2002
Maine Fuels Report

Prepared for: The Joint Standing Committee on Natural Resources

Prepared by: The Maine Department of Environmental Protection Bureau of Air Quality
17 State House Station
Augusta, ME 04333-0017
(207) 287-2437

February 2003

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Section I

Executive Summary

The Department of Environmental Protection (DEP) submits this report in accordance with Maine Revised Statutes Title 38, Section 585-H, enacted by the Maine Legislature in 2000. At that time, the Legislature established the goal to eliminate methyl-tertiary butyl ether (MTBE) in gasoline sold in the state by January 1, 2003. DEP is required to monitor and report on levels of MTBE in shipments of gasoline to storage terminals in Maine. The Department is also required to work collaboratively at a regional level to develop alternatives of the use of MTBE as a gasoline additive.

Although shipments of gasoline to Maine still contain MTBE as an octane-enhancer, the concentrations of MTBE are much lower than when Maine received reformulated gasoline. Maine continues to work toward passage of national legislation that would achieve the goal of eliminating MTBE from our fuels.

Maine began participating in the federal Reformulated Gasoline (RFG) program in January 1995 as part of the state's plan to comply with the federal Clean Air Act Amendments of 1990. The RFG delivered in Maine contained higher levels of MTBE than gasoline sold here prior to implementing the program. Subsequently, MTBE began appearing in public and private water supplies more frequently and at higher concentrations than had been reported in prior years.

This prompted Maine to petition the United States Environmental Protection Agency (EPA) to allow the state to opt-out of the RFG program based on the risk to ground water posed by MTBE. EPA approved the petition provided several conditions were met, including implementing a replacement fuel program that achieved reductions of certain air emissions (volatile organic compounds) that were equivalent to RFG. Therefore, the Maine Board of Environmental Protection adopted Chapter 119 *Motor Vehicle Fuel Volatility Limit*, which required 7.8 Reid Vapor Pressure gasoline in the seven southern counties from May first to September 15th of each year. Having met the conditions, the effective date for withdrawal from the RFG program was March 10, 1999. In May of 2001, the Department submitted a fuels waiver request for 7.8 RVP fuel under the authority of 211 (c) of the Clean Air Act. The waiver received final approval on March 6, 2002 and became effective on April 5, 2002.

The DEP anticipated that MTBE levels would drop to levels for gasoline sold in Maine prior to initial implementation of the RFG program (1995). Under the RFG program, the MTBE levels were 11% by volume; pre-RFG levels of MTBE were typically 2 to 3 percent by volume in regular grade gasoline.

In 2002 the MTBE levels were down slightly from 2.51 in 2001 to 2.44 percent by volume. In addition, the DEP tracks not only the levels of MTBE but also other gasoline components including sulfur, benzene, and aromatics. Sulfur in 2002 went up

significantly from the weighted average of 154 parts per million (ppm) in 2001 to 201 ppm in 2002. The overall average level of benzene in the fuel in 2002 was lower than the 2001 level and was almost the same as the RFG average benzene content. Benzene levels went down slightly from 0.92 percent by volume to 0.81 percent. See Table 1 for a summary of all 2002 gasoline component concentrations.

The DEP participates in regional efforts to promote development of alternatives to MTBE. In particular, DEP is actively involved with Northeast States for Coordinated Air Use Management (NESCAUM), other regional agencies and states to accomplish this goal.

On January 15, 2003, there was a meeting of the Northeast / Mid Atlantic States Fuels Task Force in Boston at the NESCAUM offices. The purpose of the meeting was to update the states on developments regarding fuels in the region and nationwide.

Presentations were given regarding the Renewable Fuels Standard (RFS) that was part of Congress' Energy Bill last year. The RFS represents a historic agreement between industry, environmental organizations and states which includes the phasing out of MTBE and requires renewable fuels to reach 5 billion gallons by 2012. We intend to continue to work toward passage of the federal measures as well as work towards an agreement on regional fuels.

Table 1
Summary of 2002 Fuels Data

Weighted Average for:	RVP (psi)	Oxygen (wt %)	MTBE (% vol)	Other Oxy. (% vol) T.A.M.E.	Other Oxy. (% vol) E.T.B.E.	Other Oxy. (% vol) MEOH	Other Oxy. (% vol) T-Butanol	Other Oxy. (% vol) N-Propanol	Other Oxy. (% vol) 2-Propanol	Other Oxy. (% vol) I-Butanol	Benzene (% vol)	Aromatics (% vol)	Sulfur (ppm)
1st Quarter	11.56	0.54	2.81	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.75	22.35	201
2nd Quarter	8.17	0.30	1.04	0.77	1.30	1.69	2.04	0.16	0.00	2.01	0.86	29.77	226
3rd Quarter	9.44	0.75	3.62	1.06	0.77	0.43	0.00	0.00	0.00	0.00	0.93	30.92	164
4th Quarter	10.89	0.43	2.27	0.40	0.00	0.00	0.16	0.08	0.10	0.00	0.71	27.14	216
Ozone Season	8.39	0.57	2.53	0.93	1.30	1.43	1.07	0.16	0.10	1.26	0.87	30.57	205
Full Year	9.96	0.50	2.44	0.80	0.89	1.43	0.98	0.14	0.10	1.26	0.81	27.69	201

Section II: Introduction

A. Background

The federal reformulated gasoline (RFG) program was designed to reduce emissions of motor vehicle pollutants. To comply with the RFG program, gasoline must achieve a set of emission performance standards and meet a minimum oxygen content requirement. Refiners have opted to comply with the oxygen requirement by selling RFG containing methyl tertiary-butyl ether (MTBE) at 11 percent by volume. In comparison, conventional gasoline has MTBE in amounts of a few percent by volume or less, while some premium blends can contain as much as 9 percent MTBE.

Methyl tertiary-butyl ether (MTBE) is a gasoline additive that replaced lead as an octane enhancer since 1979. MTBE is a member of a group of chemicals commonly known as fuel oxygenates. Oxygenates are added to conventional fuel to increase its octane. MTBE is used in gasoline throughout the United States to reduce carbon monoxide and ozone levels caused by auto emissions. In the Northeast more than one billion gallons of MTBE is sold annually.

In 1991 Maine volunteered to phase into the RFG program and began selling RFG in January of 1995. States with voluntary RFG programs were required to decide by December 30, 1997, whether they wanted to remain in the program, otherwise procedures required them to stay in the program through 2003.

With the distribution of RFG in southern Maine there was concern over the potential threat to ground water quality. MTBE is more water soluble than other gasoline components and is persistent in ground water. MTBE is considered by the United States Environmental Protection Agency (EPA) as a possible carcinogen, Class C, and has a very low odor and taste detection threshold.

In 1997, the Maine Bureau of Health reported MTBE in 7% of Maine public water supplies. These incidents of groundwater contamination prompted Governor King to direct a ground water investigation to determine the extent of MTBE in public and private water supplies. Maine did not want to commit to continued participation in the RFG program through the year 2003 until the ground water testing was completed. In *The Presence of MTBE and Other Gasoline Compounds in Maine's Drinking Water* report (1998) MTBE was detected (1ppb detection limit) in approximately 16% of the public water supplies and 951 private wells sampled in Maine.

Therefore, in October 1998, Maine petitioned EPA under 40 CFR 80.72(a) to opt-out of the RFG program based on the unacceptable risk to ground water posed by MTBE. EPA approved the petition provided several conditions were met including implementing a replacement fuel with volatile organic compound reductions equivalent to RFG. Having met the conditions, the effective date for withdrawal from the RFG program was March 10, 1999.

It was anticipated that if RFG levels for MTBE (eleven percent by volume) were not required, then the levels of MTBE would drop to the levels for conventional gas sold in Maine prior to participation in the RFG program. However, MTBE would not be totally eliminated as the industry continues to rely on MTBE as an octane enhancer.

At the request of the legislature, the Department now collects data on gasoline sold in Maine to determine the MTBE levels in gasoline and the progress made to achieve the goal of eliminating MTBE in gas sold in Maine by January 2003. The Department tracks not only the levels of MTBE but also other gasoline components including sulfur, benzene, and aromatics.

The State of Maine is required to promote and actively participate in regional efforts to develop alternatives of the use of MTBE as a gasoline additive. NESCAUM completed a study in July of 2001 of the potential affects to public health, the environment, and regulatory and economic impacts for ethanol as an oxygenate.

In 1999, a Northeast Regional Fuels Task Force was established at the behest of the New England Governors Association to look at regional solutions to address the MTBE issue. This Task Force's objectives are to maximize the air quality benefits and public health benefits of reformulated gasoline, reduce the amount of MTBE in the gasoline supply to protect water resources, promote a regionally consistent clean fuels program, and minimize impact of fuel quality changes on gasoline supply and price. The Task Force continues to work with EPA and other stakeholders to encourage congressional action to lift the oxygen mandate from RFG and provide an adequate solution over current levels of MTBE in gasoline.

B. Legislative Requirement

38 M.R.S.A. §585-H, enacted by the Legislature in 2000, requires MTBE monitoring and reductions. Specifically:

> *"The department shall monitor shipments of gasoline to storage terminals in this State and compile annual reports showing the levels of methyl tertiary butyl ether, referred to as "MTBE", in gasoline brought into this State.*
>
> *The Department shall promote and actively participate in regional efforts by state regulatory agencies in the Northeast to develop alternatives to the use of MTBE as a gasoline additive. In these efforts, the department shall work toward the goal of the elimination of MTBE in gasoline sold in the State by January 1, 2003 in a manner that:*
>
> 1. *Market constraints. Adequately accounts for market constraints related to supply and pricing; and*
>
> 2. *Lowest environmental impact. Based on thorough analysis and evaluation of alternatives to the use of MTBE, ensures the lowest possible total environmental impact.*
>
> *The department shall annually, no later than February 1st of each year, present a report to the joint standing committee of the Legislature having jurisdiction over natural resources matters on the levels of MTBE in gasoline brought into this State and the progress made in achieving the goal of eliminating MTBE in gasoline sold in the State by January 1, 2003. The committee may report out to any session of any Legislature legislation relating to MTBE use in gasoline."*

C. 211 (c) Waiver

Following the 1990 Clean Air Act Amendments, Governor John McKernan, Jr., opted Maine's nonattainment counties[1] into the federal reformulated gasoline program (RFG) on June 26, 1991. The sale of reformulated gasoline began on January 1, 1995.

On October 13, 1998, Governor King sent a letter to EPA requesting permission to opt-out of the RFG program. EPA approved the request to opt-out, with March 10, 1999 as the effective date, contingent upon three conditions being met by the Department. Those conditions were as follows: (1) Maine identify a replacement fuel measure or other measure to provide VOC reductions equivalent to those yielded by RFG; (2) Maine provide a schedule for implementing the replacement measure; and (3) Maine provide an explanation of the impact to the State Implementation Plan[2].

To meet the first condition, on March 14, 1999, the Maine Board of Environmental Protection subsequently amended Chapter 119 *Motor Vehicle Fuel Volatility Limit*, a conventional low volatility fuel regulation. This amended regulation required all gasoline have a Reid Vapor Pressure no greater than 7.8 psi during the period between May 1, 1999 and September 15, 1999 and reduced to 7.2 psi during the period between May 1, 2000 and September 15, 2000 and continuing every year thereafter. This regulation applied to gasoline that is distributed or marketed by bulk gasoline terminals, or is directly imported to gasoline service stations or bulk gasoline plants in York, Cumberland, Sagadahoc, Androscoggin, Kennebec, Knox and Lincoln Counties. However, there was concern of a limited number of refiners making 7.2 RVP fuel. This could result in a potential supply disruption. In the event of a major supply disruption, the most likely "replacement" fuel would be RFG with its required oxygen levels i.e. 11% MTBE by volume. Due to continued concerns of potential groundwater contamination from MTBE, an oxygenate used in RFG, the risk of increased levels of MTBE in gasoline shipped to Maine was not acceptable. Therefore, on April 20, 2000 the Maine Board of Environmental Protection amended Chapter 119 *Motor Vehicle Fuel Volatility Limit* to repeal the requirement that gasoline sold in the seven southern counties must have a Reid Vapor Pressure of 7.2 psi or less during the summer months. The current 7.8 RVP gasoline with no restrictions on oxygen levels has resulted in MTBE levels equal to or below typical conventional gasoline (2 to 3% by volume).

Maine is prohibited from adopting a non-identical state control under section 211(c)(4) of the Clean Air Act (CAA). EPA has promulgated nationally applicable federal standards for the RVP levels of motor vehicle gasoline under sections 211(c) and 211(h) of the CAA. Section 211(c)(4)(A) of the CAA prohibits non-identical state regulation of fuel characteristics or components for which EPA has adopted a control or prohibition. In accordance with Section 211(c)(4)(C), EPA may approve a non-identical state fuel

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[1] Hancock and Waldo counties were subsequently opted-out of the RFG program on December 28. 1994.

[2] On January 22, 1999 EPA extended the effective date of Maine's withdrawal from the RFG program until March 10, 1999 "in order to provide time for EPA and the State to reach agreement on such replacement program."

control as a State Implementation Plan (SIP) provision, provided the state demonstrates that the measure is necessary to achieve the national primary or secondary ambient air quality standards that the plan implements. EPA can approve a state fuel requirement as necessary only if no other measure exists that would bring about timely attainment, or if other measures exist but are unreasonable or impracticable.

Therefore, Maine submitted to EPA in accordance with Section 211 (c), a fuels waiver request for 7.8 RVP gasoline that was accepted on May 29, 2001. EPA subsequently published in the Federal Register on December 6, 2001 a proposal to approve the waiver and request comments. The comment period ended on January 9, 2002 with no comments received. Final approval of the waiver was received on March 6, 2002 and became effective on April 5, 2002.

Section III: Data

A. Data Collection

In addition to the requirements of 38 MRSA § 585-H, Chapter 119 *Motor Vehicle Fuel Volatility Limit* requires the following records to be kept at the bulk gasoline terminals:

> *"Any owner or operator of a bulk gasoline terminal shall maintain records on the Reid Vapor Pressure, oxygen content, oxygenate, benzene, aromatics, and sulfur of any gasoline that is delivered to or distributed from such terminal. Such records shall be maintained for at least three years and shall be available for inspection during normal business hours, and copies shall be provided to the Commissioner or his representative upon request."*

The Department requested the information listed above from each bulk gasoline terminal carrying automotive gasoline. A bulk gasoline terminal refers to a storage facility that has a daily average throughput of more than 20,000 gallons of gasoline.

In cooperation with the Maine Petroleum Association, the Department developed a quarterly reporting form for the terminals to fill out and submit to the Department (Appendix A). In addition, the Department requested the date of delivery, the number of barrels delivered, and any other significant information.

The following bulk gasoline terminals carry automotive gasoline and reported gasoline data to the Department:

Terminal	Location
Gulf	Portland
Irving	Bucksport
Mobil	Portland
Motiva	Portland
Webber	Searsport

No data was obtained from any trucking of fuel into the state.

B. Maine Data on MTBE and Other Oxygenates

During calendar year 2002, as in previous years, MTBE was present in almost all gasoline shipments containing oxygenates. MTBE was either the sole oxygenate or in formulations containing one or more of the following oxygenates: Tertiary Amyl Methyl Ether (TAME) and Ethyl Tertiary Butyl Ether (ETBE), Methanol (MEOH), t-Butanol, N-Propanol, 2-Propanol and i-butanol. Three shipments of gasoline contained only TAME. There were 40 percent more fuel shipments reported in 2002 that contained MTBE plus other oxygenates. In some cases, there was a combination of up to three different oxygenates plus MTBE in the gasoline delivered to the bulk terminals. This is according to the Maine Petroleum Association a common occurrence. In fact according to the petroleum industry, oxygenates can also occur as a natural byproduct of the refining process.

During the year 2001 gasoline contained 2.51 percent by volume MTBE and a 0.51 percent weighted average oxygen level (Table 2). The MTBE volume percent remained stable between 2001 to 2002 with levels being slightly lower in 2002.

Table 2

Weighted Ave for:	Oxygen Wt %	MTBE Vol %	TAME Vol %	ETBE Vol %	MEOH Vol %	TBA Vol %	t-Butanol Vol %
2000 Data	0.09	0.39	0.21	0.22	0.13	0.40	0.09
2001 Data	0.51	2.51	0.86	0.22	0	0	0
2002 Data	0.50	2.44	0.80	0.89	1.43	0	0.98

Weighted Ave for:	i-Butanol Vol %	N-Propanol Vol %	2-Propanol Vol %
2000 Data	0	0	0
2001 Data	0	0	0
2002 Data	1.26	0.14	0.10

As a reference, Reformulated Gasoline (RFG) required a minimum oxygen level of 2 percent by weight in gasoline. For MTBE this equates to 11 percent by volume. Conventional gasoline prior to RFG commonly contained between 3 to 5 percent by volume MTBE in regular grades and as much as 9 percent by volume in premium blends.

The oxygenate data sorted by the date of delivery is listed by each quarter (Appendix B), and for ozone season (Appendix C).

Table 3 summarizes the MTBE content in Maine fuel reported during 2002.

Table 3

Number of shipments of gasoline	340
Number of shipments with missing or questionable data	0
Number of shipments with no oxygenate	26
Number of shipments with MTBE only	186
Number of shipments with MTBE plus other oxygenates	125
Number of shipments with an other oxygenate but no MTBE	3
Number of shipments with MTBE only with oxygen levels greater than 2% by weight	18
Number of shipments with oxygen levels greater than 2% by weight containing oxygenates other than MTBE alone	4
For all shipments of gasoline:	
MTBE	2.44 % by volume
Weighted average oxygen level	0.50 % by weight

Figure 1 depicts the levels of MTBE in gasoline by quarter for 2000, 2001 and 2002. The level of MTBE in gasoline in 2002 rose during the third quarter and then dropped off during the fourth quarter. This may be due in part to a limited supply of 7.8 RVP fuel for higher octane blends. While this blend met the 7.8 RVP requirement, higher levels of MTBE were in the gasoline.

Figure 2 is a scatter-diagram of the percent volume of MTBE by delivery date for 2002 and Figure 3 depicts the volume percent of MTBE for 2000, 2001 and 2002 by shipment. Figure 4 is a scatter-diagram of the percent weight oxygen by delivery date and Figure 5 shows the percent weight oxygen levels for 2000, 2001 and 2002 by shipment.

Table 4 summarizes the other (non-MTBE) oxygenates in the Maine fuel reported during 2002.

Table 4

Oxygenate	Number of Shipments	Percent Oxygenate (by volume)
TAME	106	0.80
ETBE	4	0.89
MEOH	3	1.43
t-Butanol	8	0.98
i-Butanol	8	1.26
N-Propanol	6	0.14
2-Propanol	1	0.10

Overall, the levels of MTBE have dropped since the state withdrew from the federal RFG program and implemented a "low volatility" gasoline program starting in 1999.[3]

[3] RFG was required only in the seven southern Maine counties.

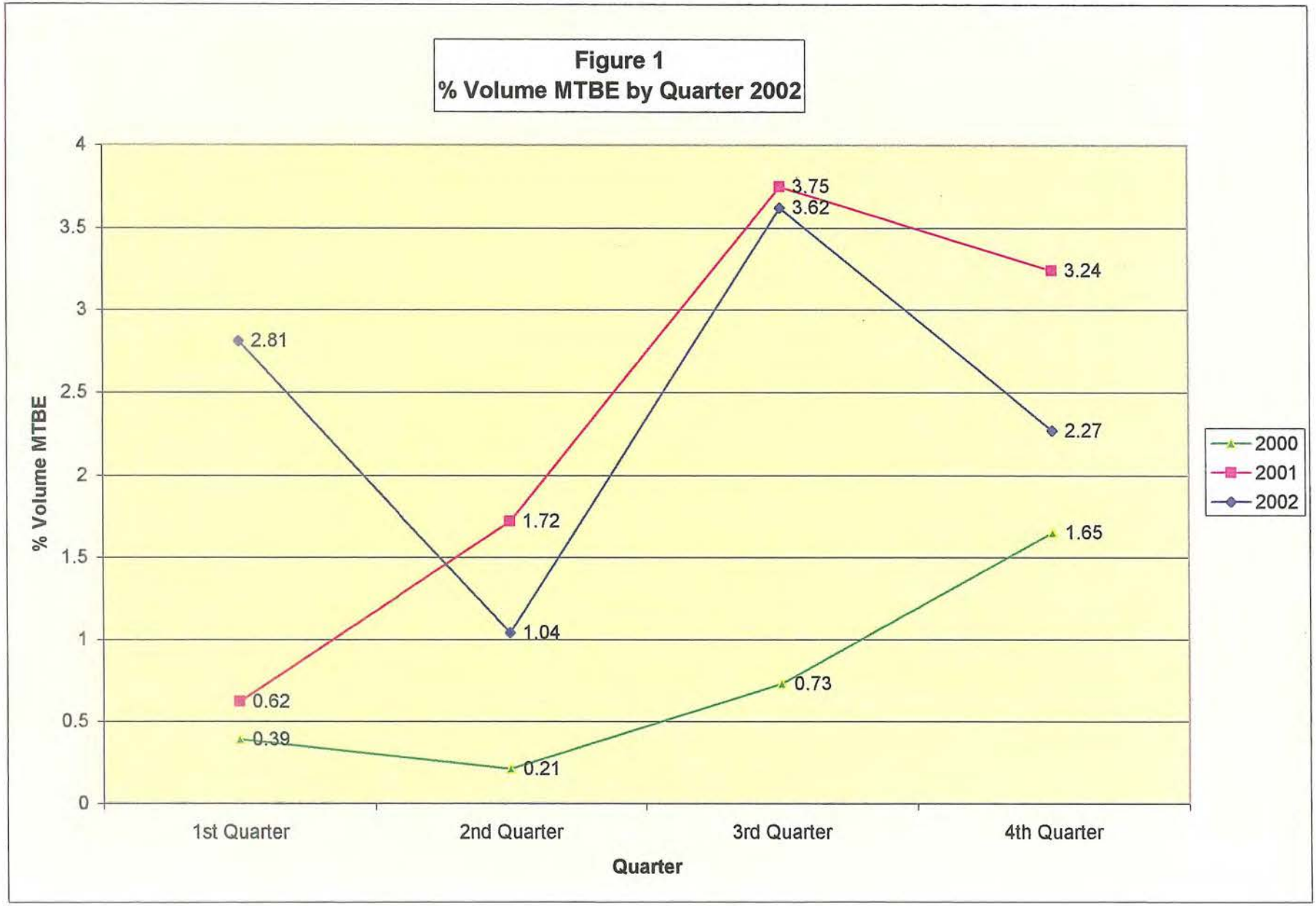


Figure 1
% Volume MTBE by Quarter 2002
% Volume MTBE
4
3.5
3
2.5
2
1.5
1
0.5
0
1st Quarter
2nd Quarter
3rd Quarter
4th Quarter
Quarter
2.81
3.75
3.62
3.24
2.27
1.72
1.04
0.62
0.39
0.21
0.73
1.65
2000
2001
2002

Figure 2
MTBE (vol %) by Delivery Date

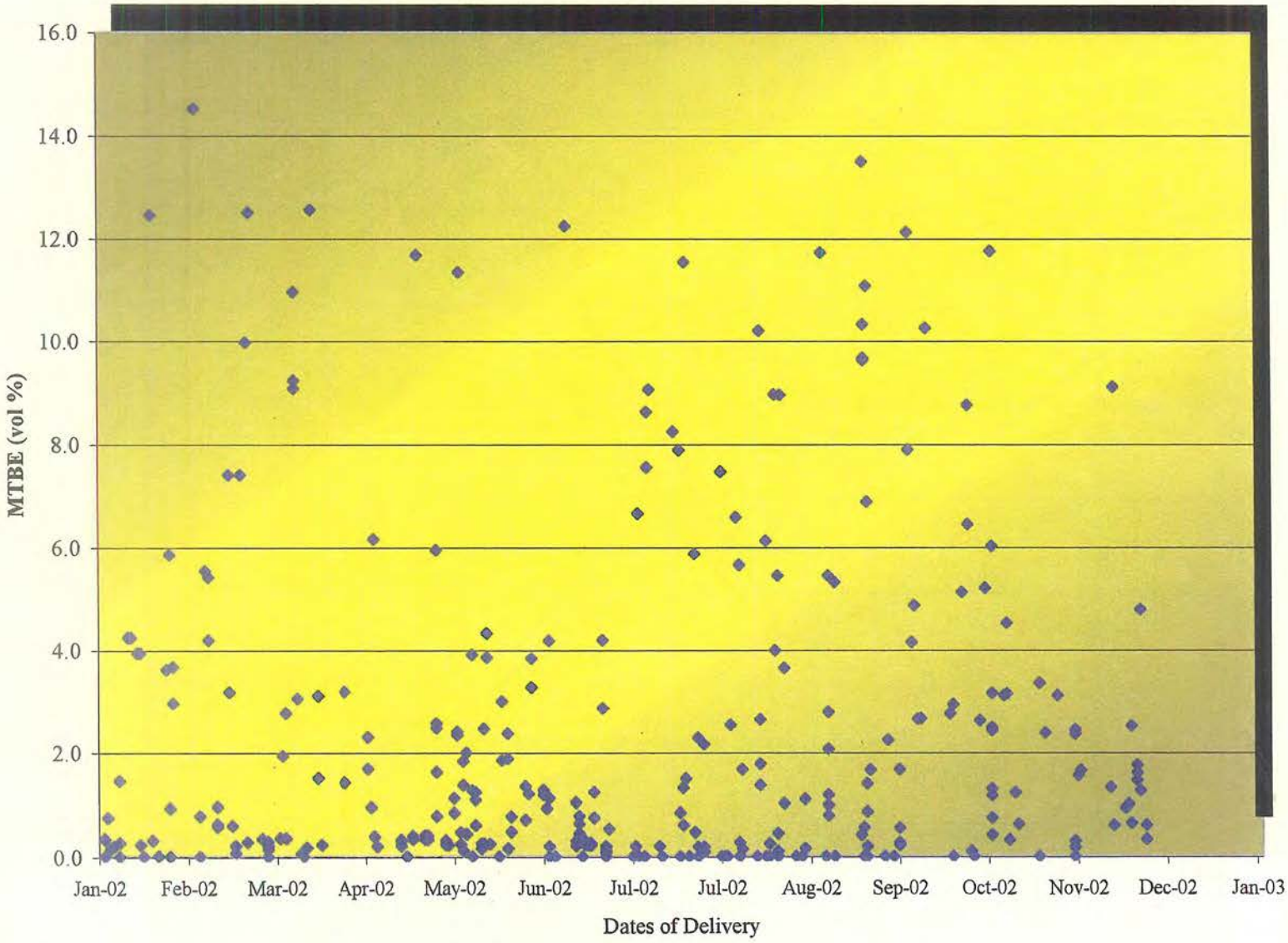


Figure 3
% Volume MTBE by Shipment

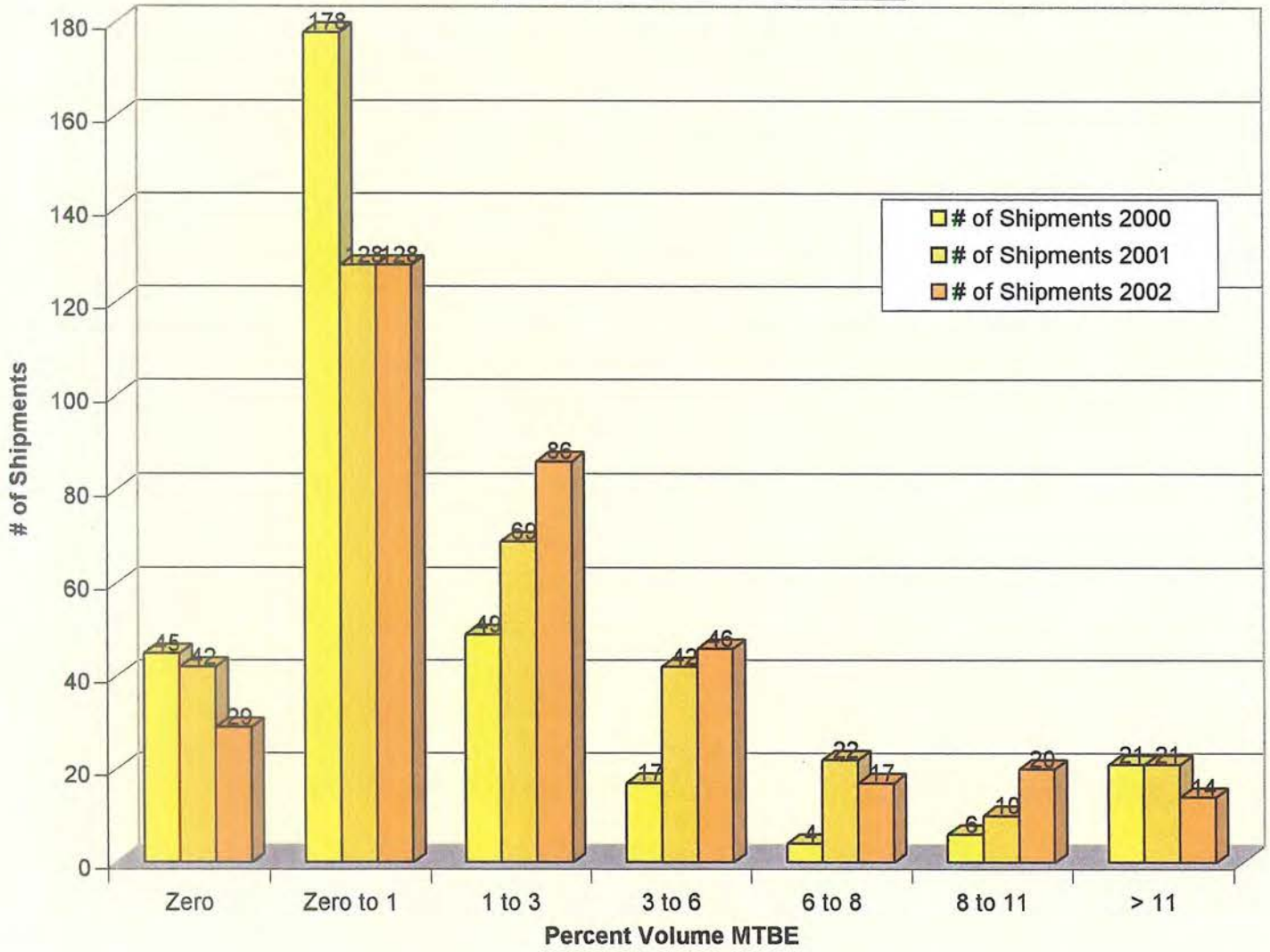
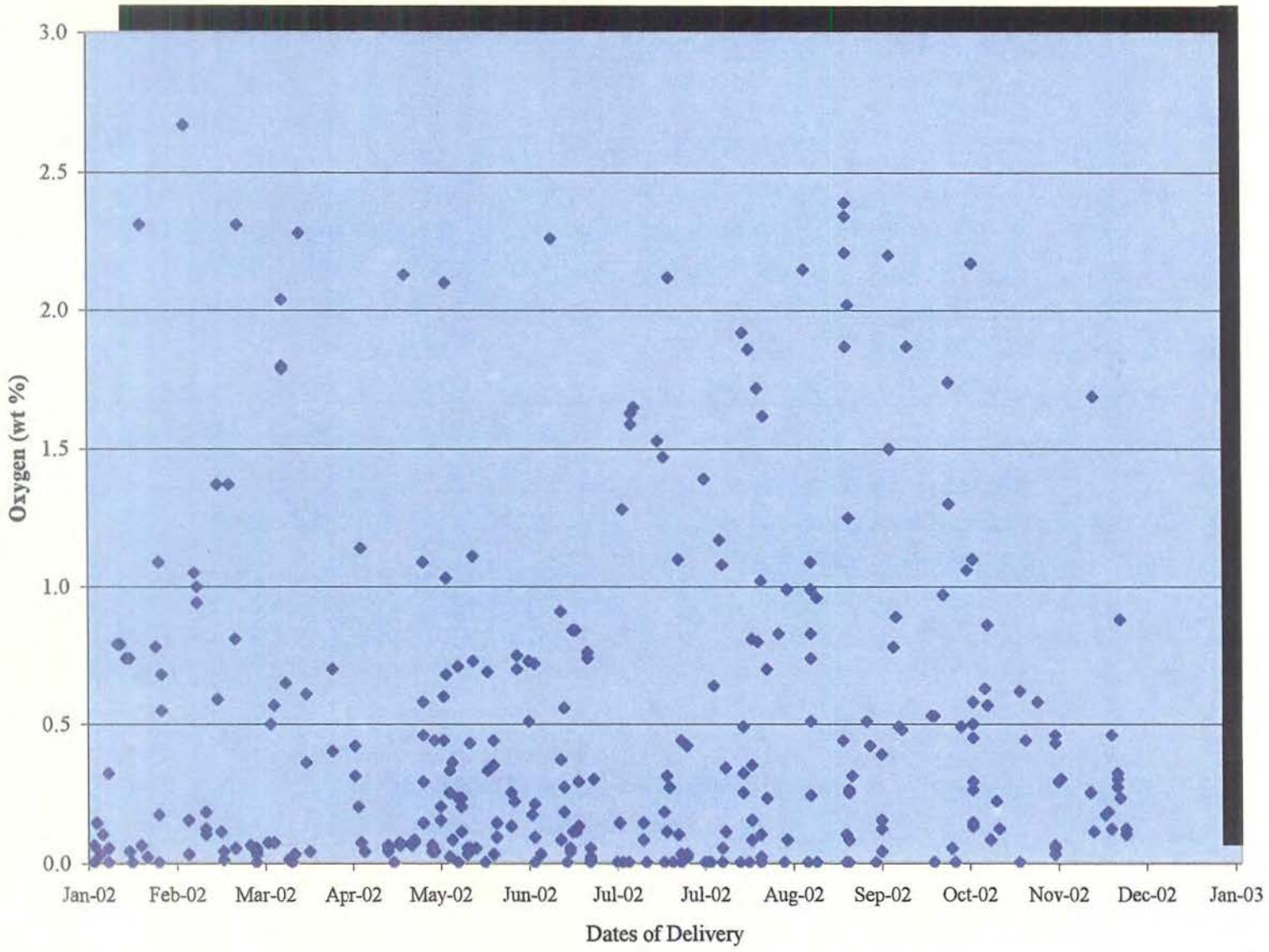


Figure 4
Oxygen (wt %) by Delivery Date



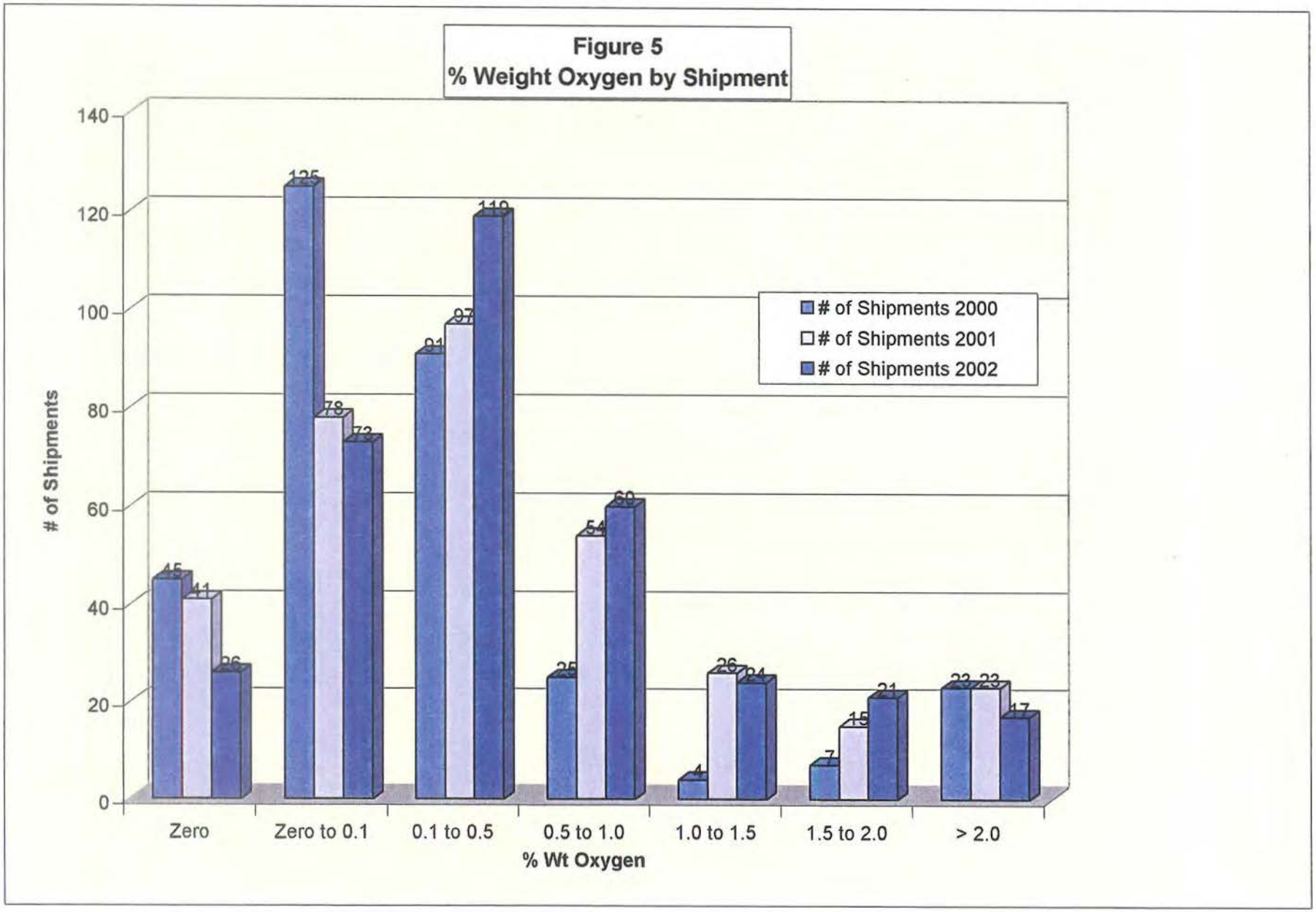


Figure 5
% Weight Oxygen by Shipment
140
120
100
80
60
40
20
0
# of Shipments
# of Shipments 2000
# of Shipments 2001
# of Shipments 2002
45
41
26
125
78
72
91
97
119
25
54
60
4
26
24
7
15
21
22
23
17
Zero
Zero to 0.1
0.1 to 0.5
0.5 to 1.0
1.0 to 1.5
1.5 to 2.0
> 2.0
% Wt Oxygen

C. Maine Data on Other Gasoline Components: Sulfur, Benzene, and Aromatics

Table 5 lists the statewide weighted averages of benzene, aromatics and sulfur in the 2002 fuel compared to 2001and 2000 fuel, plus Phase 1 and Phase 2 Reformulated Gasoline (RFG).

Table 5

Weighted Averages for:	Sulfur	Benzene	Aromatics
2002 data	201 ppm	0.81 % Vol	27.69 % Vol
2001 data	154 ppm	0.92 % Vol	28.10 % Vol
2000 data	125 ppm	0.58 % Vol	30.55 % Vol
Ave. Phase I RFG	170 ppm	0.8% Vol	26.3 % Vol
Ave Phase II RFG	150 ppm	0.8 % Vol	24.0 % Vol

Note: Phase 1 RFG started in 1995. Phase 2 RFG started in 2000. Maine opted-out of the RFG program in 1999.

The sulfur levels in 2002 went up quite significantly from 2001. The 2002 level of 201 ppm brings us much closer to the national average levels for sulfur, obtained from EPA for 2000 (their most recent figure) which is 272 ppm. In 2002, 10.9 percent of the shipments reported, or approximately 11 percent of the volume of gasoline, had sulfur levels over 400 ppm. In comparison, only six percent of the fuel shipments, or approximately two percent of the volume of gasoline were reported over 400 ppm in 2001. This may be due in part to purchase of higher sulfur fuel on the spot market. Figure 6 is a scatter-diagram of the ppm sulfur by delivery date and Figure 7 shows the ppm of sulfur for 2000, 2001 and 2002 by shipment.

The overall average level of benzene in gasoline in 2002 was lower than the 2001 level, higher than the 2000 level, and almost the same as the RFG average benzene content. Benzene was reported in 67 (or 19.7%) of 340 shipments, at levels over 1 % by volume, with maximum levels as high as 2.14% by volume. RFG is required to have a 1 percent benzene cap. Figure 8 is a scatter-diagram of the percent volume benzene by delivery date and Figure 9 shows the percent volume benzene levels for 2000, 2001 and 2002 by shipment.

The concentration of aromatics in gasoline for 2002 remained higher than Phase I and Phase II RFG but decreased slightly from 2001 and 2000. One reason MTBE is added to gasoline is to increase the octane of the fuel. When MTBE is not used or is reduced, then aromatics are commonly used to increase octane in gasoline. Therefore, conventional gas with lower MTBE levels will report higher levels of aromatics. The increase in aromatics results in increased emissions of air toxics primarily from combustion of the gasoline as opposed to evaporation. Figure 10 is a scatter-diagram of the percent volume aromatics by delivery date and Figure 11 shows the percent volume aromatic levels for 2000, 2001 and 2002 by shipment.

Figure 6
PPM Sulfur by Delivery Date

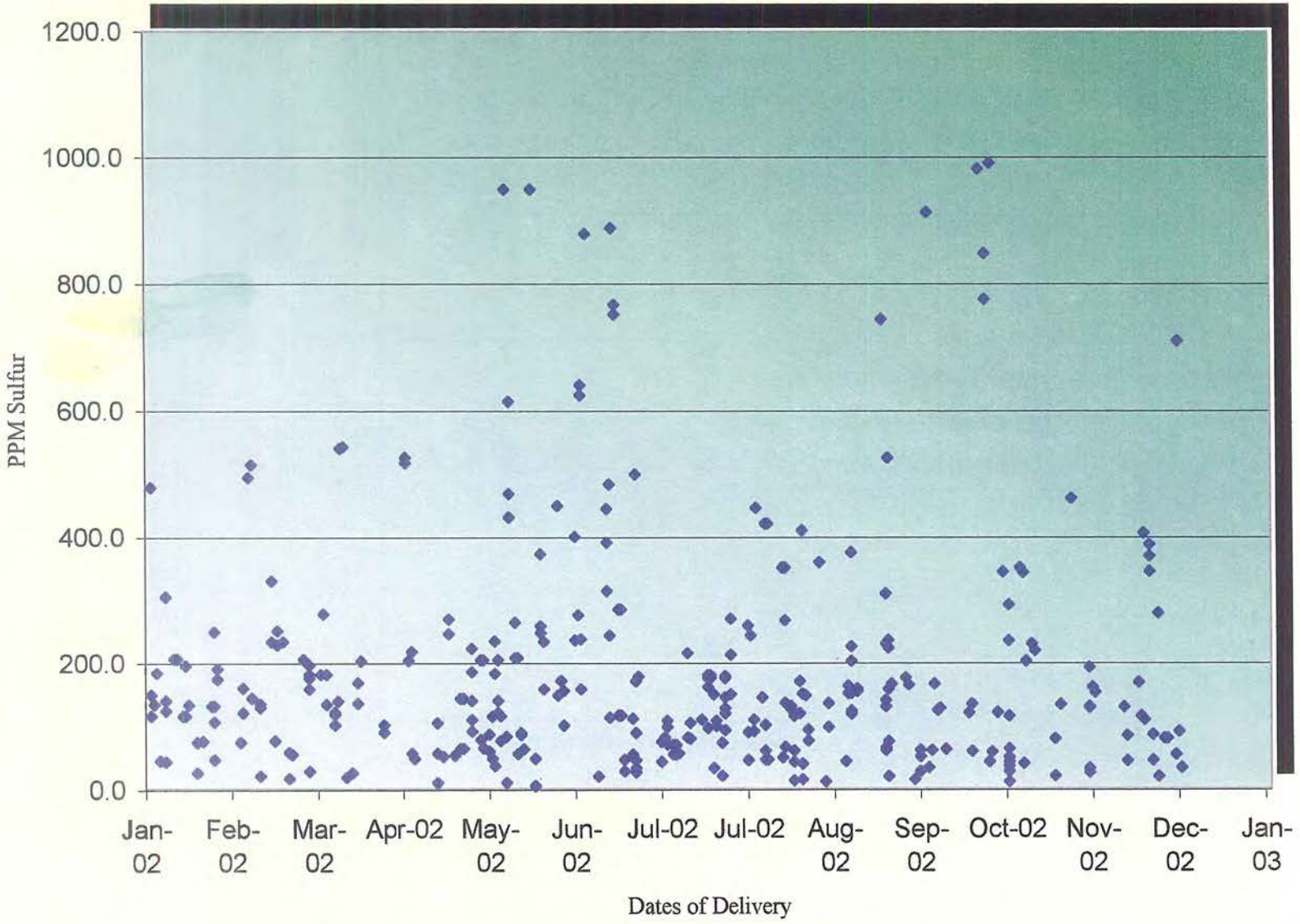


Figure 7
PPM Sulfur by Shipment

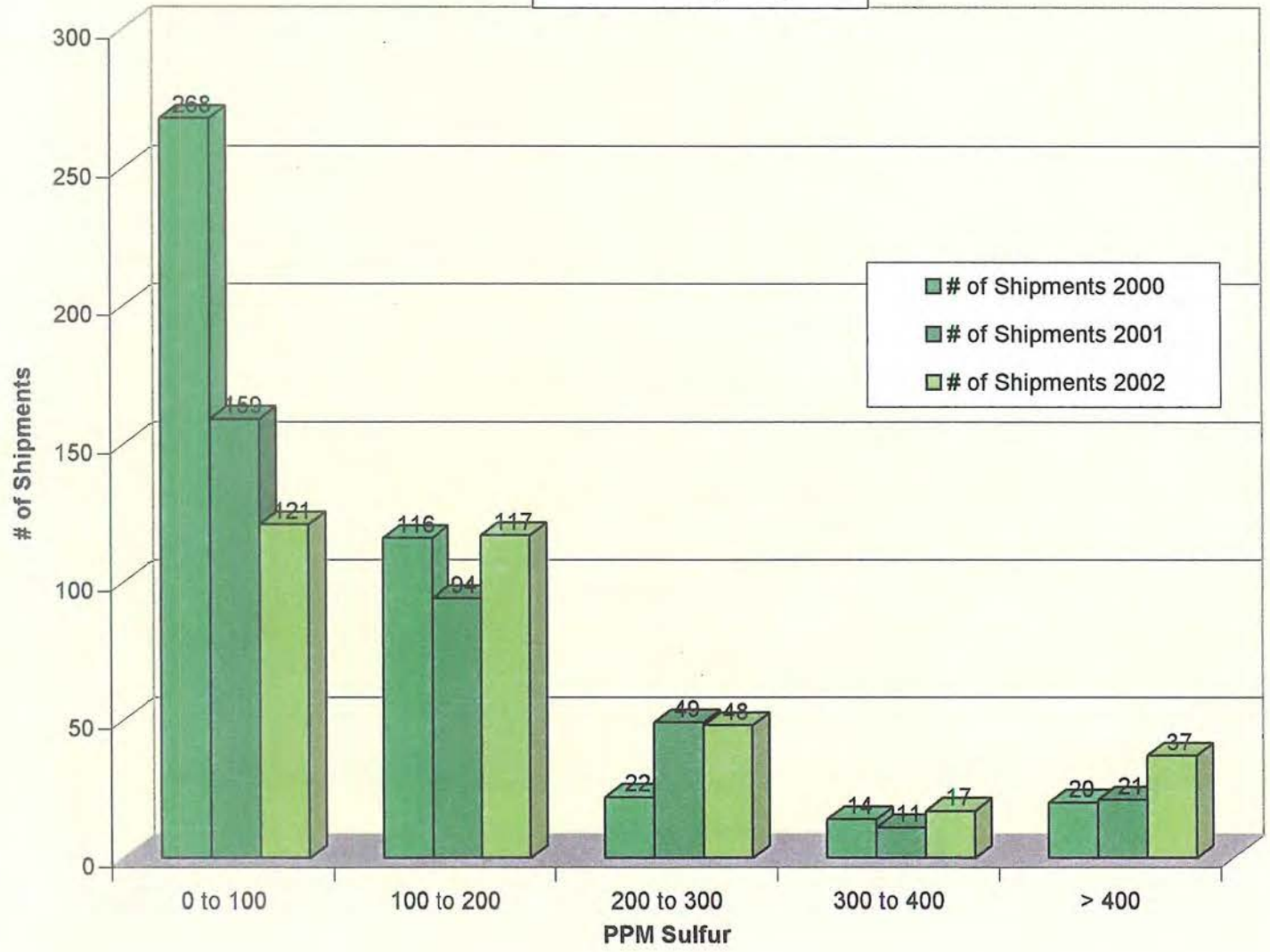
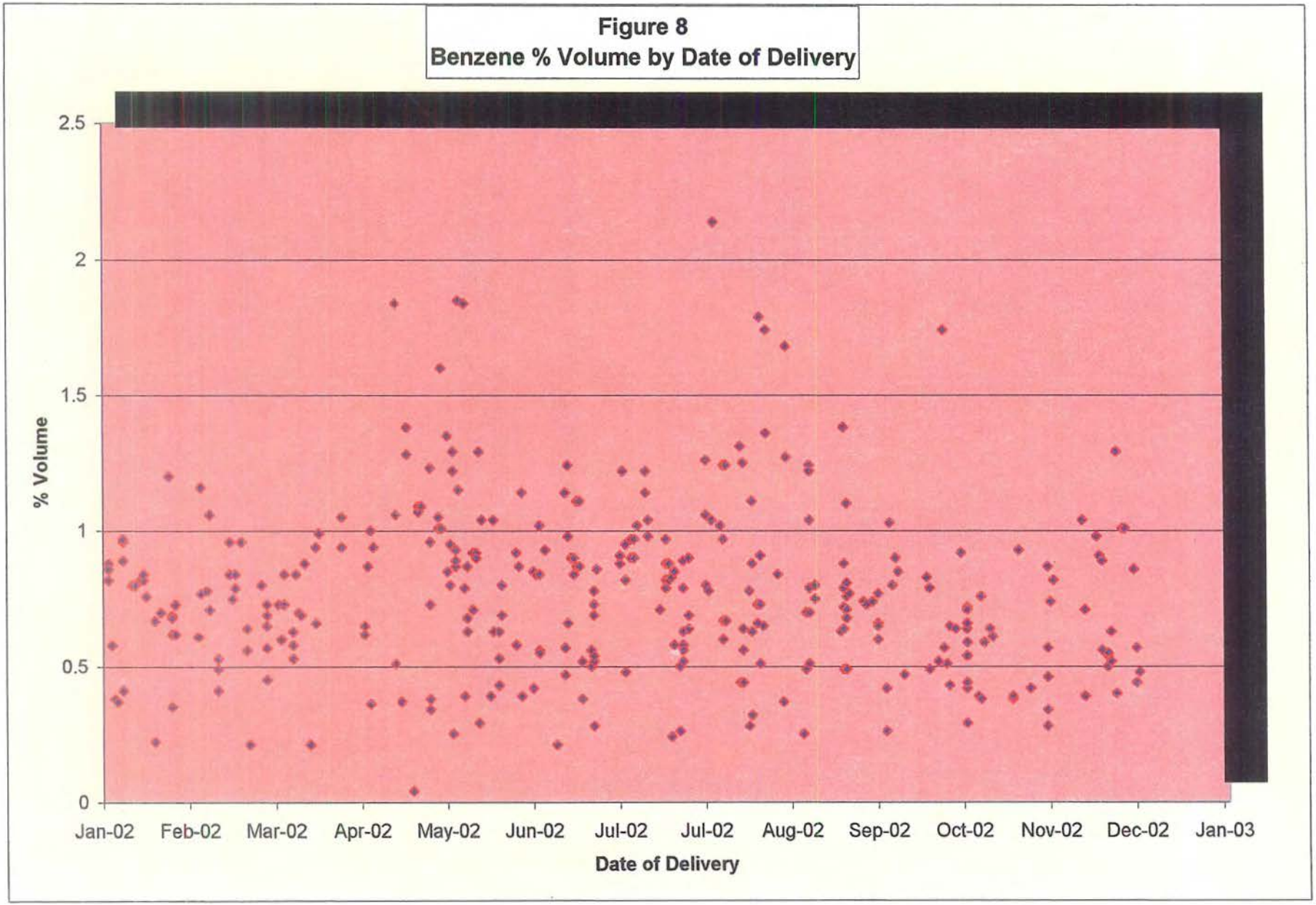


Figure 8
Benzene % Volume by Date of Delivery



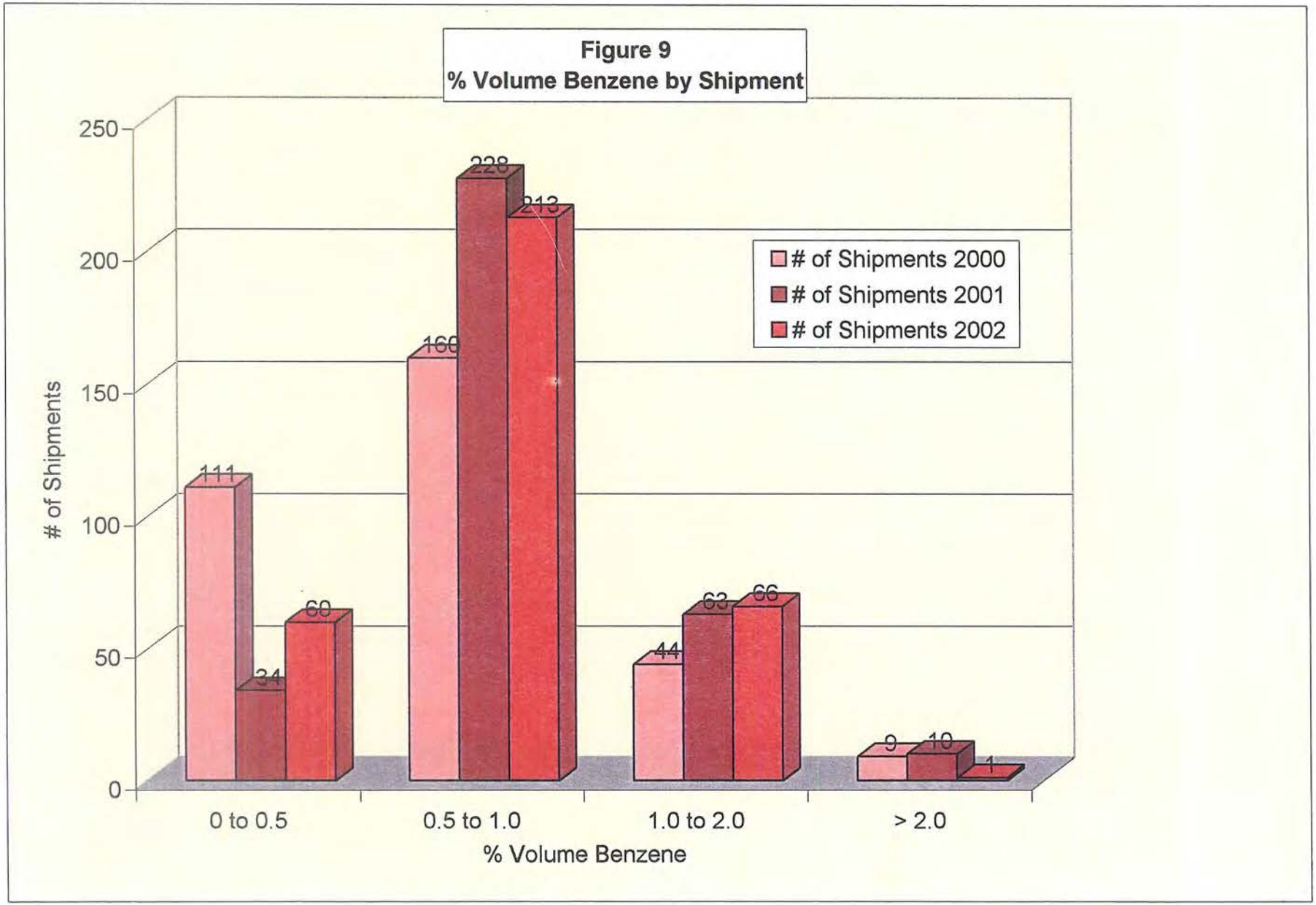


Figure 9
% Volume Benzene by Shipment
250
200
150
100
50
0
# of Shipments
# of Shipments 2000
# of Shipments 2001
# of Shipments 2002
111
34
60
166
228
213
44
63
66
9
10
1
0 to 0.5
0.5 to 1.0
1.0 to 2.0
> 2.0
% Volume Benzene

Figure 10
Percent Volume Aromatics by Delivery Date

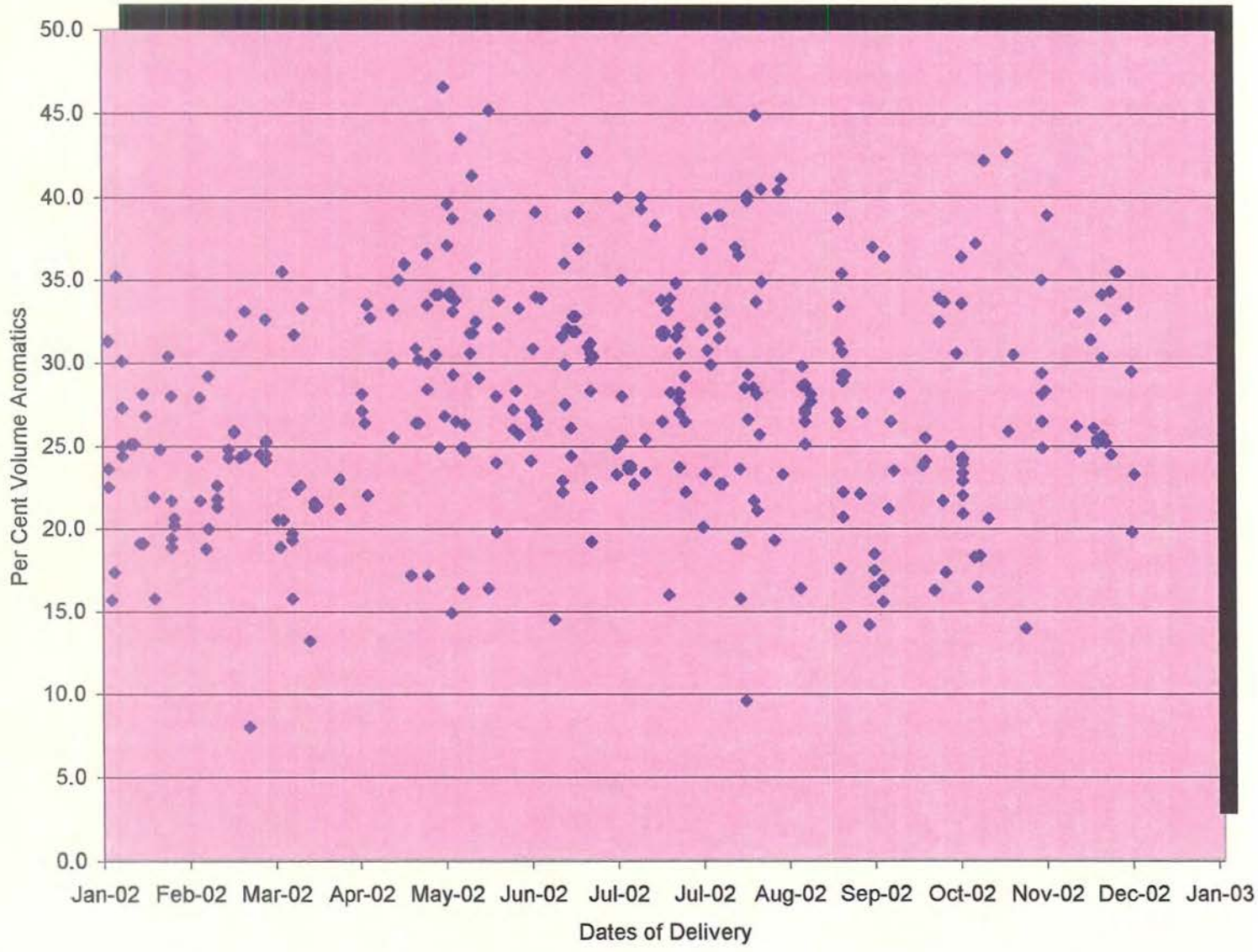
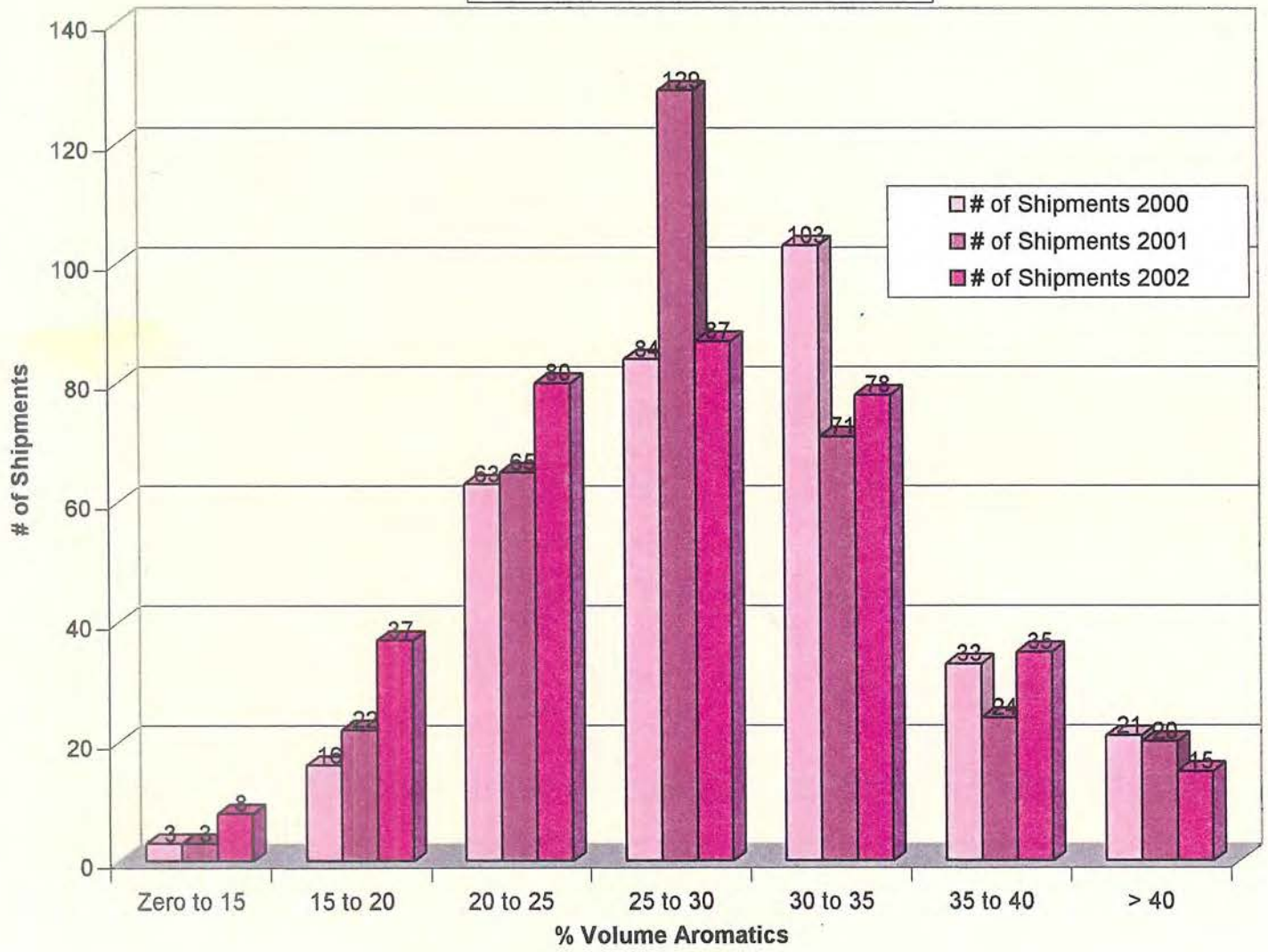


Figure 11
% Volume Aromatics by Shipment



D. Maine Data on Reid Vapor Pressure

Chapter 119 *Motor Vehicle Fuel Volatility Limit* requires that the Reid Vapor Pressure (RVP) of gasoline sold in Maine from May 1 to September 15 of each year shall not exceed 9.0 pounds per square inch (psi). Chapter 119 further limits the RVP of all gasoline sold in York, Cumberland, Sagadahoc, Androscoggin, Kennebec, Knox and Lincoln counties to not exceed 7.8 psi from May 1 to September 15 of each year.

The ozone season is from May 1 to September 15th of each year, which correlates to the period when 7.8 RVP is required in Maine's seven southern counties. Low volatility gas is required during the ozone season to reduce emissions of volatile organic compounds, which are precursors to ozone formation.

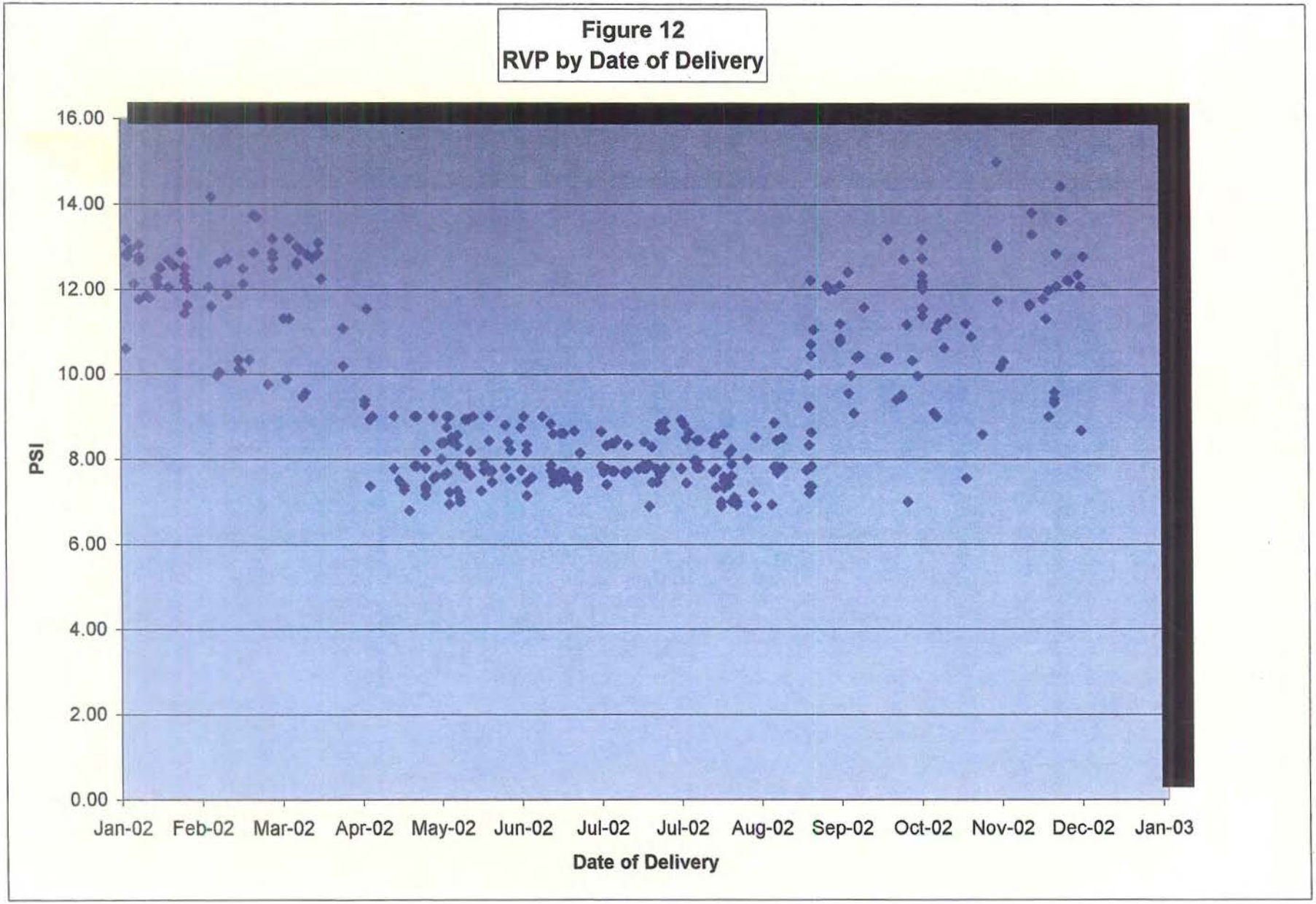
The average of all fuel sold during ozone season in Maine beginning in May through mid-September is shown below in Table 6. A summary of the RVP is sorted by the date of delivery by quarter (Appendix B) and by ozone season (Appendix C.

Table 6

RVP Reported	RVP Average
Ozone Season, 7 counties	7.51 psi
Ozone Season, statewide	8.39 psi

Figure 12 is a scatter-diagram of the Reid Vapor Pressure by delivery date.

Figure 12
RVP by Date of Delivery



Section IV: Progress Toward the Goal of Eliminating MTBE in Maine

Overview of Federal Action on RFG/MTBE

Market forces, including Maine's relatively small impact and fuel demands, make it virtually impossible for one remote state to influence an entire product line. The force will have to come up through regional to national efforts. In that regard, progress is being made that will make the Maine goal more attainable.

Over the past several years, a flurry of congressional and administrative actions have been initiated to address the problem of MTBE groundwater contamination while preserving the air quality and public health benefits of RFG. This discussion focuses on activities in three areas that will form the foundation for future federal action:

1) Congressional actions;
2) California's lawsuit for denial of its petition for a waiver of the oxygen mandate in RFG;
3) Northeast / Mid Atlantic States Fuels Task Force;
4) U.S. EPA's effort to ban MTBE under the Toxic Substances Control Act (TSCA).

Congressional Actions

The Northeast States have played a significant role in advancing federal legislative efforts. Frustrated by the lack of legislative activity in the months following the September 1999 conclusion of the U.S. EPA's Blue Ribbon Panel on Oxygenates and Gasoline, the eight Northeast States' air pollution control programs joined together to support a series of principles for congressional action. On January 19, 2000, Northeast States for Coordinated Air Use Management (NESCAUM) released the following recommendations:

1) Repeal the 2 percent oxygen mandate for reformulated gasoline (RFG) in the Clean Air Act;
2) Phase down and cap MTBE content in all gasoline;
3) Clarify state and federal authority to eliminate MTBE or other oxygenates if necessary to protect public health or the environment;
4) Maintain the full air quality benefits achieved to date by the federal RFG program;
5) Promote consistency in fuel specifications through the timely implementation of effective federal requirements;
6) Provide adequate lead-time for the petroleum infrastructure to adjust in order to ensure adequate fuel supply and price stability.

These principles were endorsed by the American Lung Association (ALA), the Natural Resources Defense Council (NRDC), and the American Petroleum Institute (API). Thus began an unusual coalition effort among states, environmentalists, and oil companies and refineries to secure federal legislation. Notably absent from this alliance were ethanol

producers, who were unwilling to accept the basic premise of repealing the oxygen mandate. However, it was generally accepted that the ethanol industry would have to join in a compromise before legislation would pass in either house of Congress.

In the 106th Congress, Senators Tom Daschle (D-SD) and Richard Lugar (R-IN) introduced legislation backed by much of the ethanol community that lifted the oxygen mandate and replaced it with a more flexible national sales requirement for renewable fuels. Instead of mandating the sale of ethanol only in states participating in the RFG program, the Daschle/Lugar approach allowed oil companies to decide where it was most viable economically to sell ethanol throughout the nation. Governors Shaheen (D-NH) and King (I-ME) wrote to Senator Daschle expressing cautious support for the concept if properly designed.

The Northeast States and the environmental community worked with Senator Robert Smith (R-NH), then chair of the Environment and Public Works Committee, in an effort to harmonize the Daschle/Lugar approach with legislation introduced by Smith that effectively reflected the views of the Northeast States and their partners. Unfortunately, most oil companies rejected all legislative proposals that required the sale of ethanol, thus ending their Alliance involvement for the time being. Similarly, while Smith's approach was strongly supported by the majority of small ethanol producers and by Governors from a host of ethanol-producing states, large multi-international ethanol producers opposed lifting the oxygen mandate, even in exchange for a national program. Observers surmised that large ethanol producers took this position because allowing ethanol to be sold nationwide would increase competition from small producers. Whereas only the large companies possessed the infrastructure and capital to ship hundreds of millions of gallons of ethanol from the Midwest to the Northeast, California and Texas, areas that would have to use ethanol in lieu of MTBE if the oxygen mandate was retained.

Legislation establishing a national renewable fuels program would have required nearly unanimous support from ethanol interests and environmentalists, along with acceptance from some sectors of the oil industry. In an effort to create such a broad-based coalition, the eight Northeast States joined with the twenty-four state Governors' Ethanol Coalition (GEC) to advance a joint position. On July 19, 2000, in a letter signed by Governors representing thirty-two states urged Senator Smith to introduce legislation that phased out MTBE within four years; lifted the oxygen standard and replaced it with a national renewable fuels program; and maintained the full air quality benefits of the RFG program.

Sen. Smith re-introduced legislation on MTBE in the 107th Congress and his bill (S. 950) was reported out of the Environment and Public Works Committee on December 20, 2001. The bill would have banned MTBE within four years, allowed states to waive the oxygenate requirement, stimulated the use of ethanol and clean vehicles, increased funding to clean up contaminated ground water, and broadened EPA's authority to regulate fuel additives and emissions. It also provided funds to assist merchant MTBE producers in converting production facilities to produce cleaner additives.

S. 950 was almost entirely incorporated in S. 1766, omnibus energy legislation introduced by Senators Daschle and Jeff Bingaman (D-NM).[4] In addition, S. 1766 contained a national renewable fuels mandate, starting at two billion gallons in calendar year 2003 and increasing to five billion gallons in 2012. Refiners who produced more than the required amount of renewable fuel could earn tradable credits effective for one year. Some state officials on the east and west coasts remain concerned about whether their states could absorb the quantities of ethanol-blended fuel that were expected to be produced under this mandate without sacrificing air quality. However, a year-round nationwide renewable fuels requirement was generally viewed as more flexible than the current oxygen mandate under the RFG program, and thus as a positive starting point.

Prospects were more positive in 2002. The Senate Democratic leadership's energy bill (S. 1766) included several major provisions on MTBE and ethanol, and had been scheduled for early floor consideration. However, proposals such as a national renewable fuels mandate remain controversial, and legislative action will likely involve extended negotiations both within the Senate and between House and Senate energy conferees.

The senate was unable to move S. 1766 forward and get it passed in 2002. There is hope that a compromise agreed upon by the states, industry and environmental organizations will be presented in S. 1766 during the 108th Congress. Final enactment of any new policies into law is unlikely before the fall of 2003.

California Request to EPA for a Waiver of the Oxygen Mandate

In March 1999, California Governor Gray Davis ordered the phase-out of MTBE under Executive Order D-5-99. California, like all states with "severe" or "extreme" ozone nonattainment areas or wintertime CO nonattainment areas, must use oxygenated gasoline. As in the Northeast, California refiners and distributors have relied almost exclusively on MTBE to satisfy the Clean Air Act oxygenate requirement. The elimination of MTBE would result in a *de facto* ethanol mandate in California, unless it obtained a waiver of the oxygen mandate.

Ethanol is highly volatile when mixed with gasoline. To offset the pollutant impacts of the resulting mixture, refiners must blend ethanol with a more expensive lower-volatility base fuel than is required for MTBE blends.

Ethanol's volatility and transportation complexities also have potentially substantial environmental impacts. Under §211(k)(2)(b) of the Clean Air Act, the Administrator is authorized to waive the oxygen requirement, "if the requirement will prevent or interfere with attainment in a nonattainment area." Citing this authority, Governor Davis wrote to former Administrator Browner on April 12, 1999 requesting a waiver on the grounds that the oxygenate requirement was interfering with California's ability to attain both the

[4] The sole exception is that S. 1766 only repeals the current one-pound Reid Vapor Pressure waiver in section 211(h) of the Clean Air Act in states east of the Mississippi, whereas S. 950 repeals the waiver nationwide. This waiver facilitates the use of ethanol as a fuel additive by partially discounting its higher volatility relative to other oxygenates.

ozone and PM-10 NAAQS. Over the next two years, California submitted thousands of pages of technical support for its waiver request. The state contended that mandatory use of ethanol would increase NOx emissions compared to levels California could achieve if it were given flexibility to continue to develop its own fuel specifications. These NOx increases, it asserted, would undermine ozone and PM-10 nonattainment efforts. California's request also addressed the increased evaporative emissions that could be expected from ethanol use and their impact on ozone formation.

On June 12, 2001 EPA denied California's waiver request. The agency agreed with California that NOx emissions would be lower if the oxygen requirement were waived. However, found based on its own modeling that a waiver (a) would increase carbon monoxide (CO) emissions, and (b) could either increase or decrease volatile organic compound (VOC) emissions, largely based on the degree to which gasoline blends with and without ethanol were likely to be commingled (mixed) in vehicle fuel tanks. As a result of this uncertainty, the agency held that California had not clearly demonstrated that a waiver would help it comply with the ozone NAAQS. The agency did not address the issue of interference with the PM-10 NAAQS.

California contested EPA's analysis, arguing that the agency had ignored the state's detailed analysis showing that ethanol would increase air pollution. In August 2001 California filed a suit against the Agency in the 9th U.S. Circuit Court of Appeals in San Francisco, in which it asked the court to require EPA to waive the oxygen requirement. On August 10, 2001 briefs were filed and Maine joined the other Northeast States in filing an *amicus curiae* brief in support of California on June 27, 2002.

The outcome of California's lawsuit will have a significant impact on other states that find themselves in similar predicaments. In the Northeast, New York and Connecticut (both mandatory RFG states) have banned MTBE (see Map 1).[5] Connecticut's ban goes into effect on October 1, 2003 and the ban in New York goes into effect in January 2004. Connecticut is facing a crisis in preparing for the use of ethanol in the fuel by October. The use of ethanol requires significant changes in the way the fuel is transported, stored and blended. The industry's reliance on MTBE arose primarily from the fact that ethanol can not easily be transported by pipeline because it mixes with water and becomes unusable. Hence, moving hundreds of millions of gallons of ethanol from the middle of the country where it is produced to the coasts where it is required poses substantial logistical challenges as well cost increases.

Maine opted out of the RFG program, in 1999 and New Hampshire has filed a similar request, although it cannot leave the program before 2004 unless EPA gives it special relief.

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[5] Outside of the Northeast, states that had moved to ban or restrict use of MTBE as of late 2001 included Iowa, Minnesota, Nebraska, South Dakota, Colorado, Michigan, Arizona, Washington, and Illinois. Ethanol-blended RFG is used primarily in the Chicago and Milwaukee areas; additionally, Minnesota has adopted a year-round minimum oxygen content requirement that is effectively an ethanol mandate, since the state has banned other oxygenates.

Northeast/Mid-Atlantic States Fuels Task Force

There is growing interest in the Northeast in developing a regional clean fuel that does not contain MTBE but maintains the environmental benefits of the federal RFG program. However, unless states can obtain relief from the CAA oxygen requirement, large populated portions of the region will be unable to use such a fuel. Accordingly, either legislative relief at the national level (such as that proposed in S. 1766) or a favorable ruling in California's lawsuit against EPA will be needed before the Northeast can develop a regional solution to the RFG/MTBE/ethanol problem.

On January 15, 2003 there was a meeting of the Northeast / Mid Atlantic States Fuels Task Force in Boston at the NESCAUM (Northeast States for Coordinated Air Use Management) Offices. The meeting re-examined the issue of what is happening with fuels and particurlarly fuels with MTBE around the Northeast and Mid Atlantic regions.

Stakeholders which included the Environmental Protection Agency (EPA), the American Petroleum Industry (API), the Renewable Fuels Association (RFA) and others, presented information regarding the Renewable Fuels Standard (RFS) that was part of Congress' Energy Bill last year. This RFS represents a historic agreement between industry, environmental groups and states. The result of the meeting was to increase support for this agreement and to get it passed this Congressional Session. An important issue brought to light by this stakeholder meeting was the need for more education of our congressional delegations and state leadership on the RFS and regional fuels strategies.

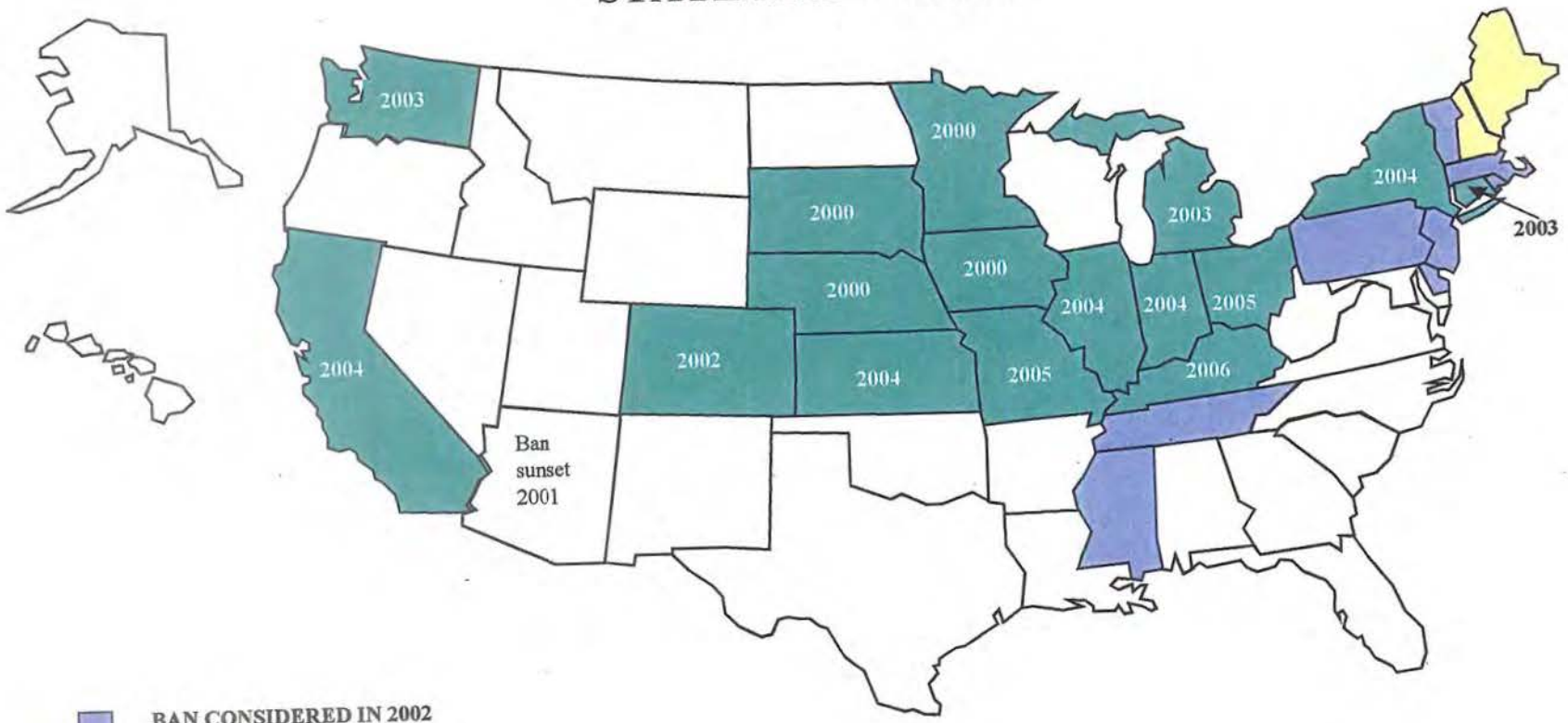
Beginning in January of 2004, states currently in the RFG program will have the ability to opt out of the program. At that time a regional fuel will be a more palatable issue for those states without options at the present time.

Federal MTBE Ban under the Toxic Substances Control Act (TSCA)

On March 24, 2000, the U.S, EPA published an Advanced Notice of Proposed Rulemaking (ANPRM) to "Initiate Rulemaking under the Toxic Substances Control Act to Eliminate or Limit the Use of MTBE as a Fuel Additive in Gasoline." Authority for such an action is found in section 6 of the Act (15 USC 2605). The standard for action under TSCA is extremely high and the process is quite cumbersome. As a point of comparison, EPA's effort to use the same authority to ban asbestos was unsuccessful. The EPA action under TSCA should be understood as an effort by the Agency to demonstrate that it is leaving no stone unturned in working to address MTBE. The use of an ANPRM as opposed to a Notice of Proposed Rulemaking is consistent with the desire to make a statement rather than a law. The resort to TSCA section 6 is also a clear statement of the inadequacy of EPA's authority under the Clean Air Act and Clean Water Act to address the problem. It would be unwise to rely solely upon EPA action under TSCA to address concerns about MTBE. As of early 2003 EPA had not announced further action on this rulemaking.

MAP 1

STATE MTBE BANS



BAN CONSIDERED IN 2002 (8 States)

BAN CURRENTLY IN PLACE (or date ban takes effect) (16 States)

STATES WITH GOAL OF BANNING (2 States)

AUGUST 2002

APPENDIX A

Fuel Data Report for _____ Location: _____

			RVP	Oxygen	MTBE	Other Oxygenate(s) in Fuel		.BENZ	ARO	SULF		
	Date of transfer	Octane	(psi)	(% wt O_2)	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels	Notes
1												
2												
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APPENDIX B

1st Quarter Data by Date of Delivery

	Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
1	Motiva	01/04/02	87	10.59	0.06	0.34			0.88	31.3	479	22537
2	Motiva	01/04/02	87	12.82	0	0			0.82	23.6	149	73191
3	Motiva	01/04/02	87	13.16	0.06	0.33			0.86	22.5	116	23837
4	Exxon Mobil	01/05/02	87	12.79	0.14	0.75			0.58	15.7	134	167207
5	Irving	01/06/02	87	12.97	0.03	0.16			0.38	17.4	184	74843
6	Exxon Mobil	01/07/02	93	12.13	0.1	0.2	TAME	0.39	0.37	35.2	45	15067
7	Motiva	01/09/02	87	11.75	0.05	0.27			0.96	27.3	306	43090
8	Motiva	01/09/02	87	12.78	0	0			0.89	25	140	4159
9	Motiva	01/09/02	93	12.68	0.32	1.46	TAME	0.31	0.41	30.1	43	34644
10	Motiva	01/09/02	87	13.05	0.05	0.27			0.97	24.4	124	27610
11	Gulf	01/12/02	88	11.85	0.79	4.24			0.8	25.1	207	19985
12	Webber	01/13/02	88	11.79	0.79	4.24			0.80	25.1	207	39817
13	Exxon Mobil	01/15/02	87	12.27	0.74	3.94			0.82	19.1	116	242807
14	Gulf	01/16/02	87	12.27	0.74	3.94			0.82	19.1	116	48110
15	Motiva	01/16/02	87	12.1	0.04	0.23			0.84	28.1	196	37249
16	Gulf	01/17/02	87	12.5	0	0			0.76	26.8	133	49938
17	Irving	01/20/02	93	12.05	2.31	12.45			0.22	15.8	26	18517
18	Exxon Mobil	01/20/02	87	12.69	0.06	0.31			0.67	21.9	74	187725
19	Irving	01/22/02	87	12.56	0.02	0.012			0.7	24.8	76	53222
20	Exxon Mobil	01/25/02	93	12.88	0.78	3.62	TAME	0.77	1.20	30.4	132	31642
21	Exxon Mobil	01/26/02	87	11.42	1.09	5.86			0.69	18.9	250	242153
22	Motiva	01/26/02	87	12.34	0	0			0.68	19.4	107	33681
23	Motiva	01/26/02	93	12.52	0.17	0.93			0.35	28	47	30081
24	Motiva	01/26/02	87	12.21	0	0			0.62	21.7	132	35782
25	Motiva	01/27/02	87	11.62	0.68	3.67			0.73	20.2	191	48677
26	Motiva	01/27/02	87	12.04	0.55	2.96			0.62	20.6	174	45611
27	Gulf	02/04/02	93	12.05	2.67	14.53			0.61	24.4	74	24420
28	Gulf	02/05/02	87	11.59	0.03	0	TAME	0.18	1.16	27.9	160	20946
29	Webber	02/05/02	88	14.16	0.15	0.78			0.77	21.7	121	48657
30	Exxon Mobil	02/07/02	87	9.96	1.05	5.55			0.78	18.8	495	189219

1st Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Irving	02/08/02	87	10.04	1	5.42			0.71	20	515	49839
Exxon Mobil	02/08/02	93	12.62	0.94	4.19	TAME	1.02	1.06	29.2	144	68508
Motiva	02/11/02	93	12.71	0.10	0.57			0.41	22.6	21	20250
Motiva	02/11/02	87	11.86	0.12	0.63			0.49	21.3	129	69632
Motiva	02/11/02	87	11.86	0.18	0.96			0.53	21.8	135	35880
Exxon Mobil	02/15/02	87	10.12	0.59	3.18			0.84	24.8	331	159795
Exxon Mobil	02/15/02	87	10.33	1.37	7.42			0.96	24.3	234	242813
Irving	02/16/02	87	10.07	0.11	0.59			0.75	31.7	77	80714
Motiva	02/17/02	87	12.13	0.04	0.21			0.79	25.8	252	65777
Motiva	02/17/02	87	12.49	0.01	0.07			0.84	25.9	229	37036
Gulf	02/19/02	87	10.33	1.37	7.42			0.96	24.3	234	73434
Webber	02/21/02	93	13.74	0.81	9.98			0.56	33.1	17	11851
Webber	02/21/02	87	12.87	0.05	0.28			0.64	24.5	58	59793
Irving	02/22/02	93	13.7	2.31	12.51			0.21	8	55	21292
Exxon Mobil	02/26/02	87	9.75	0.06	0.34			0.80	24.5	206	148588
Motiva	02/28/02	87	12.75	0.03	0.15			0.69	25.2	182	37696
Motiva	02/28/02	87	12.73	0	0			0.73	24.5	197	4767
Motiva	02/28/02	87	12.87	0.04	0.21			0.57	25.3	158	19304
Motiva	02/28/02	87	13.2	0	0			0.65	24.1	176	50238
Motiva	02/28/02	93	12.49	0.05	0.29			0.45	32.6	28	19964
Irving	03/04/02	87	11.3	0.07	0.35			0.73	20.5	182	85093
Exxon Mobil	03/05/02	87	9.87	0.50	1.94	TAME	0.81	0.60	18.9	278	156562
Irving	03/06/02	87	11.3	0.07	0.35			0.73	20.5	182	83923
Exxon Mobil	03/06/02	93	13.2	0.57	2.77	TAME	0.43	0.84	35.5	134	38358
Gulf	03/09/02	88	12.58	2.04	10.96			0.53	15.8	102	98618
Motiva	03/09/02	87	12.63	1.80	9.1	TAME	0.58	0.58	19.7	118	40649
Motiva	03/09/02	87	13.01	1.79	9.25	TAME	0.50	0.63	19.3	122	84369
Exxon Mobil	03/10/02	93	12.94	0.65	3.06	TAME	0.59	0.84	31.7	139	26018
Exxon Mobil	03/11/02	87	9.46	0.01	0.05			0.70	22.4	541	156672

1st Quarter Data by Date of Delivery

				RVP	Oxygen	MTBE	Other Oxygenate(s) in Fuel		BENZ	ARO	SULF	
	Terminal	**Date of transfer**	**Octane**	**(psi)**	**(% wt O_2)**	**(% Vol)**	**(Other Oxy. Name)**	**(% Vol)**	**(% Vol)**	**(% Vol)**	**(ppm)**	**Barrels**
	Irving	03/12/02	87	9.56	0	0			0.69	22.6	543	84099
	Motiva	03/13/02	93	12.82	0.03	0.18			0.88	33.3	18	35674
	Irving	03/15/02	93	12.73	2.28	12.56			0.21	13.2	26	22344
	Motiva	03/17/02	87	13.1	0.61	3.11	TAME	0.22	0.66	21.3	136	21918
	Motiva	03/17/02	87	12.85	0.36	1.51	TAME	0.45	0.94	21.6	168	46956
	Exxon Mobil	03/18/02	87	12.25	0.04	0.23			0.99	21.4	203	170475
	Gulf	03/26/02	88	10.18	0.4	1.43			1.05	23	90	40785
	Motiva	03/26/02	87	11.07	0.70	3.19	TAME	0.68	0.94	21.2	102	29055
	Exxon Mobil	03/26/02	87	10.18	0.40	1.43	TAME	0.85	1.05	23.0	90	166498
	Weighted Ave.			**11.56**	**0.54**	**2.81**	**TAME**	**0.67**	**0.75**	**22.35**	**201.20**	

2nd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Motiva	04/03/02	87	9.38	0.31	1.69			0.65	27.1	518	44231
Motiva	04/03/02	87	9.27	0.42	2.31			0.62	28.1	527	75453
Webber	04/04/02	87	11.53	0.20	0.95	TAME	0.16	0.87	26.4	204	38810.42
Exxon-Mobil	04/05/02	87	8.93	0.07	0.39			1	33.5	57	137905
Exxon-Mobil	04/05/02	93	7.37	1.14	6.16	TAME	0.4	0.36	22	218	33743
Irving	04/06/02	87	9	0.04	0.2			0.94	32.7	48	102319
Gulf	04/14/02	89	7.79	0.04	0.21			0.51	33.2	10	40447
Exxon-Mobil	04/14/02	87	7.79	0.06	0.32			1.84	25.5	105	84647
Exxon-Mobil	04/14/02	87	9.01	0.05	0.3			1.06	30	57	103286
Motiva	04/16/02	93	7.51	0	0			0.37	35	52	40790
Motiva	04/18/02	87	7.37	0.07	0.4			1.28	36	247	52229
Motiva	04/18/02	87	7.28	0.06	0.33			1.38	35.9	270	67300
Gulf	04/20/02	93	6.8	2.13	11.68			0.04	17.2	53	40030
Exxon-Mobil	04/22/02	87	7.84	0.06	0.33			1.07	26.4	143	39902
Exxon-Mobil	04/22/02	87	9.00	0.07	0.41			1.09	30.9	64	119164
Gulf	04/23/02	87	8.99	0.08	0.41			1.09	30.2	64	53964
Gulf	04/23/02	88	7.84	0.07	0.33			1.09	26.4	143	27462
Motiva	04/26/02	87	7.16	0.29	1.63			0.96	33.5	140	16842
Motiva	04/26/02	87	7.38	0.46	2.58			0.73	28.4	110	20558
Motiva	04/26/02	87	7.30	0.14	0.78			1.23	36.6	186	21958
Exxon-Mobil	04/26/02	93	7.80	1.09	5.96			0.38	17.2	223	16938
Exxon-Mobil	04/26/02	93	8.19	0.58	2.48	TAME	0.78	0.34	30	92	33522
Exxon-Mobil	04/29/02	87	7.56	0.04	0.23			1.01	34.1	205	102394
Exxon-Mobil	04/29/02	87	9.01	0.06	0.31			1.05	30.5	78	98743

2nd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Gulf	04/30/02	88	7.6	0.04	0.23			1.01	34.1	205	39926
Gulf	04/30/02	88	7.6	0.44	0.23	TAME	2.63	1.6	24.9	65	39910
Webber	05/02/02	93	8.37	0.15	0.84			1.35	46.6	60	22698.50
Webber	05/02/02	87	8.00	0.20	1.13			0.85	26.8	87	42379.69
Motiva	05/03/02	93	7.63	0.6	2.35	TAME	1.13	0.8	37.1	48	20290
Motiva	05/03/02	87	8.38	0.44	2.41			0.95	39.6	115	62651
Irving	05/04/02	93	9	2.1	11.35			0.25	14.9	37	22089
Exxon-Mobil	05/04/02	87	7.68	0.68	0.47	MEOH	1.14	1.22	34	235	44726
Exxon-Mobil	05/04/02	87	8.74	1.03	0.24	MEOH	1.88	1.29	34.2	183	128157
Irving	05/05/02	87	9	0.02	0.11			0.93	38.7	205	67370
Motiva	05/05/02	87	6.95	0.33	1.84			0.87	29.3	121	26691
Motiva	05/05/02	87	7.22	0.25	1.38			0.89	33.1	140	29293
Gulf	05/06/02	88	8.5	0.08	0.44			1.85	26.5	77	21463
Motiva	05/06/02	87	8.40	0.36	2.00			1.15	33.8	116	18185
Gulf	05/08/02	88	7.26	0	0			0.39	16.4	949	20175
Webber	05/08/02	93	8.56	0.71	3.91	TAME	0.15	0.79	43.5	10	11242.37
Webber	05/08/02	87	8.31	0.23	1.27			1.84	24.9	83	50112.07
Motiva	05/09/02	87	7.01	0.20	1.09			0.63	26.3	469	24976
Motiva	05/09/02	87	7.12	0.11	0.61			0.68	24.7	615	53961
Motiva	05/09/02	87	7.86	0.23	1.24			0.87	24.9	432	34639
Exxon-Mobil	05/11/02	87	7.82	0.03	0.16			0.71	30.6	265	84243
Exxon-Mobil	05/11/02	87	8.93	0.05	0.25			0.92	31.8	208	81728
Gulf	05/12/02	88	8.93	0.05	0.25			0.92	31.8	208	74115
Motiva	05/12/02	93	7.69	0.43	2.47			0.90	41.3	56	15109
Exxon-Mobil	05/13/02	93	7.63	1.11	4.33	TAME	2.13	0.29	32.5	86	33976
Exxon-Mobil	05/13/02	93	8.17	0.73	3.86	TAME	0.32	1.29	35.7	89	18963
Irving	05/14/02	87	9	0.05	0.25			1.04	29.1	63	53480
Gulf	05/17/02	88	7.26	0	0			0.39	16.4	949	39840
Motiva	05/18/02	93	7.88	0.69	3.00	TAME	1.03	1.04	38.9	48	3735
Motiva	05/18/02	93	7.73	0.33	1.86			0.63	45.2	5	51044
Irving	05/20/02	87	9	0.35	1.89			0.53	24	259	61745
Exxon-Mobil	05/20/02	87	7.73	0.03	0.16			0.63	28	373	84408

2nd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Exxon-Mobil	05/20/02	87	8.42	0.44	2.38			0.43	19.8	248	93048
Motiva	05/21/02	87	7.73	0.14	0.77			0.80	32.1	234	27566
Motiva	05/21/02	87	7.47	0.09	0.48			0.69	33.8	158	71098
Exxon-Mobil	05/26/02	87	7.80	0.13	0.71			0.58	27.2	450	83924
Exxon-Mobil	05/26/02	87	8.80	0.25	1.36			0.92	26	148	101994
Motiva	05/27/02	87	8.40	0.22	1.21			0.87	28.3	172	53465
Exxon-Mobil	05/28/02	93	7.55	0.75	3.27	TAME	0.91	0.39	25.7	101	29894
Exxon-Mobil	05/28/02	93	8.20	0.7	3.84	TAME	0.21	1.14	33.3	156	17942
Exxon-Mobil	06/01/02	87	8.73	0.73	1.19	N-Propanol T-Butanol I-Butanol	0.15 0.23 1.79	0.85	27.1	237	72117
Exxon-Mobil	06/01/02	87	7.74	0.51	1.28	N-Propanol I-Butanol	0.40 0.75	0.42	24.1	401	91484
Irving	06/02/02	87	9	0.17	0.93	I-Butanol N-Propanol	0.08 0.07	0.84	30.9	277	124440
Gulf	06/03/02	87	8.17	0	0			0.56	26.3	625	52872
Gulf	06/03/02	93	7.15	0.72	4.18			0.55	39.1	158	40178
Motiva	06/03/02	87	8.33	0.21	1.13			0.84	26.6	238	8228
Motiva	06/03/02	87	7.47	0.09	0.2	I-butanol	0.25	1.02	34.0	641	58392
Gulf	06/05/02	88	7.58	0.03	0	TAME	0.19	0.93	33.9	879	39194
Irving	06/09/02	93	9	2.26	12.25			0.21	14.5	20	26340
Exxon-Mobil	06/12/02	87	7.73	0.37	1.04	N-Propanol I-Butanol	0.07 0.70	0.47	22.9	445	66768
Exxon-Mobil	06/12/02	87	8.83	0.91	0.21	T-Butanol I-Butanol	0.20 3.61	1.14	31.6	315	98040
Webber	06/12/02	88	7.86	0.08	0.3	TAME	0.16	0.57	22.2	392	60660.26
Gulf	06/13/02	87	7.44	0.18	0.45	TAME	0.63	1.24	36	113	39864
Motiva	06/13/02	87	8.59	0.56	0.64	I-butanol	1.91	0.98	29.9	244	54425
Motiva	06/13/02	87	7.60	0.27	0.78	I-butanol	0.56	0.66	27.5	484	19159
Exxon-Mobil	06/14/02	87	7.52	0	0			0.9	32.1	888	19843.4
Motiva	06/15/02	87	7.48	0.05	0.30			0.90	26.1	767	24974
Motiva	06/15/02	87	7.60	0.04	0.23			0.84	24.4	752	55241
Exxon-Mobil	06/16/02	87	7.70	0.11	0.22	T - Butanal	0.3	0.87	31.9	117	78826
Exxon-Mobil	06/16/02	87	8.60	0.84	0.26	T - Butanal	3.39	1.11	32.8	286	98213
Gulf	06/17/02	87	7.7	0.11	0.22	t-butanol	3.39	0.87	31.9	117	8036
Gulf	06/17/02	87	8.6	0.84	0.26	t-butanol	0.3	1.11	32.8	286	53443
Motiva	06/18/02	93	7.56	0.13	0.75			0.38	39.1	28	37690
Motiva	06/18/02	93	7.53	0.29	1.24	TAME	0.46	0.52	36.9	47	42155

2nd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Exxon-Mobil	06/21/02	93	7.46	0.74	2.87	TAME	1.4	0.5	31	112	33524
Exxon-Mobil	06/21/02	93	8.65	0.76	4.19	TAME	0.1	0.56	42.7	55	21404
Gulf	06/22/02	93	7.5	0	0			0.28	28.3	27	50084
Gulf	06/22/02	87	7.6	0	0			0.52	30.6	89	24624
Motiva	06/22/02	87	7.32	0.05	0.20	N-Propanol	0.05	0.69	30.2	500	28940
Motiva	06/22/02	87	7.37	0.01	0.08			0.54	31.2	171	71321
Exxon-Mobil	06/22/02	87	7.3	0.01	0.08			0.73	19.2	33	92944
Exxon-Mobil	06/22/02	87	7.5	0.02	0.12			0.78	22.5	46	97992
Motiva	06/23/02	87	8.14	0.30	0.53	ETBE	1.3	0.86	30.4	178	40682
Weighted Ave.			**8.17**	**0.30**	**1.04**	**TAME**	**0.77**	**0.86**	**29.77**	**225.56**	
						t-butanol	**2.04**				
						I-butanol	**2.01**				
						N-propanol	**0.16**				
						ETBE	**1.3**				
						MEOH	**1.69**				

3rd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Exxon-Mobil	07/01/02	87	7.84	1.48	7.56	TAME	0.53	0.88	23.3	75	85170
Exxon-Mobil	07/01/02	87	8.64	2.06	11.25			0.91	24.9	43	91299
Gulf	07/02/02	87.2	7.7	0.14	0.2	TAME	0.62	1.22	40	82	39751
Motiva	07/03/02	87	7.76	1.28	6.66	TAME	0.36	0.82	25.3	71	60994
Exxon-Mobil	07/03/02	93	8.31	.93	4.26	TAME	0.43	0.95	35.0	98	33960
Exxon-Mobil	07/03/02	93	7.41	.68	2.96	TAME	0.94	.48	28	108	33999
Exxon-Mobil	07/05/02	87	7.72	1.63	7.56	TAME	1.55	0.97	23.6	70	64647
Exxon-Mobil	07/05/02	87	8.37	1.59	8.64			0.90	23.8	55	73786
Gulf	07/06/02	87.4	8.37	1.59	8.64			0.9	23.8	55	9902
Gulf	07/06/02	87.6	7.72	1.63	7.56	TAME	1.55	0.97	23.6	70	37488
Irving	07/07/02	87	8.43	1.65	9.07			1.02	22.7	57	53206
Webber	07/10/02	87.2	7.70	0.14	0.20	TAME	0.62	1.22	40.0	82	53054
Motiva	07/10/02	87	7.67	0.08	0.20	TAME	0.27	1.14	39.3	216	39577
Exxon-Mobil	07/11/02	87	7.72	1.71	7.36	TAME	2.25	0.98	25.4	105	91325
Exxon-Mobil	07/11/02	87	8.32	1.72	8.96	TAME	0.41	1.04	23.4	80	102987
Gulf	07/15/02	90.2	7.78	1.53	8.25	TAME	0.46	0.71	38.3	110	39353
Motiva	07/17/02	87	7.83	1.47	7.90	TAME	0.39	0.79	33.8	97	57693
Motiva	07/17/02	87	8.40	0.18	0.85	TAME	0.18	0.97	26.5	162	11567
Exxon-Mobil	07/17/02	87	7.79	0.31	1.32	TAME	0.43	0.88	31.7	176	39293
Exxon-Mobil	07/17/02	87	7.87	0.11	0.60			0.82	31.9	181	26065
Gulf	07/18/02	87.5	7.79	0.31	1.32	MEOH	0.43	0.88	31.7	176	44039
Gulf	07/18/02	87.4	7.87	0.11	0.6			0.82	31.9	181	47043
Irving	07/19/02	87	7.86	0.27	1.5			0.83	33.2	150	80778
Irving	07/19/02	93	6.89	2.12	11.55			0.24	16	33	22193
Exxon-Mobil	07/20/02	93	8.28	1.12	5.81	TAME	0.48	.85	33.9	108	19163
Exxon-Mobil	07/20/02	93	7.46	.59	2.76	TAME	0.54	.58	28.2	100	27697
Motiva	07/22/02	93	7.47	1.10	5.88	TAME	0.33	0.50	31.6	73	26658
Motiva	07/22/02	93	7.76	0.10	0.47	TAME	0.14	0.26	34.8	21	40097
Motiva	07/23/02	87	8.69	0.03	0.19			0.58	27.0	176	56239
Motiva	07/23/02	87	7.69	0.44	2.29	TAME	0.18	0.63	30.6	128	98498
Exxon-Mobil	07/23/02	87	7.64	0.02	0.13			0.56	28.2	145	69482
Exxon-Mobil	07/23/02	87	8.69	0.02	0.09			0.52	27.8	179	59790
Exxon-Mobil	07/23/02	87	7.69	0.02	0.20			0.79	32.1	93	73381
Exxon-Mobil	07/23/02	87	8.81	0.02	0.12			0.89	23.7	120	76615
Irving	07/25/02	87	8.67	0.02	0.09			0.9	22.2	271	47103
Motiva	07/25/02	87	7.80	0.42	2.17	TAME	0.17	0.64	29.2	150	10147
Motiva	07/25/02	87	8.89	0.03	0.19			0.69	26.5	213	29832
Gulf	07/31/02	89.2	7.77	1.39	7.48	TAME	0.29	1.06	32	90	39263

3rd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Exxon-Mobil	07/31/02	87	7.79	0.03	0.16			1.26	36.9	46	83308
Exxon-Mobil	07/31/02	87	8.92	0.02	0.12			0.80	20.1	260	79085
Irving	08/01/02	87	8.81	0.00	0			0.78	23.3	244	74643
Exxon-Mobil	08/02/02	93	8.47	1.45	7.73	TAME	0.50	1.04	38.7	92	16670
Exxon-Mobil	08/02/02	93	7.44	0.58	2.59	TAME	0.70	1.04	30.8	110	30857
Webber	08/03/02	88.5	8.62	0.64	2.54	TAME	1.17	2.14	29.9	447	49915
Motiva	08/05/02	87	7.96	1.17	6.59			1.02	33.3	145	53606
Motiva	08/06/02	87	7.83	0.05	0.27			0.6	32.5	61	51371
Motiva	08/06/02	87	7.95	1.08	5.66	TAME	0.36	0.97	31.5	102	6588
Exxon-Mobil	08/06/02	87	8.43	0.34	1.68	TAME	0.18	0.67	22.7	422	90968
Exxon-Mobil	08/06/02	87	7.80	0.11	0.15	TAME	0.46	1.24	38.9	47	79071
Gulf	08/07/02	87.2	7.8	0.11	0.15	TAME	0.46	1.24	38.9	47	27443
Gulf	08/07/02	87.4	8.43	0.34	1.68	TAME	0.18	0.67	22.7	422	39116
Exxon-Mobil	08/12/02	87	7.71	0.03	0.15			1.31	37.0	50	80391
Exxon-Mobil	08/12/02	87	8.37	0.49	2.65			0.44	19.1	352	89364
Gulf	08/13/02	87.8	8.37	0.49	2.65			0.44	19.1	352	27213
Gulf	08/13/02	87.8	7.34	1.92	10.21	TAME	0.25	0.64	15.8	137	39343
Motiva	08/13/02	87	7.77	0.32	1.78			1.25	36.5	67	19957
Motiva	08/13/02	87	8.50	0.25	1.38			0.56	23.6	268	19682
Gulf	08/15/02	93.4	7	1.86	6.13	TAME	4.19	0.28	9.6	127	24507
Exxon-Mobil	08/15/02	87	6.89	1.59	8.85			0.78	28.5	132	90711
Motiva	08/16/02	93	7.34	0.08	0.25	TAME	0.19	0.32	26.6	13	39893
Exxon-Mobil	08/16/02	93	8.58	0.35	1.79	TAME	0.17	0.63	40.1	43	20484
Exxon-Mobil	08/16/02	93	7.59	0.81	3.64	TAME	1.01	0.88	29.3	116	33925
Exxon-Mobil	08/16/02	87	7.48	0.15	.67	TAME	0.19	1.11	39.8	61	33333
Motiva	08/18/02	87	7.41	1.72	8.98	TAME	0.47	0.73	21.7	120	45382
Motiva	08/18/02	87	8.14	0.80	4.00	TAME	0.40	0.66	28.5	171	34992
Webber	08/19/02	87.6	8.21	0.02	0.10	TAME	0.14	0.91	21.1	411	49176
Webber	08/19/02	93.0	7.89	0.10	0.45	TAME	0.13	1.79	44.9	15	8840
Motiva	08/19/02	87	7.61	1.02	5.45	TAME	0.33	0.51	33.7	40	13445
Exxon-Mobil	08/19/02	87	7.0	1.71	9.54			0.73	28.1	151	80321
Irving	08/20/02	87	7.1	1.62	8.97			0.65	25.7	148	64831
Motiva	08/21/02	87	7.01	0.70	3.65	TAME	0.34	1.36	34.9	94	27173
Motiva	08/21/02	87	6.93	0.23	1.02	TAME	0.29	1.74	40.5	77	69810
Exxon-Mobil	08/25/02	87	8.0	0.83	.94	TAME	3.73	0.84	19.3	360	75613
Exxon-Mobil	08/27/02	87	7.23	0	0			0.37	40.4	12	106844
Exxon-Mobil	08/27/02	87	7.23	0	0			0.37	40.4	12	24000
Motiva	08/28/02	87	6.89	0.08	0.16	TAME	0.32	1.68	41.1	98	59866

3rd Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Motiva	08/28/02	87	8.50	0.99	1.11	TAME	4.80	1.27	23.3	136	58098
Irving	09/03/02	93	6.94	2.15	11.73			0.25	16.4	44	24044
Exxon-Mobil	09/04/02	87	7.82	0.99	5.45			0.70	28.6	152	79650
Exxon-Mobil	09/04/02	87	8.85	0.42	2.31			0.49	29.8	163	92257
Irving	09/05/02	87	8.43	0.51	2.8			0.79	28.7	119	47245
Gulf	09/05/02	87.3	7.82	0.99	5.45			0.7	28.6	152	17883
Gulf	09/05/02	87.6	7.69	0.24	1.19	TAME	0.15	0.51	27	376	39741
Motiva	09/05/02	87	7.75	0.83	0.99	TAME	4.00	1.24	26.5	203	55672
Motiva	09/05/02	87	7.77	1.09	2.08	TAME	4.06	1.04	27.2	227	43171
Motiva	09/05/02	87	8.44	0.74	0.79	TAME	3.83	1.22	25.1	124	912
Exxon-Mobil	09/07/02	87	7.81	0.96	5.33			0.75	28.1	155	91726
Exxon-Mobil	09/07/02	87	8.50	0.44	2.46			0.80	27.7	159	135068
Gulf	09/16/02	88.2	7.74	0.44	0.42	ETBE	2.05	0.63	27	744	41300
Gulf	09/17/02	88.3	9.24	0.10	0.56			1.38	26.5	311	34830
Gulf	09/17/02	93.4	9.21	2.39	13.51			0.79	33.4	231	23416
Motiva	09/17/02	93	9.99	1.87	10.34			0.49	31.2	62	14955
Motiva	09/17/02	87	7.21	2.21	9.64	TAME	2.73	0.72	17.6	131	46926
Motiva	09/17/02	87	7.37	2.34	9.68	TAME	3.37	0.64	14.1	141	52686
Exxon-Mobil	09/17/02	93	8.32	0	0			0.88	38.7	66	64691
Webber	09/18/02	87.7	8.62	0.26	0.87	TAME ETBE	0.34 0.24	0.68	22.2	224	74657
Webber	09/18/02	93.5	12.22	0.08	0.2	TAME ETBE	0.12 0.13	1.10	35.4	20	20709
Motiva	09/18/02	87	7.83	0.25	1.41			0.76	29.3	526	29550
Motiva	09/18/02	87	7.37	1.25	6.89			0.71	20.7	237	29250
Motiva	09/18/02	93	10.44	2.02	11.09			0.49	28.9	76	5108
Exxon-Mobil	09/18/02	87	10.70	0.44	1.89	TAME	0.57	0.81	30.7	158	209678
Irving	09/19/02	87	11.04	0.31	1.67			0.77	29.3	167	27679
Exxon-Mobil	09/24/02	87	12.09	0.51	2.72			0.74	22.1	177	144994
Irving	09/25/02	87	11.99	0.42	2.25	TAME	0.34	0.73	27	165	92686
Gulf	09/27/02	87	12	0.00	0			0.74	14.2	15	174467
Motiva	09/29/02	93	12.08	0.04	0.22			0.66	37.0	28	39868
Motiva	09/29/02	87	11.18	0.15	0.55	TAME	0.32	0.60	17.5	62	49151
Motiva	09/29/02	87	10.76	0.12	0.27	TAME	0.42	0.77	18.5	52	32484
Motiva	09/29/02	87	10.83	0.39	1.68	TAME	0.40	0.65	16.5	52	70331
Weighted Average			**9.44**	**0.75**	**3.62**	**TAME**	**1.06**	**0.93**	**30.92**	**163.82**	
						ETBE	**0.77**				
						MEOH	**0.43**				

4th Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Irving	10/02/02	93	12.4	2.2	12.13	t-butanol	0.23	0.26	15.6	34	23999
Exxon-Mobil	10/02/02	87	9.54	1.50	7.91			0.42	16.9	913	150754
Exxon-Mobil	10/03/02	93	9.96	0.78	4.15	TAME	0.24	1.03	36.4	62	46054
Motiva	10/04/02	87	9.07	0.89	4.87			0.80	21.2	167	30031
Exxon-Mobil	10/05/02	87	10.38	0.49	2.66			0.9	26.5	125	126912
Irving	10/06/02	87	10.43	0.48	2.67	TAME	0.51	0.85	23.5	128	80828
Gulf	10/08/02	93	11.57	1.87	10.26	t-butanol	0.08	0.47	28.2	63	20166
Exxon-Mobil	10/16/02	87	10.39	0.53	2.76	2-Propenol	0.1	0.83	23.8	121	185429
Webber	10/17/02	87	13.18	0.00	0.00			0.49	24.10	60	65576
Irving	10/17/02	87	10.38	0.53	2.94			0.79	25.5	135	53446
Exxon-Mobil	10/20/02	87	9.39	0.97	5.13			0.52	16.3	982	49951
Motiva	10/22/02	87	9.46	1.74	8.77	TAME	0.52	1.74	32.5	776	49907
Motiva	10/22/02	87	9.50	1.30	6.46	TAME	0.45	0.57	33.9	848	54183
Gulf	10/23/02	87	12.7	0.05	0.1	TAME	0.2	0.51	21.7	43	39891
Gulf	10/24/02	90	7	0	0			0.43	17.4	991	49451
Exxon-Mobil	10/24/02	93	11.16	0	0			0.65	33.7	59	33980
Exxon-Mobil	10/26/02	87	10.31	0.49	2.63			0.64	25	122	219790
Motiva	10/28/02	87	9.95	1.06	5.21	TAME	0.52	0.92	30.6	345	20008
Gulf	10/30/02	87	12.18	0.58	3.16			0.64	24.2	43	97904
Gulf	10/30/02	93	13.19	2.17	11.77			0.42	22.9	28	27603
Motiva	10/30/02	87	12.01	0.50	2.49	TAME	0.22	0.72	22.0	51	43331
Motiva	10/30/02	93	12.73	1.10	6.03			0.44	33.6	37	26349
Motiva	10/30/02	87	12.07	0.45	2.44			0.71	23.4	64	43620
Motiva	10/30/02	87	11.55	0.26	1.18	TAME	0.23	0.59	24.3	293	59203
Motiva	10/30/02	87	11.37	0.29	1.3	TAME	0.29	0.29	23.9	236	59323
Motiva	10/30/02	87	11.53	0.13	0.42	TAME	0.29	0.66	20.9	116	7569
Motiva	10/30/02	93	12.34	0.14	0.75			0.54	36.4	12	18109
Gulf	11/03/02	87	9.08	0.63	3.12			0.39	18.3	352	39718
Exxon-Mobil	11/03/02	87	9.08	0.63	3.12			0.39	18.3	352	156587
Irving	11/04/02	87	8.99	0.57	3.15			0.38	16.5	344	44790
Exxon-Mobil	11/04/02	93	11.04	0.86	4.53	TAME	0.22	0.76	37.2	41	33794
Exxon-Mobil	11/05/02	87	11.19	0.08	0.32	N-Propanol	0.08	0.59	18.4	203	119154
Irving	11/07/02	87	10.61	0.22	1.23	TAME	0.38	0.64	42.2	231	95775
Motiva	11/08/02	87	11.30	0.12	0.63			0.61	20.6	220	24945
Gulf	11/15/02	87	7.55	0	0			0.38	42.7	21	113484
Exxon-Mobil	11/15/02	93	11.20	0.62	3.36			0.39	25.9	80	68938
Exxon-Mobil	11/17/02	87	10.88	0.44	2.39			0.93	30.5	134	240482
Webber	11/21/02	88	8.58	0.58	3.12			0.42	14.00	462	67068
Gulf	11/27/02	93	15	0.05	0	TAME	0.28	0.28	28.1	33	8181

4th Quarter Data by Date of Delivery

Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
Motiva	11/27/02	87	13.04	0.46	2.45			0.46	26.5	131	44168
Motiva	11/27/02	87	13.01	0.06	0.30			0.87	24.9	129	82510
Motiva	11/27/02	87	11.72	0.03	0.18			0.57	29.4	193	12862
Motiva	11/27/02	93	12.98	0.43	2.37			0.34	35.0	27	2303
Exxon-Mobil	11/28/02	87	10.16	0.29	1.56			0.74	28.3	162	174262
Irving	11/29/02	87	10.29	0.3	1.66	TAME	1.26	0.82	38.9	153	67824
Gulf	12/09/02	87	11.6	0.25	1.33			1.04	26.2	130	45129
Exxon-Mobil	12/09/02	87	11.66	0.25	1.33			1.04	26.2	130	197001
Gulf	12/10/02	87	13.8	0.11	0.6			0.71	33.1	85	67185
Gulf	12/10/02	93	13.3	1.69	9.13			0.39	24.7	45	22200
Exxon-Mobil	12/14/02	87	11.78	0.17	0.94			0.98	31.4	169	107615
Irving	12/15/02	87	11.3	0.18	1.01			0.91	26.1	116	94527
Exxon-Mobil	12/16/02	87	9.00	0.46	2.52			0.56	25.2	407	39968
Motiva	12/16/02	87	11.97	0.12	0.65			0.89	25.4	110	40072
Motiva	12/18/02	87	9.41	0.32	1.76			0.54	30.3	388	74032
Motiva	12/18/02	87	9.57	0.27	1.47			0.50	25.6	346	88339
Motiva	12/18/02	87	9.33	0.30	1.62			0.55	34.1	370	74502
Exxon-Mobil	12/19/02	93	12.07	0.88	4.79			0.63	25.2	87	66896
Motiva	12/19/02	93	12.84	0.23	1.27			0.52	32.6	46	22795
Webber	12/21/02	87	13.64	0.12	0.60	TAME	0.07	1.29	24.50	280	70683
Webber	12/21/02	93	14.43	0.10	0.33	TAME	0.23	0.40	34.30	20	12688
Exxon-Mobil	12/23/02	87	12.22	0.03	0.19			1.01	35.5	81	213659
Gulf	12/24/02	87	12.2	0.03	0.19			1.01	35.5	81	27143
Exxon-Mobil	12/27/02	87	12.35	0	0			0.86	33.3	55	156447
Gulf	12/28/02	88	8.67	0	0			0.57	19.8	710	40337
Motiva	12/28/02	87	12.07	0.08	0.44			0.44	29.5	92	83142
Motiva	12/29/02	93	12.78	0.19	1.07			0.48	23.3	34	15465
Weighted Average			**10.89**	**0.43**	**2.27**	**TAME**	**0.4**	**0.71**	**27.14**	**216.45**	
						t-butanol	**0.16**				
						N-Propanol	**0.08**				
						2-Propanol	**0.1**				
Whole Year Weighted Average			**9.96**	**0.50**	**2.44**	**TAME**	**0.80**	**0.81**	**27.69**	**201.2**	
						ETBE	**0.89**				
						MEOH	**1.43**				
						t_butanol	**0.98**				
						I-butanol	**1.26**				
						N-Propanol	**0.14**				
						2-Propanol	**0.10**				

APPENDIX C

Ozone Season by Date of Delivery

	Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
1	Webber	05/02/02	93	8.37	0.15	0.84			1.35	46.6	60	22698.50
2	Webber	05/02/02	87	8.00	0.20	1.13			0.85	26.8	87	42379.69
3	Motiva	05/03/02	93	7.63	0.6	2.35	TAME	1.13	0.8	37.1	48	20290
4	Motiva	05/03/02	87	8.38	0.44	2.41			0.95	39.6	115	62651
5	Irving	05/04/02	93	9	2.1	11.35			0.25	14.9	37	22089
6	Exxon-Mobil	05/04/02	87	7.68	0.68	0.47	MEOH	1.14	1.22	34	235	44726
7	Exxon-Mobil	05/04/02	87	8.74	1.03	0.24	MEOH	1.88	1.29	34.2	183	128157
8	Irving	05/05/02	87	9	0.02	0.11			0.93	38.7	205	67370
9	Motiva	05/05/02	87	6.95	0.33	1.84			0.87	29.3	121	26691
10	Motiva	05/05/02	87	7.22	0.25	1.38			0.89	33.1	140	29293
11	Gulf	05/06/02	88	8.5	0.08	0.44			1.85	26.5	77	21463
12	Motiva	05/06/02	87	8.40	0.36	2.00			1.15	33.8	116	18185
13	Gulf	05/08/02	88	7.26	0	0			0.39	16.4	949	20175
14	Webber	05/08/02	93	8.56	0.71	3.91	TAME	0.15	0.79	43.5	10	11242.37
15	Webber	05/08/02	87	8.31	0.23	1.27			1.84	24.9	83	50112.07
16	Motiva	05/09/02	87	7.01	0.20	1.09			0.63	26.3	469	24976
17	Motiva	05/09/02	87	7.12	0.11	0.61			0.68	24.7	615	53961
18	Motiva	05/09/02	87	7.86	0.23	1.24			0.87	24.9	432	34639
19	Exxon-Mobil	05/11/02	87	7.82	0.03	0.16			0.71	30.6	265	84243
20	Exxon-Mobil	05/11/02	87	8.93	0.05	0.25			0.92	31.8	208	81728
21	Gulf	05/12/02	88	8.93	0.05	0.25			0.92	31.8	208	74115
22	Motiva	05/12/02	93	7.69	0.43	2.47			0.90	41.3	56	15109
23	Exxon-Mobil	05/13/02	93	7.63	1.11	4.33	TAME	2.13	0.29	32.5	86	33976
24	Exxon-Mobil	05/13/02	93	8.17	0.73	3.86	TAME	0.32	1.29	35.7	89	18963
25	Irving	05/14/02	87	9	0.05	0.25			1.04	29.1	63	53480
26	Gulf	05/17/02	88	7.26	0	0			0.39	16.4	949	39840
27	Motiva	05/18/02	93	7.88	0.69	3.00	TAME	1.03	1.04	38.9	48	3735
28	Motiva	05/18/02	93	7.73	0.33	1.86			0.63	45.2	5	51044
29	Irving	05/20/02	87	9	0.35	1.89			0.53	24	259	61745

	Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
30	Exxon-Mobil	05/20/02	87	7.73	0.03	0.16			0.63	28	373	84408
31	Exxon-Mobil	05/20/02	87	8.42	0.44	2.38			0.43	19.8	248	93048
32	Motiva	05/21/02	87	7.73	0.14	0.77			0.80	32.1	234	27566
33	Motiva	05/21/02	87	7.47	0.09	0.48			0.69	33.8	158	71098
34	Exxon-Mobil	05/26/02	87	7.80	0.13	0.71			0.58	27.2	450	83924
35	Exxon-Mobil	05/26/02	87	8.80	0.25	1.36			0.92	26	148	101994
36	Motiva	05/27/02	87	8.40	0.22	1.21			0.87	28.3	172	53465
37	Exxon-Mobil	05/28/02	93	7.55	0.75	3.27	TAME	0.91	0.39	25.7	101	29894
38	Exxon-Mobil	05/28/02	93	8.20	0.7	3.84	TAME	0.21	1.14	33.3	156	17942
39	Exxon-Mobil	06/01/02	87	8.73	0.73	1.19	N-Propanol T-Butanol I-Butanol	0.15 0.23 1.79	0.85	27.1	237	72117
40	Exxon-Mobil	06/01/02	87	7.74	0.51	1.28	N-Propanol I-Butanol	0.40 0.75	0.42	24.1	401	91484
41	Irving	06/02/02	87	9	0.17	0.93	I-Butanol N-Propanol	0.08 0.07	0.84	30.9	277	124440
42	Gulf	06/03/02	87	8.17	0	0			0.56	26.3	625	52872
43	Gulf	06/03/02	93	7.15	0.72	4.18			0.55	39.1	158	40178
44	Motiva	06/03/02	87	8.33	0.21	1.13			0.84	26.6	238	8228
45	Motiva	06/03/02	87	7.47	0.09	0.2	I-butanol	0.25	1.02	34.0	641	58392
46	Gulf	06/05/02	88	7.58	0.03	0	TAME	0.19	0.93	33.9	879	39194
47	Irving	06/09/02	93	9	2.26	12.25			0.21	14.5	20	26340
48	Exxon-Mobil	06/12/02	87	7.73	0.37	1.04	N-Propanol I-Butanol	0.07 0.70	0.47	22.9	445	66768
49	Exxon-Mobil	06/12/02	87	8.83	0.91	0.21	T-Butanol I-Butanol	0.20 3.61	1.14	31.6	315	98040
50	Webber	06/12/02	88	7.86	0.08	0.3	TAME	0.16	0.57	22.2	392	60660.26
51	Gulf	06/13/02	87	7.44	0.18	0.45	TAME	0.63	1.24	36	113	39864
52	Motiva	06/13/02	87	8.59	0.56	0.64	I-butanol	1.91	0.98	29.9	244	54425
53	Motiva	06/13/02	87	7.60	0.27	0.78	I-butanol	0.56	0.66	27.5	484	19159

Ozone Season by Date of Delivery

				RVP	Oxygen	MTBE	Other Oxygenate(s) in Fuel		BENZ	ARO	SULF	
	Terminal	Date of transfer	Octane	(psi)	(% wt O_2)	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
54	Exxon-Mobil	06/14/02	87	7.52	0	0			0.9	32.1	888	19843.4
55	Motiva	06/15/02	87	7.48	0.05	0.30			0.90	26.1	767	24974
56	Motiva	06/15/02	87	7.60	0.04	0.23			0.84	24.4	752	55241
57	Exxon-Mobil	06/16/02	87	7.70	0.11	0.22	T - Butanol	0.3	0.87	31.9	117	78826
58	Exxon-Mobil	06/16/02	87	8.60	0.84	0.26	T - Butanol	3.39	1.11	32.8	286	98213
59	Gulf	06/17/02	87	7.7	0.11	0.22	t-butanol	3.39	0.87	31.9	117	8036
60	Gulf	06/17/02	87	8.6	0.84	0.26	t-butanol	0.3	1.11	32.8	286	53443
61	Motiva	06/18/02	93	7.56	0.13	0.75			0.38	39.1	28	37690
62	Motiva	06/18/02	93	7.53	0.29	1.24	TAME	0.46	0.52	36.9	47	42155
63	Exxon-Mobil	06/21/02	93	7.46	0.74	2.87	TAME	1.4	0.5	31	112	33524
64	Exxon-Mobil	06/21/02	93	8.65	0.76	4.19	TAME	0.1	0.56	42.7	55	21404
65	Gulf	06/22/02	93	7.5	0	0			0.28	28.3	27	50084
66	Gulf	06/22/02	87	7.6	0	0			0.52	30.6	89	24624
67	Motiva	06/22/02	87	7.32	0.05	0.20	N-Propanol	0.05	0.69	30.2	500	28940
68	Motiva	06/22/02	87	7.37	0.01	0.08			0.54	31.2	171	71321
69	Exxon-Mobil	06/22/02	87	7.3	0.01	0.08			0.73	19.2	33	92944
70	Exxon-Mobil	06/22/02	87	7.5	0.02	0.12			0.78	22.5	46	97992
71	Motiva	06/23/02	87	8.14	0.30	0.53	ETBE	1.3	0.86	30.4	178	40682
72	Exxon-Mobil	07/01/02	87	7.84	1.48	7.56	TAME	0.53	0.88	23.3	75	85170
73	Exxon-Mobil	07/01/02	87	8.64	2.06	11.25			0.91	24.9	43	91299
74	Gulf	07/02/02	87.2	7.7	0.14	0.2	TAME	0.62	1.22	40	82	39751
75	Motiva	07/03/02	87	7.76	1.28	6.66	TAME	0.36	0.82	25.3	71	60994
76	Exxon-Mobil	07/03/02	93	8.31	.93	4.26	TAME	0.43	0.95	35.0	98	33960
77	Exxon-Mobil	07/03/02	93	7.41	.68	2.96	TAME	0.94	.48	28	108	33999
78	Exxon-Mobil	07/05/02	87	7.72	1.63	7.56	TAME	1.55	0.97	23.6	70	64647
79	Exxon-Mobil	07/05/02	87	8.37	1.59	8.64			0.90	23.8	55	73786
80	Gulf	07/06/02	87.4	8.37	1.59	8.64			0.9	23.8	55	9902
81	Gulf	07/06/02	87.6	7.72	1.63	7.56	TAME	1.55	0.97	23.6	70	37488
82	Irving	07/07/02	87	8.43	1.65	9.07			1.02	22.7	57	53206
83	Webber	07/10/02	87.2	7.70	0.14	0.20	TAME	0.62	1.22	40.0	82	53054

Ozone Season by Date of Delivery

	Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
84	Motiva	07/10/02	87	7.67	0.08	0.20	TAME	0.27	1.14	39.3	216	39577
85	Exxon-Mobil	07/11/02	87	7.72	1.71	7.36	TAME	2.25	0.98	25.4	105	91325
86	Exxon-Mobil	07/11/02	87	8.32	1.72	8.96	TAME	0.41	1.04	23.4	80	102987
87	Gulf	07/15/02	90.2	7.78	1.53	8.25	TAME	0.46	0.71	38.3	110	39353
88	Motiva	07/17/02	87	7.83	1.47	7.90	TAME	0.39	0.79	33.8	97	57693
89	Motiva	07/17/02	87	8.40	0.18	0.85	TAME	0.18	0.97	26.5	162	11567
90	Exxon-Mobil	07/17/02	87	7.79	0.31	1.32	TAME	0.43	0.88	31.7	176	39293
91	Exxon-Mobil	07/17/02	87	7.87	0.11	0.60			0.82	31.9	181	26065
92	Gulf	07/18/02	87.5	7.79	0.31	1.32	MEOH	0.43	0.88	31.7	176	44039
93	Gulf	07/18/02	87.4	7.87	0.11	0.6			0.82	31.9	181	47043
94	Irving	07/19/02	87	7.86	0.27	1.5			0.83	33.2	150	80778
95	Irving	07/19/02	93	6.89	2.12	11.55			0.24	16	33	22193
96	Exxon-Mobil	07/20/02	93	8.28	1.12	5.81	TAME	0.48	.85	33.9	108	19163
97	Exxon-Mobil	07/20/02	93	7.46	.59	2.76	TAME	0.54	.58	28.2	100	27697
98	Motiva	07/22/02	93	7.47	1.10	5.88	TAME	0.33	0.50	31.6	73	26658
99	Motiva	07/22/02	93	7.76	0.10	0.47	TAME	0.14	0.26	34.8	21	40097
100	Motiva	07/23/02	87	8.69	0.03	0.19			0.58	27.0	176	56239
101	Motiva	07/23/02	87	7.69	0.44	2.29	TAME	0.18	0.63	30.6	128	98498
102	Exxon-Mobil	07/23/02	87	7.64	0.02	0.13			0.56	28.2	145	69482
103	Exxon-Mobil	07/23/02	87	8.69	0.02	0.09			0.52	27.8	179	59790
104	Exxon-Mobil	07/23/02	87	7.69	0.02	0.20			0.79	32.1	93	73381
105	Exxon-Mobil	07/23/02	87	8.81	0.02	0.12			0.89	23.7	120	76615
106	Irving	07/25/02	87	8.67	0.02	0.09			0.9	22.2	271	47103
107	Motiva	07/25/02	87	7.80	0.42	2.17	TAME	0.17	0.64	29.2	150	10147
108	Motiva	07/25/02	87	8.89	0.03	0.19			0.69	26.5	213	29832
109	Gulf	07/31/02	89.2	7.77	1.39	7.48	TAME	0.29	1.06	32	90	39263
110	Exxon-Mobil	07/31/02	87	7.79	0.03	0.16			1.26	36.9	46	83308
111	Exxon-Mobil	07/31/02	87	8.92	0.02	0.12			0.80	20.1	260	79085
112	Irving	08/01/02	87	8.81	0.00	0			0.78	23.3	244	74643
113	Exxon-Mobil	08/02/02	93	8.47	1.45	7.73	TAME	0.50	1.04	38.7	92	16670

	Terminal	Date of transfer	Octane	RVP (psi)	Oxygen (% wt O_2)	MTBE (% Vol)	Other Oxygenate(s) in Fuel (Other Oxy. Name)	(% Vol)	BENZ (% Vol)	ARO (% Vol)	SULF (ppm)	Barrels
114	Exxon-Mobil	08/02/02	93	7.44	0.58	2.59	TAME	0.70	1.04	30.8	110	30857
115	Webber	08/03/02	88.5	8.62	0.64	2.54	TAME	1.17	2.14	29.9	447	49915
116	Motiva	08/05/02	87	7.96	1.17	6.59			1.02	33.3	145	53606
117	Motiva	08/06/02	87	7.83	0.05	0.27			0.6	32.5	61	51371
118	Motiva	08/06/02	87	7.95	1.08	5.66	TAME	0.36	0.97	31.5	102	6588
119	Exxon-Mobil	08/06/02	87	8.43	0.34	1.68	TAME	0.18	0.67	22.7	422	90968
120	Exxon-Mobil	08/06/02	87	7.80	0.11	0.15	TAME	0.46	1.24	38.9	47	79071
121	Gulf	08/07/02	87.2	7.8	0.11	0.15	TAME	0.46	1.24	38.9	47	27443
122	Gulf	08/07/02	87.4	8.43	0.34	1.68	TAME	0.18	0.67	22.7	422	39116
123	Exxon-Mobil	08/12/02	87	7.71	0.03	0.15			1.31	37.0	50	80391
124	Exxon-Mobil	08/12/02	87	8.37	0.49	2.65			0.44	19.1	352	89364
125	Gulf	08/13/02	87.8	8.37	0.49	2.65			0.44	19.1	352	27213
126	Gulf	08/13/02	87.8	7.34	1.92	10.21	TAME	0.25	0.64	15.8	137	39343
127	Motiva	08/13/02	87	7.77	0.32	1.78			1.25	36.5	67	19957
128	Motiva	08/13/02	87	8.50	0.25	1.38			0.56	23.6	268	19682
129	Gulf	08/15/02	93.4	7	1.86	6.13	TAME	4.19	0.28	9.6	127	24507
130	Exxon-Mobil	08/15/02	87	6.89	1.59	8.85			0.78	28.5	132	90711
131	Motiva	08/16/02	93	7.34	0.08	0.25	TAME	0.19	0.32	26.6	13	39893
132	Exxon-Mobil	08/16/02	93	8.58	0.35	1.79	TAME	0.17	0.63	40.1	43	20484
133	Exxon-Mobil	08/16/02	93	7.59	0.81	3.64	TAME	1.01	0.88	29.3	116	33925
134	Exxon-Mobil	08/16/02	87	7.48	0.15	.67	TAME	0.19	1.11	39.8	61	33333
135	Motiva	08/18/02	87	7.41	1.72	8.98	TAME	0.47	0.73	21.7	120	45382
136	Motiva	08/18/02	87	8.14	0.80	4.00	TAME	0.40	0.66	28.5	171	34992
137	Webber	08/19/02	87.6	8.21	0.02	0.10	TAME	0.14	0.91	21.1	411	49176
138	Webber	08/19/02	93.0	7.89	0.10	0.45	TAME	0.13	1.79	44.9	15	8840
139	Motiva	08/19/02	87	7.61	1.02	5.45	TAME	0.33	0.51	33.7	40	13445
140	Exxon-Mobil	08/19/02	87	7.0	1.71	9.54			0.73	28.1	151	80321
141	Irving	08/20/02	87	7.1	1.62	8.97			0.65	25.7	148	64831
142	Motiva	08/21/02	87	7.01	0.70	3.65	TAME	0.34	1.36	34.9	94	27173
143	Motiva	08/21/02	87	6.93	0.23	1.02	TAME	0.29	1.74	40.5	77	69810

Ozone Season by Date of Delivery

				RVP	Oxygen	MTBE	Other Oxygenate(s) in Fuel		BENZ	ARO	SULF	
	Terminal	Date of transfer	Octane	(psi)	(% wt O_2)	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
144	Exxon-Mobil	08/25/02	87	8.0	0.83	.94	TAME	3.73	0.84	19.3	360	75613
145	Exxon-Mobil	08/27/02	87	7.23	0	0			0.37	40.4	12	106844
146	Exxon-Mobil	08/27/02	87	7.23	0	0			0.37	40.4	12	24000
147	Motiva	08/28/02	87	6.89	0.08	0.16	TAME	0.32	1.68	41.1	98	59866
148	Motiva	08/28/02	87	8.50	0.99	1.11	TAME	4.80	1.27	23.3	136	58098
149	Irving	09/03/02	93	6.94	2.15	11.73			0.25	16.4	44	24044
150	Exxon-Mobil	09/04/02	87	7.82	0.99	5.45			0.70	28.6	152	79650
151	Exxon-Mobil	09/04/02	87	8.85	0.42	2.31			0.49	29.8	163	92257
152	Irving	09/05/02	87	8.43	0.51	2.8			0.79	28.7	119	47245
153	Gulf	09/05/02	87.3	7.82	0.99	5.45			0.7	28.6	152	17883
154	Gulf	09/05/02	87.6	7.69	0.24	1.19	TAME	0.15	0.51	27	376	39741
155	Motiva	09/05/02	87	7.75	0.83	0.99	TAME	4.00	1.24	26.5	203	55672
156	Motiva	09/05/02	87	7.77	1.09	2.08	TAME	4.06	1.04	27.2	227	43171
157	Motiva	09/05/02	87	8.44	0.74	0.79	TAME	3.83	1.22	25.1	124	912
158	Exxon-Mobil	09/07/02	87	7.81	0.96	5.33			0.75	28.1	155	91726
159	Exxon-Mobil	09/07/02	87	8.50	0.44	2.46			0.80	27.7	159	135068
Weighted Average				**8.39**	**0.57**	**2.53**	**TAME**	**0.93**	**0.87**	**30.57**	**205.32**	
							ETBE	**1.30**				
							MEOH	**1.43**				
							t-Butanol	**1.07**				
							N-Propanol	**0.16**				
							I-butanol	**1.26**				
							2-Propanol	**0.10**				