2.20E-05	1.00E-04
Coke Oven Gas	5.99E-04	mmBtu/scf	46.85	4.80E-04	1.00E-04
Propane Gas	2.516E-03	mmBtu/scf	61.46	(not provided)	(not provided)
Fuel Gas ⁽⁴⁾	1.388E-03	mmBtu/scf	59	3.00E-03	6.00E-04
Biomass Fuels - Solid					
Wood and Wood Residuals (dry basis) ⁽⁵⁾	17.48	mmBtu/shortTon	93.8	7.20E-03	3.60E-03
Agricultural Byproducts	8.25	mmBtu/shortTon	118.17	3.20E-02	4.20E-03
Peat	8	mmBtu/shortTon	111.84	3.20E-02	4.20E-03
Solid Byproducts	10.39	mmBtu/shortTon	105.51	3.20E-02	4.20E-03
Biomass Fuels - Gaseous					
Landfill Gas	4.85E-04	mmBtu/scf	52.07	3.20E-03	6.30E-04
Other Biomass Gases	6.55E-04	mmBtu/scf	52.07	3.20E-03	6.30E-04
Biomass Fuels - Liquid					
Ethanol	0.084	mmBtu/gallon	68.44	1.10E-03	1.10E-04
Biodiesel (100%)	0.128	mmBtu/gallon	73.84	1.10E-03	1.10E-04
Rendered Animal Fat	0.125	mmBtu/gallon	71.06	1.10E-03	1.10E-04
Vegetable Oil	0.120	mmBtu/gallon	81.55	1.10E-03	1.10E-04

Notes (Table C-1):
 1 The HHV for components of LPG determined at 60 °F and saturation pressure with the exception of ethylene.
 2 Ethylene HHV determined at 41 °F (5 °C) and saturation pressure.
 3 Use of this default HHV is allowed only for: (a) Units that combust MSW do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.
 4 Reporters subject to subpart X of this part that are complying with § 98.243(d) or subpart Y of this part may only use the default HHV and the default CO₂ emission factor for fuel gas combustion under the conditions prescribed in § 98.243(d)(2)(i) and (d)(2)(ii) and § 98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.
 5 Use the following formula to calculate a wet basis HHV for use in Equation C-1: HHV_w = ((100-M)/100)HHV_d where HHV_w = wet basis HHV, M = moisture content(percent) and HHV_d = dry basis HHV from Table C-1.

Notes (Table C-2):
 NOTE: Those employing this table are assumed to fall under the IPCC definitions of the "Energy Industry" or "Manufacturing Industries and Construction". In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC "Energy Industry" category may employ a value of 1g of CH₄/mmBtu.

<-- Also listed above under Pet Products

<-- Refinery Propane calculated as liquid