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# 2004 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

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February 2005



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Cover: Exxon-Mobil Terminal, South Portland Maine. Photo by Cathy Richardson, DEP



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## Section I: Executive Summary

### 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. During the second special session of the 121<sup>st</sup> Legislature, Section 585-H was revised and Section 585-I enacted to reflect a statewide ban on MTBE beginning on January 1, 2007. Maine also continues to work toward passage of national legislation that would achieve the goal of eliminating MTBE from all 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 1<sup>st</sup> to September 15<sup>th</sup> 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 in gasoline would drop to levels sold in Maine prior to initial implementation of the RFG program (1995). Under the RFG program, the MTBE levels were 11% by volume; compared to pre-RFG



levels of MTBE which were typically 2 to 3 percent by volume in regular grade gasoline.

For the first time since 2000, when Maine began tracking MTBE levels in the gasoline, MTBE levels have actually increased rather than decreased. During this time MTBE levels have shown a continued steady decline until this year. The levels of MTBE have nearly doubled from last year's average of 2.38 % by volume to 4.49 % by volume for 2004. There are two possible explanations for this increased level. First the increased level may be a result of recent MTBE bans in Connecticut and New York. Gasoline fuel in Connecticut and New York uses ethanol in the gasoline as a substitute for the banned MTBE. It is possible that the MTBE previously blended into Connecticut and New York's gasoline is being utilized in other states' gasoline. The second possible reason for the increased level of MTBE in Maine may be that some refiners who supply fuel to Maine, their gasoline production is being directed towards other boutique fuel markets (such as the California fuel market) resulting in higher MTBE volume fuels being shipped to Maine from other refineries. The Department is still investigating the reasons and origins of the increased MTBE concentration.

In 2004 there were nearly three times the percentage of shipments with MTBE levels greater than 11 percent by volume than in 2003. The percentages are based upon the number of shipments in 2003 and 2004 that contained MTBE only with oxygen levels over 2% by weight. In 2003, 15 of 316 shipments contained 2% oxygen by weight compared to 38 of 284 shipments containing 2% oxygen by weight.

In addition, the DEP tracks not only the levels of MTBE but also other gasoline components including sulfur, benzene, and aromatics. Sulfur in 2004 went down significantly from the weighted average of 157 parts per million (ppm) in 2003 to 94.39 ppm in 2004. Benzene levels went from 0.96 percent by volume in 2003 to 0.81 percent in 2004; aromatic levels went down from 27.68 percent by volume to 22.84 percent over the same time period. The reduced levels of benzene and aromatics are probably related to the increased levels of MTBE. See Table 1 for a summary of all 2004 gasoline component concentrations.

**TABLE 1 DATA SUMMARY**

Weighted Average for:	RVP (psi)	Oxygen (wt %)	MTBE (% vol)	Other Oxy. (% vol) TAME	Other Oxy. (% vol) ETBE	Other Oxy. (% vol) ETOH	Other Oxy. (% vol) MEOH	Other Oxy. (% vol) T-butanol	Other Oxy. (% vol) DIPE	Other Oxy. (% vol) n-Propanol	Benz. (% vol)	Aro. (% vol)	Sulf. (ppm)
1st Quarter	12.45	0.79	3.67	1.88	2.67	0.20	0.00	0.65	0.57	0.11	0.74	21.04	86.11
2nd Quarter	8.19	1.21	6.22	1.33	3.03	0.37	0.00	0.47	0.82	0.31	0.99	24.89	112.63
3rd Quarter	8.62	1.02	4.86	2.70	0.51	0.00	0.04	0.10	0.00	0.00	0.83	23.93	107.07
4th Quarter	11.56	0.60	3.12	1.56	1.94	0.00	0.03	0.31	0	0.00	0.69	21.56	70.20
Ozone Season	8.00	1.13	5.60	2.38	1.22	0.04	0.04	0.17	0.40	0.31	0.90	24.90	114.01
Full Year	10.16	0.91	4.49	2.08	2.40	0.13	0.04	0.40	0.81	0.16	0.81	22.84	94.39



## 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 2-3 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 also 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 public 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 reported to be detected (1ppb detection limit) in approximately 16% of the public water supplies and 951 private wells sampled in Maine.

As a result of this study, 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.

The Department 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, the Department also anticipated MTBE would not be totally eliminated since the petroleum industry continues to rely on MTBE as an octane enhancer in gasoline fuel production.

At the direction of the 120<sup>th</sup> legislature, the Department collects data on gasoline sold in Maine to determine the MTBE levels in gasoline. The Department tracks not only the levels of MTBE but also other gasoline components including sulfur, benzene, and aromatics. The data collection was also intended to track the progress made towards the goal of eliminating MTBE in gasoline sold in Maine (the 120<sup>th</sup> legislature also set an MTBE elimination date goal of January 2003). This goal was not met, and during the second special session of the 121<sup>st</sup> Legislature, MTBE was banned in gasoline fuels, beginning on January 1, 2007.

The State of Maine is also required to promote and actively participate in regional efforts to develop alternatives of the use of MTBE as a gasoline additive. As a result of that requirement, the Northeast States for Coordinated Air Use Management (NESCAUM) completed a study in the summer of 2001, of the potential effects on public health and the environment, and on the regulatory and economic impacts of using ethanol as an oxygenate.

In 1999, a Northeast Regional Fuels Task Force was established at the direction 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 to minimize the impact of fuel quality changes on gasoline supply and price.

For the past four years, the Task Force worked with the petroleum and ethanol industries and environmental groups to forge a compromise in legislative language on a Congressional bill that would phase the elimination of MTBE and require a national fuel with a renewable content requirement with clean air performance benefits. This language eventually became attached to the current proposed Energy Bill. It is unclear whether an energy bill with the MTBE elimination provisions will pass this year.

At this time, the Task Force is investigating other potential possibilities including a northeast region-wide ban on MTBE containing fuel. 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 alternative to current

levels of MTBE in gasoline. The Department will continue to work with the Task Force and monitor all MTBE issues throughout the region and the country.

## B. Legislative Requirement

38 M.R.S.A. §585-H, enacted by the Legislature in 2000, requires MTBE monitoring and reductions. This section was amended by the 121<sup>st</sup> Legislature during the second special session in 2004 to reflect a ban on MTBE. Those changes are reflected below by strikeouts. Specifically the rule now reads:

*“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 1<sup>st</sup> 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.”*

In addition to the changes made to §585-H, §585-I was added. §585-I was enacted to read:

*“The following provisions apply to the sale of MTBE in the State.*

- 1. Definition. For purposes of this section, “MTBE” means the gasoline oxygenate methyl tertiary butyl ether.*
- 2. Prohibition on sale. Beginning January 1, 2007, a person may not sell, offer for sale, distribute or blend in this State gasoline that contains more than ½ of 1% by volume MTBE that is intended for sale for ultimate consumers in this State.”*

3. *Emergency order. Notwithstanding subsection 2, whenever the commissioner finds that a danger to public health or safety exists due to low supply of gasoline in the State, the commissioner may issue an emergency order waiving the sales prohibition in subsection 2.*

*Sec. 5. Report. By March 1, 2006, the Department of Environmental Protection shall present a report to the joint standing committee of the Legislature having jurisdiction over natural resources matters on the implementation and status of the prohibition on the sale of gasoline containing more than ½ of 1% by volume methyl tertiary butyl ether, or MTBE.*



### C. 211 (c) Waiver

Following the 1990 Clean Air Act Amendments, Governor John McKernan, Jr. opted Maine's non-attainment counties<sup>1</sup> 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<sup>2</sup>.

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

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<sup>1</sup> Hancock and Waldo counties were subsequently opted-out of the RFG program on December 28, 1994.

<sup>2</sup> 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."

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 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:

<u>Terminal</u>	<u>Location</u>
Gulf	Portland
Irving	Bucksport
Exxon-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 2004, 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 (TBA), Ethanol, N-propanol and diisopropyl ether (DIPE). Fourteen shipments of gasoline contained no MTBE at all, only other oxygenates either alone or in combination. In some shipments, there were up to three different oxygenates plus MTBE in the gasoline delivered to the bulk terminals. This is, according to the petroleum industry, 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 2003 gasoline contained 2.38 percent by volume MTBE and a 0.48 percent weighted average oxygen level (Table 2). The MTBE volume percent nearly doubled between 2003 and 2004 to 4.49 percent by volume.

**Table 2 MTBE & Other Oxygenates**

Weighted Ave for:	Oxygen Wt %	MTBE Vol %	TAME Vol %	ETBE Vol %	MEOH Vol %	Ethanol Vol %	T-butanol Vol %
2002 Data	0.50	2.44	0.80	0.89	1.43	0	0.98
2003 Data	0.48	2.38	0.93	0.73	0.18	0.01	0.22
2004 Data	0.91	4.49	2.08	2.40	0.04	0.13	0.40

Weighted Ave for:	isobutanol Vol %	Sec-butanol Vol %	N-Propanol Vol %	DIPE Vol %
2002 Data	1.26	0	0	0
2003 Data	0.22	0.26	0	1.40
2004 Data	0	0	0.16	0.81

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 2004.

**Table 3: Shipment Summary**

Number of shipments of gasoline.....	284
Number of shipments with no oxygenate.....	41
Number of shipments with MTBE only.....	171
Number of shipments with MTBE plus other oxygenates.....	58
Number of shipments with an other oxygenate but no MTBE.....	14
Number of shipments with MTBE only with oxygen levels greater than 2% by weight.....	38
Number of shipments with oxygen levels greater than 2% by weight containing oxygenates other than MTBE alone.....	0

For all shipments of gasoline:

MTBE	4.49% by volume
Weighted average oxygen level	0.91% by weight

Figure 1 depicts the levels of MTBE in gasoline by quarters for 2002, 2003, and 2004. The level of MTBE in gasoline in 2004 remained consistently high for all four quarters. This may be due to the MTBE bans in Connecticut and New York. Gasoline fuel in Connecticut and New York uses ethanol in the gasoline as a substitute for the banned MTBE. Another reason for the high levels may be that some refiners who supply fuel to Maine, their gasoline production is being directed towards other boutique fuel markets (such as the California fuel market) resulting in higher MTBE volume fuels being shipped to Maine from other refineries. While the blends 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 2004 and Figure 3 depicts the volume percent of MTBE for 2002, 2003, and 2004 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 2002, 2003, and 2004 by shipment.

Table 4 summarizes the other (non-MTBE) oxygenates in the Maine fuel reported during 2004.

**Table 4: Other Oxygenates Reported**

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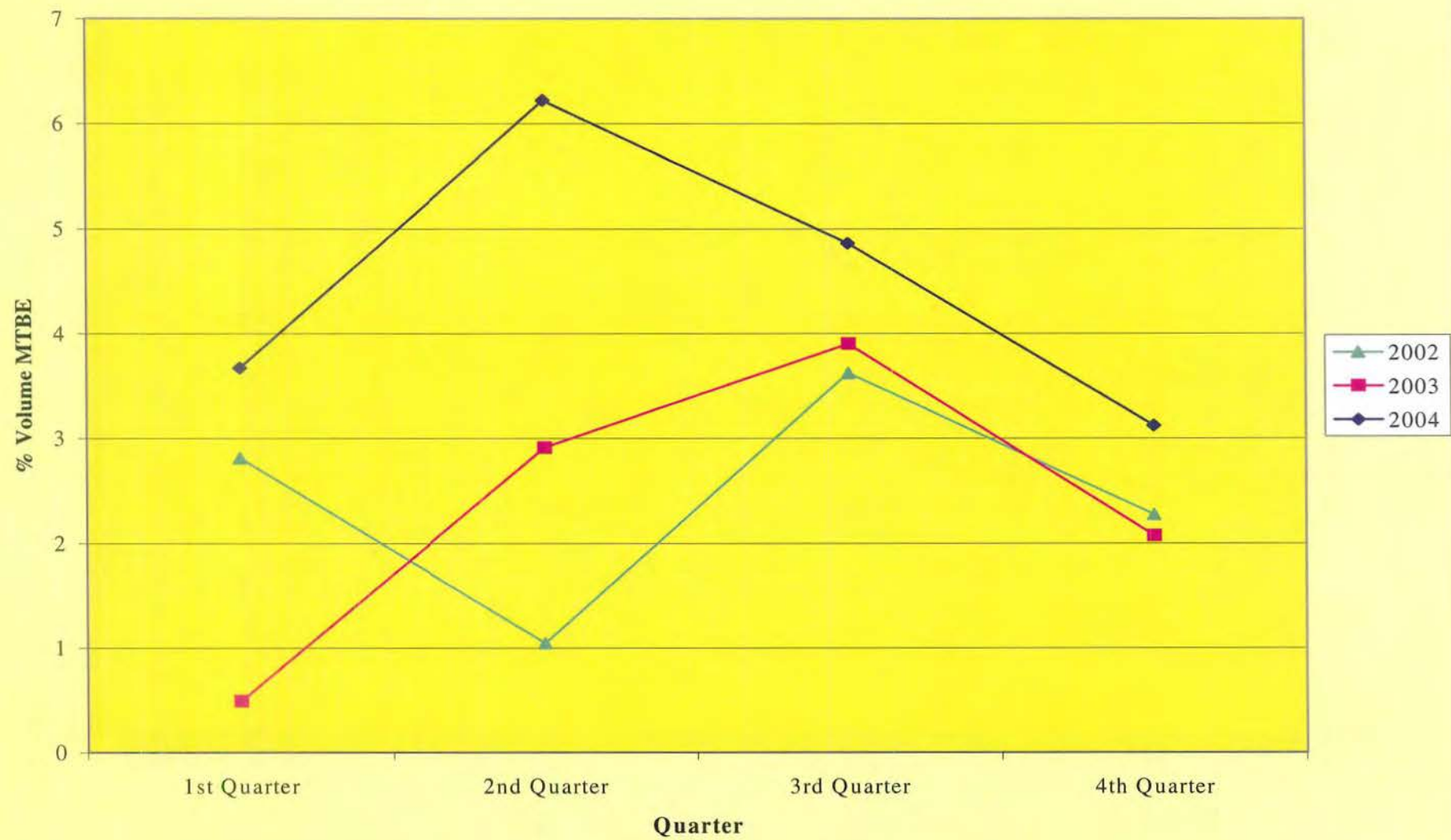
Oxygenate	Number of Shipments	Percent Oxygenate (by volume)
TAME	38	2.08
ETBE	24	2.40
Ethanol	4	0.13
MEOH	2	0.04
T-butanol	14	0.40
N-propanol	3	0.16
DIPE	5	0.81

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.<sup>3</sup>

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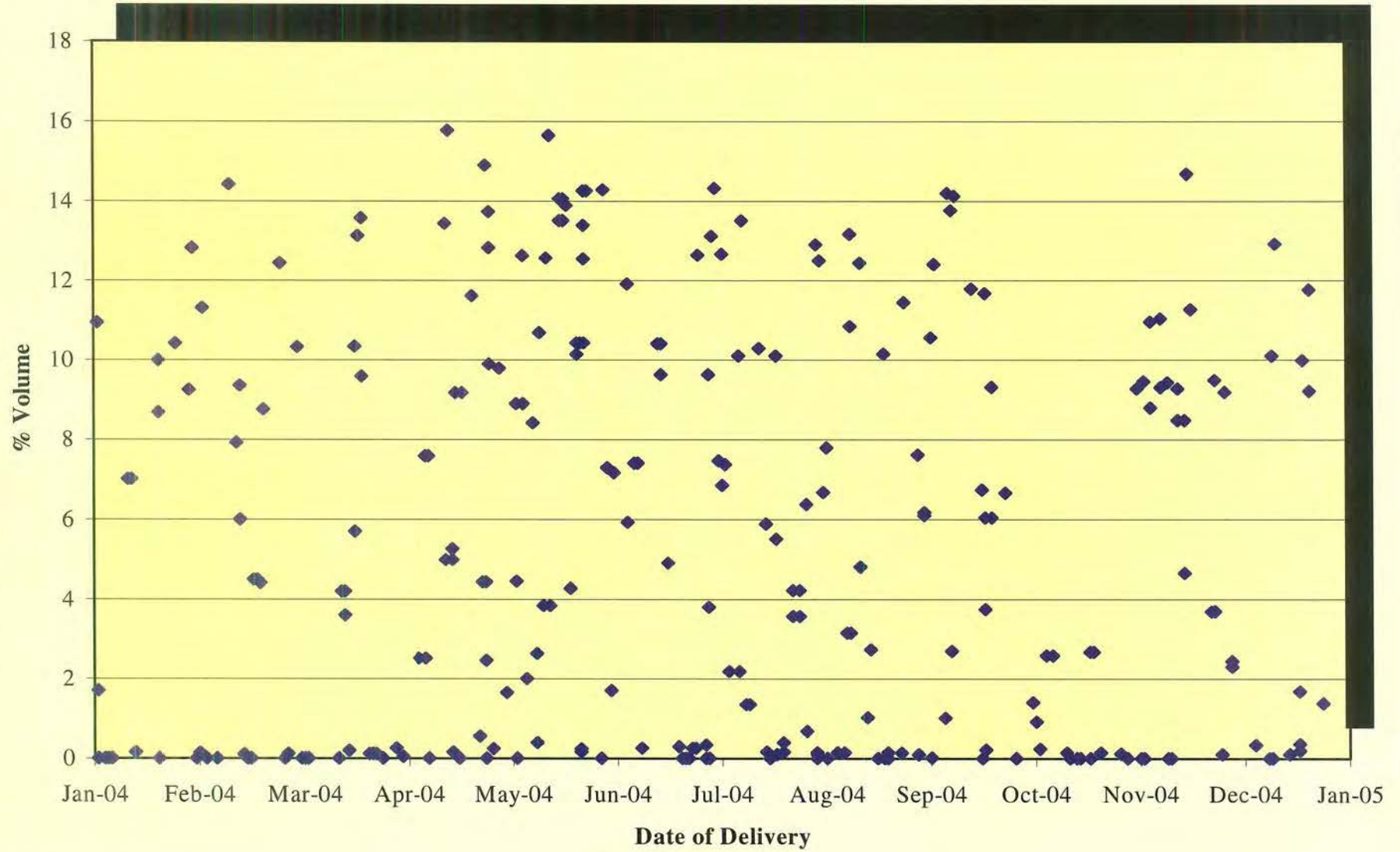
<sup>3</sup> RFG was required only in the seven southern Maine counties.

**Figure 1**  
**% Volume MTBE by Quarter**

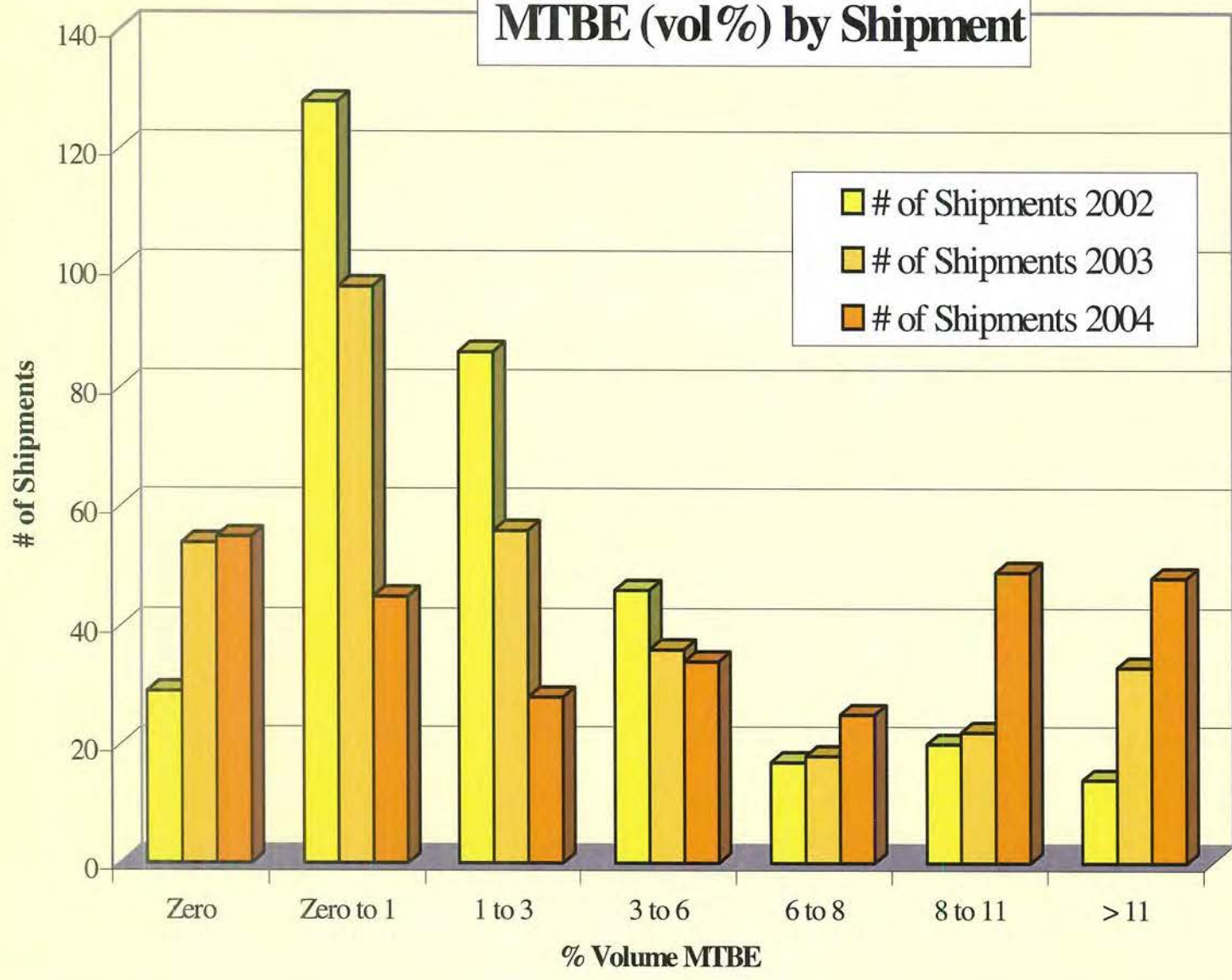




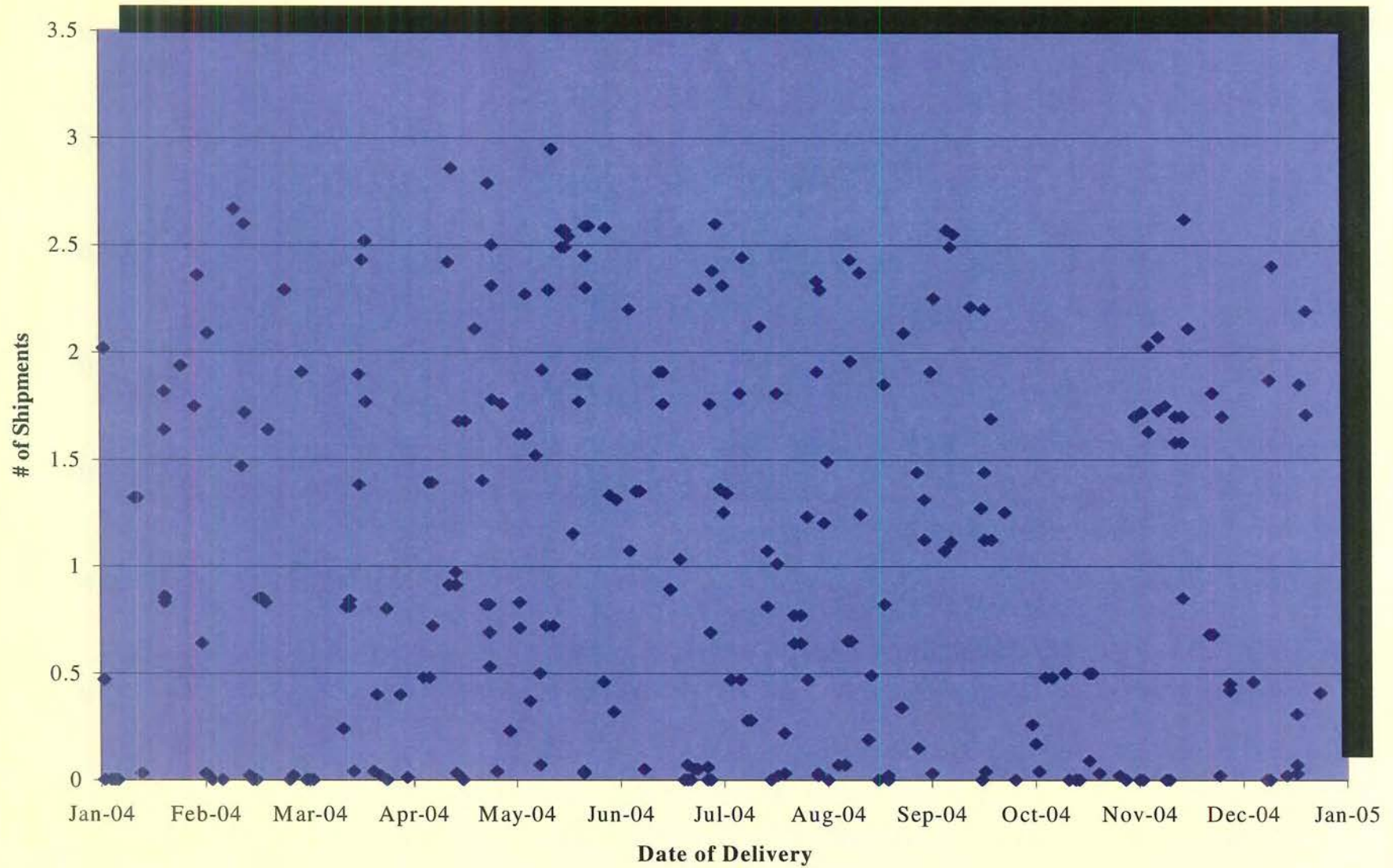
**Figure 2**  
**MTBE (vol %) by Delivery Date**



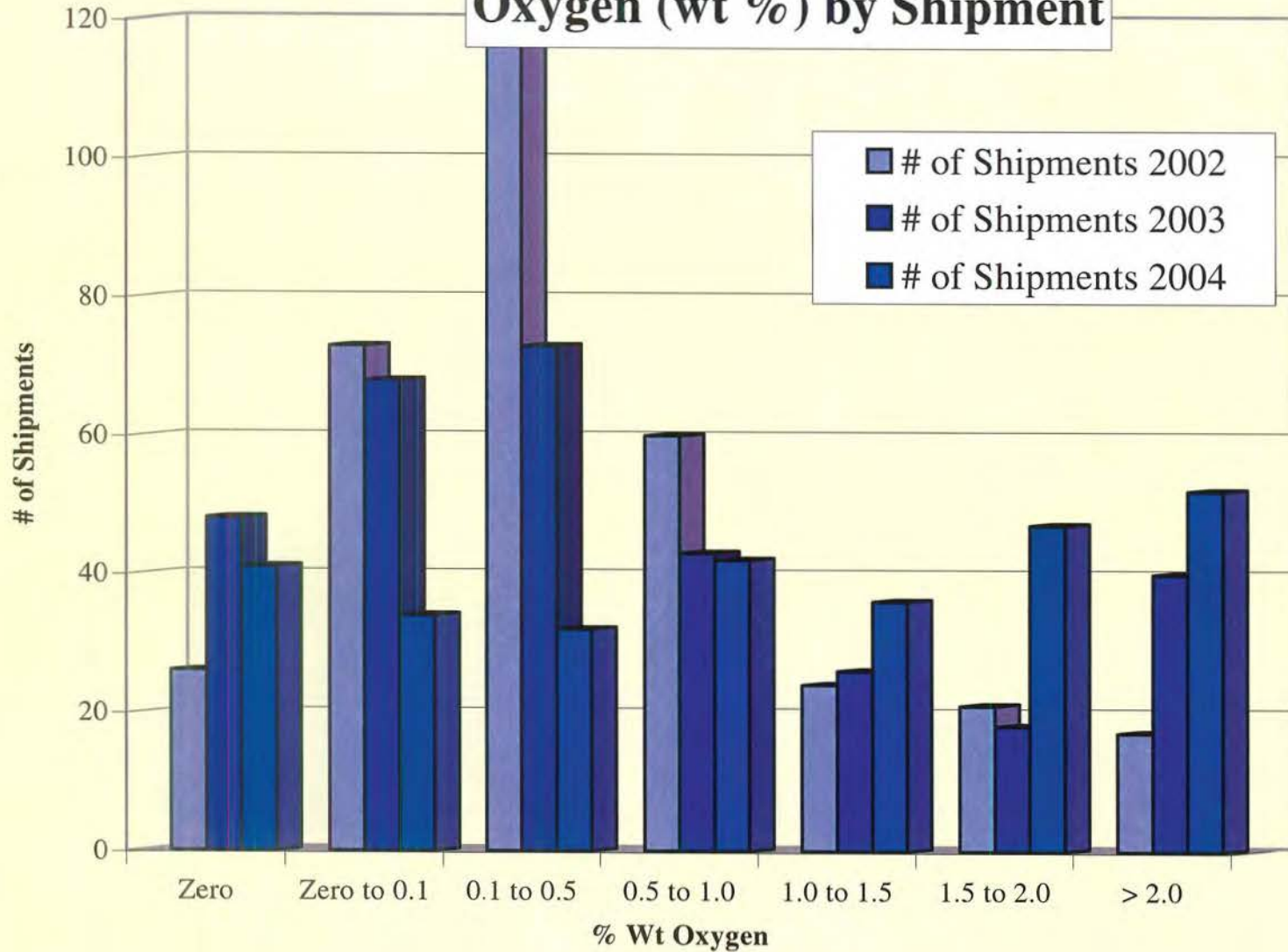
**Figure 3**  
**MTBE (vol %) by Shipment**



**Figure 4**  
**Oxygen (wt %) by Delivery Date**



**Figure 5**  
**Oxygen (wt %) by Shipment**



**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 2004 fuel compared to 2003 and 2002 fuel, plus Phase 1 and Phase 2 Reformulated Gasoline (RFG).

**Table 5: Other Gasoline Components**

Weighted Averages for:	Sulfur	Benzene	Aromatics
2004 data	94.39 ppm	0.81 % Vol	22.84 % Vol
2003 data	156.7 ppm	0.96 % Vol	27.68 % Vol
2002 data	201 ppm	0.81 % Vol	27.69 % 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

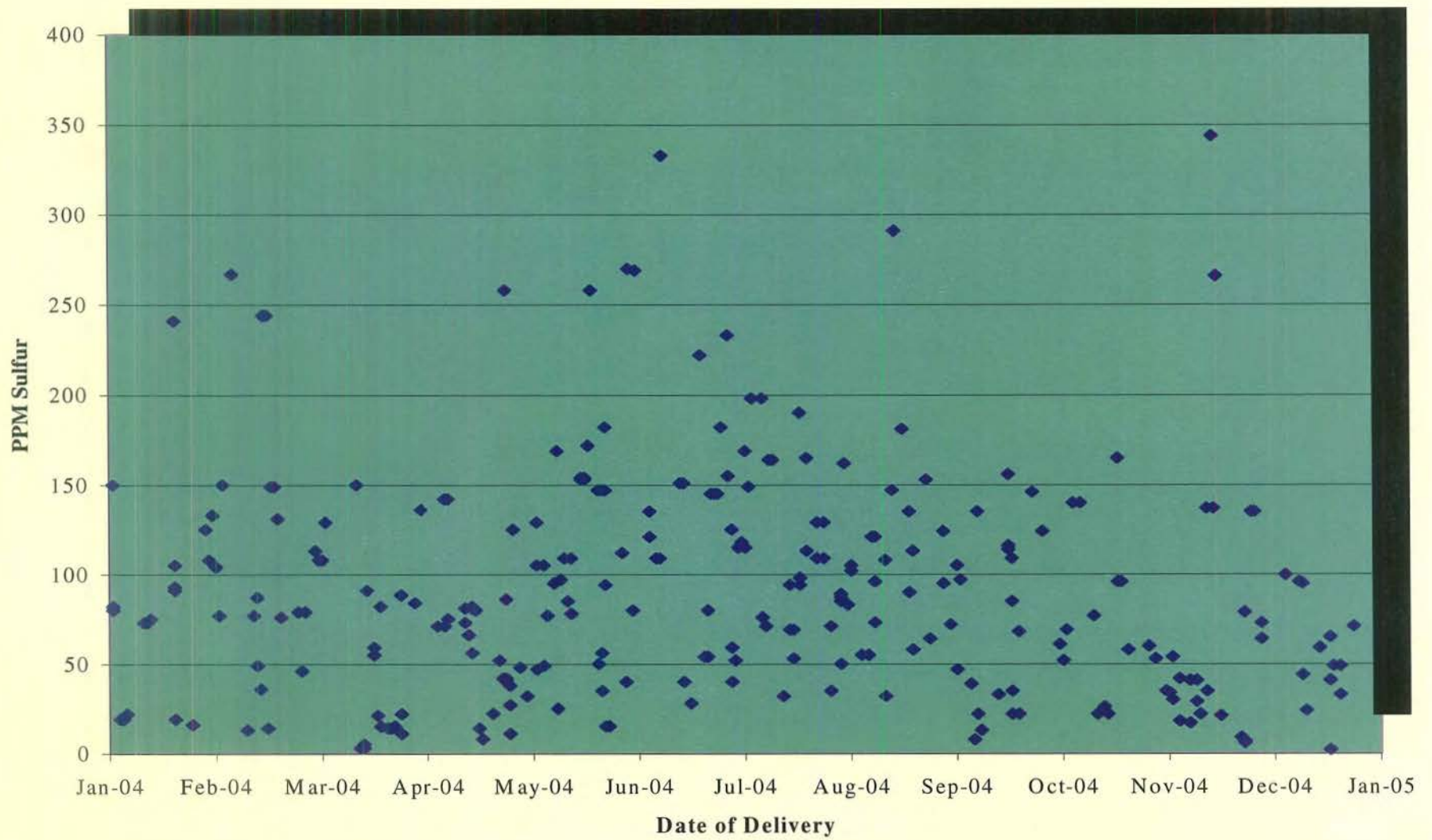
*Note: Phase 1 RFG started in 1995. Phase 2 RFG started in 2000. Maine opted-out of the RFG program in 1999.*

The sulfur levels in 2004 went down significantly from 2003. In 2004, none of the shipments reported had sulfur levels over 400 ppm. In comparison, 5 percent of the fuel shipments, or approximately 5 percent of the volume of gasoline were reported over 400 ppm in 2003. This may be due in part to the fuel industry gearing up for the low sulfur gasoline requirements that will be completely phased in by 2006. Figure 6 is a scatter-diagram of the ppm sulfur by delivery date and Figure 7 shows the ppm of sulfur for 2002, 2003, and 2004 by shipment. Figure 7-A shows the barrels of sulfur by range of sulfur (i.e. so many barrels for those deliveries with less than 100 ppm sulfur).

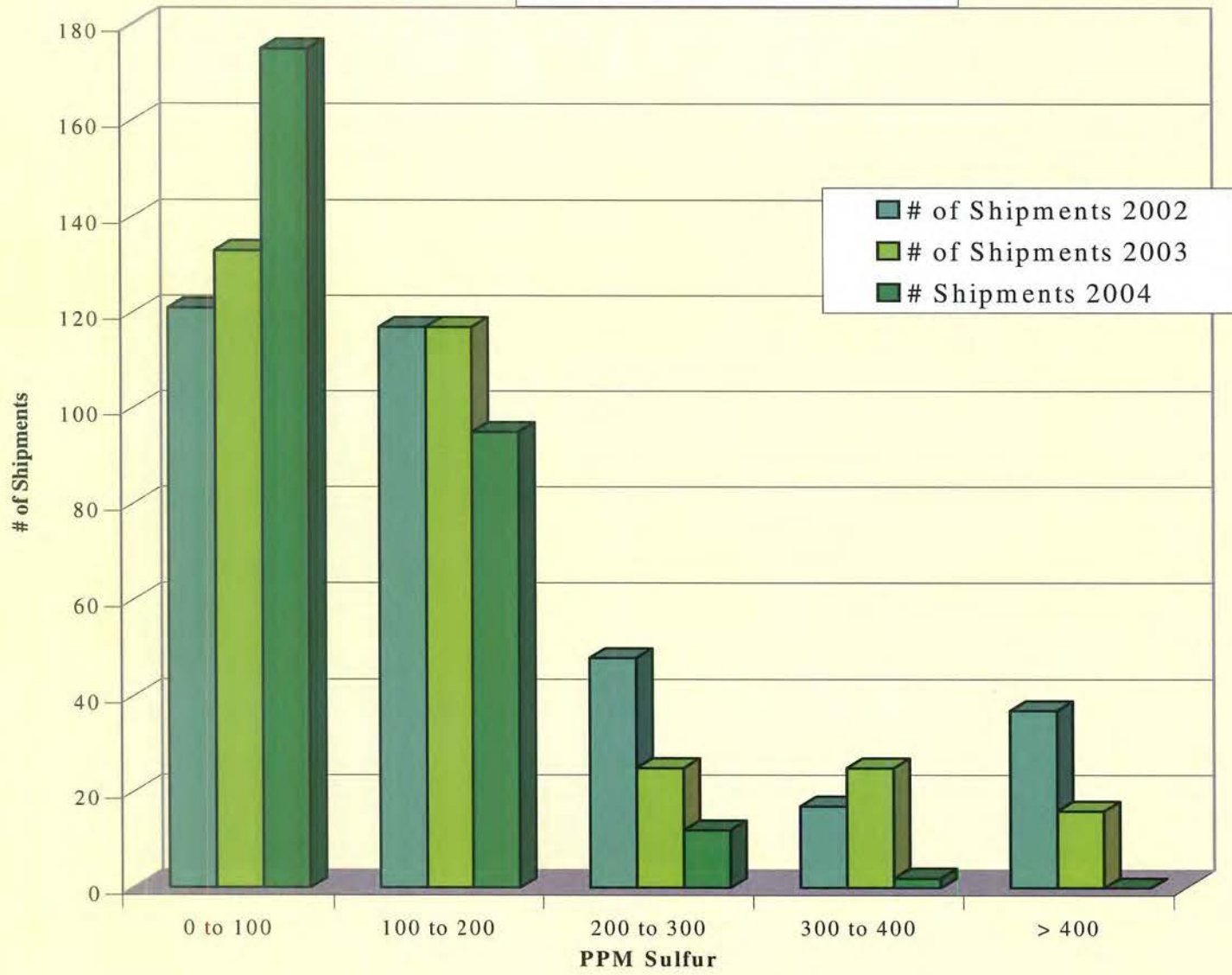
RFG is required to have a 1-percent benzene cap. The overall average level of benzene in gasoline in 2004 was lower than the 2003 level; it was the same as the 2002 level and just about equal to the RFG average benzene content. Benzene was reported in 39 (or 14 %) of 284 shipments, at levels of 1 % or greater by volume, with maximum levels as high as 3.85 % by volume. Figure 8 is a scatter-diagram of the percent volume benzene by delivery date, and Figure 9 shows the percent volume benzene levels for 2002, 2003, and 2004 by shipment.

The concentration of aromatics in gasoline for 2004 was slightly lower than in RFG and much lower than reported in Maine gasoline in 2003 and 2002. This is the first year since we began tracking the fuel components that we have seen such a significant decrease in aromatics. It is possible the reductions in aromatics are directly related to the increase in MTBE use in 2004. Figure 10 is a scatter-diagram of the percent volume aromatics in 2004 by delivery date, and Figure 11 shows the percent volume aromatic levels for 2002, 2003, and 2004 by shipment.

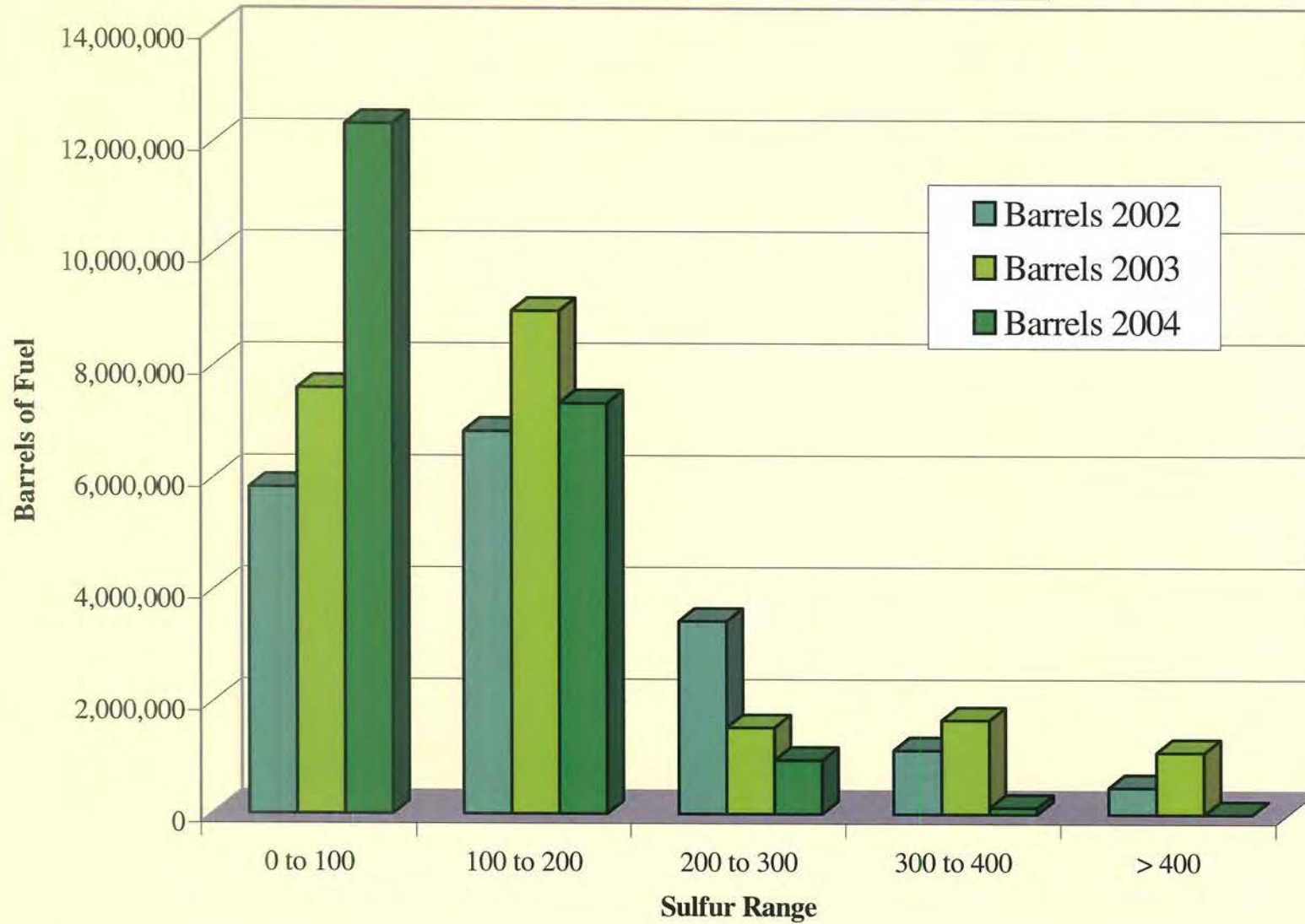
**Figure 6**  
**PPM Sulfur by Date of Delivery**



**Figure 7**  
**PPM Sulfur by Shipment**

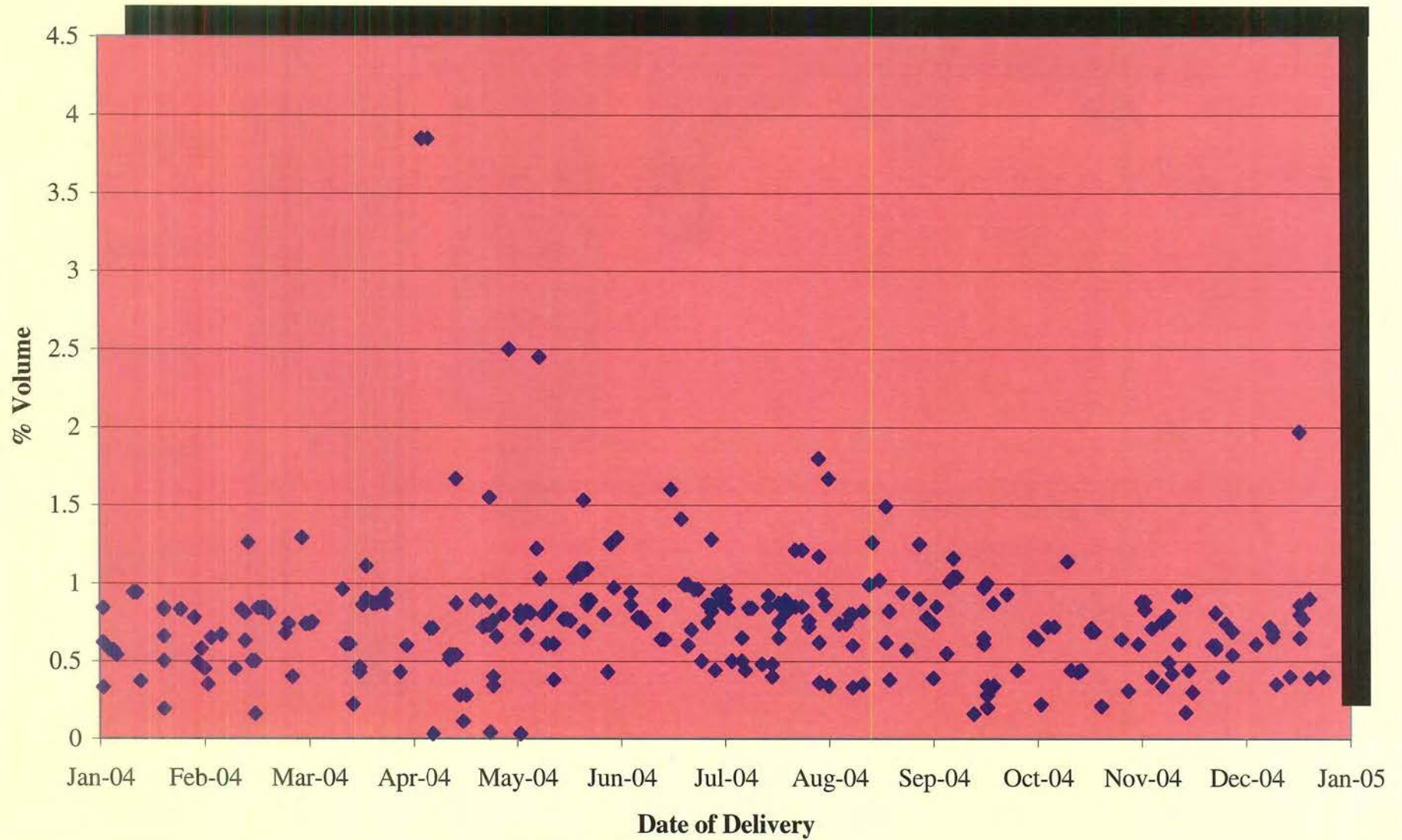


**Figure 7-A**  
**PPM Sulfur by Barrel of Fuel**

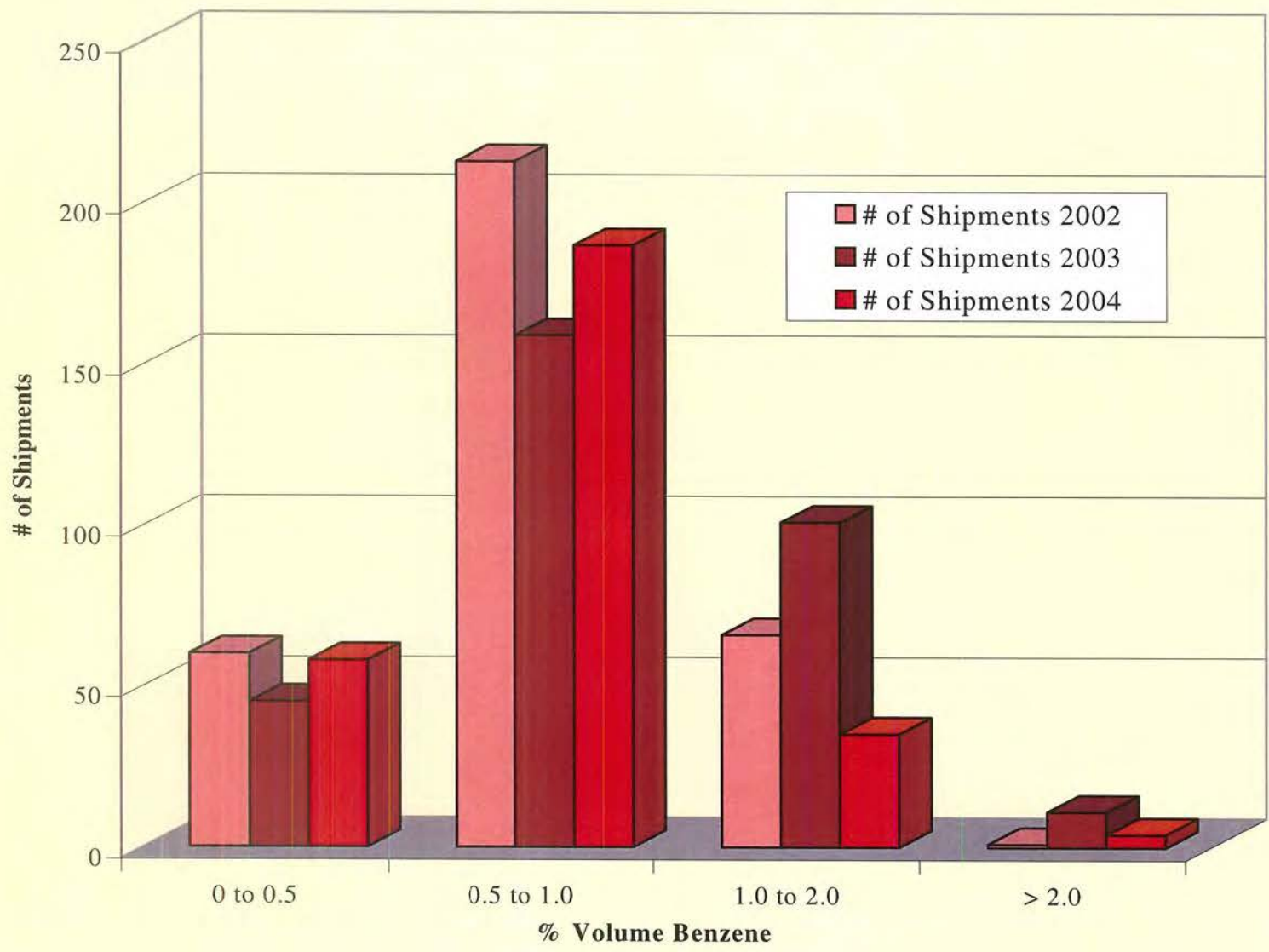




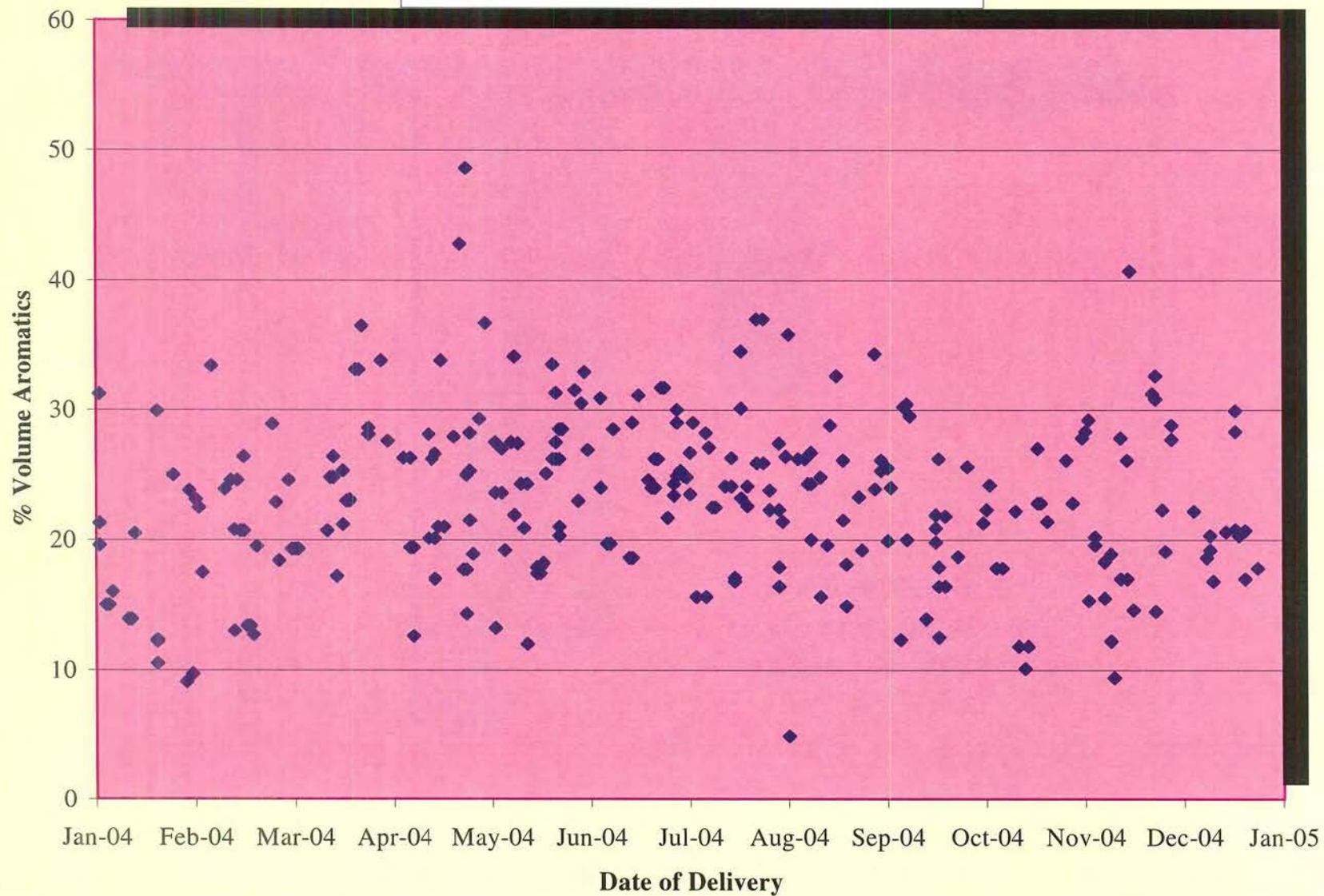
**Figure 8**  
**Benzene (% vol) by Delivery Date**



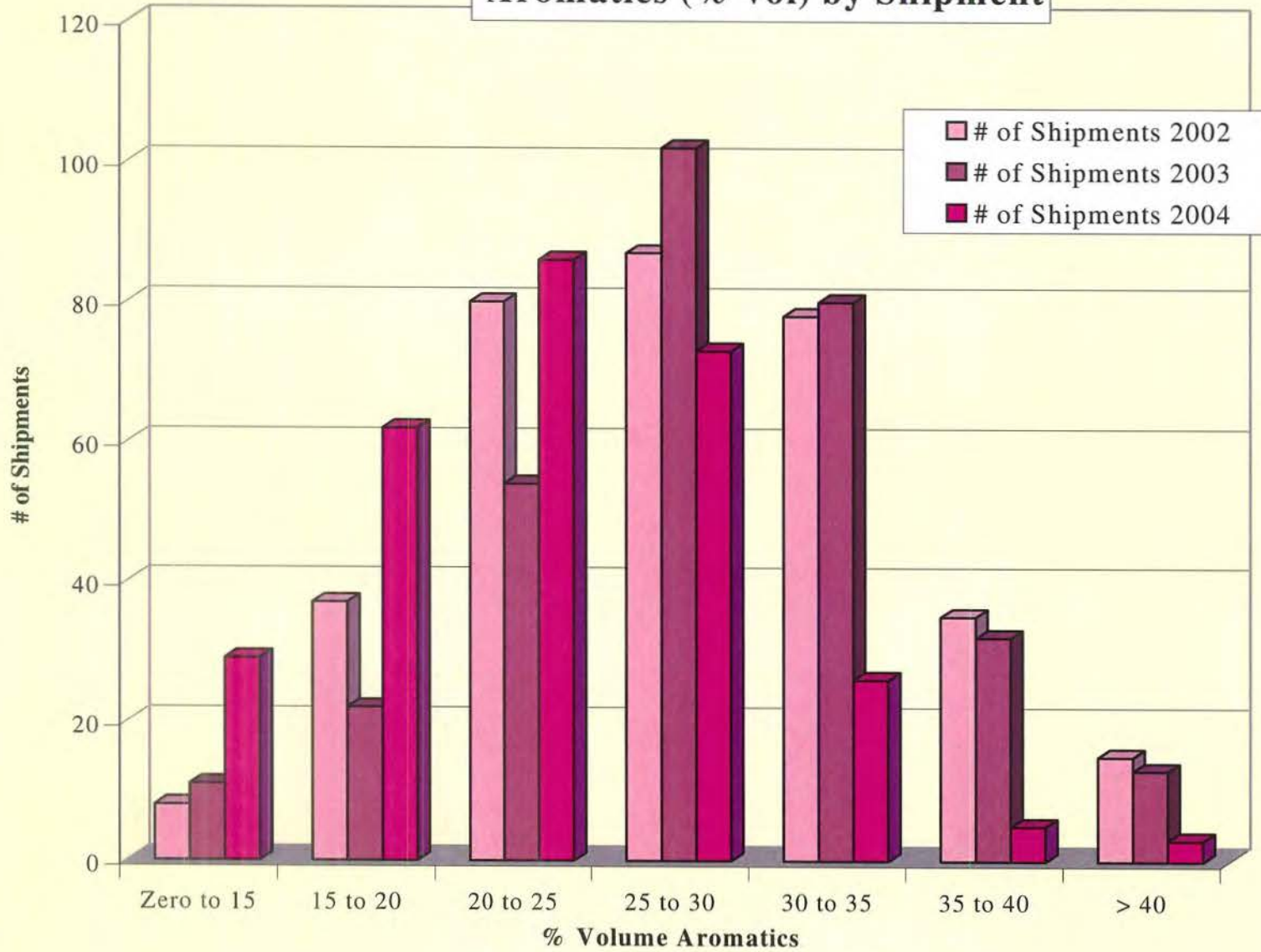
**Figure 9**  
**Benzene (% vol) by Shipment**



**Figure 10**  
**Aromatics (% vol) by Delivery Date**



**Figure 11**  
**Aromatics (% vol) 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 15<sup>th</sup> 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.

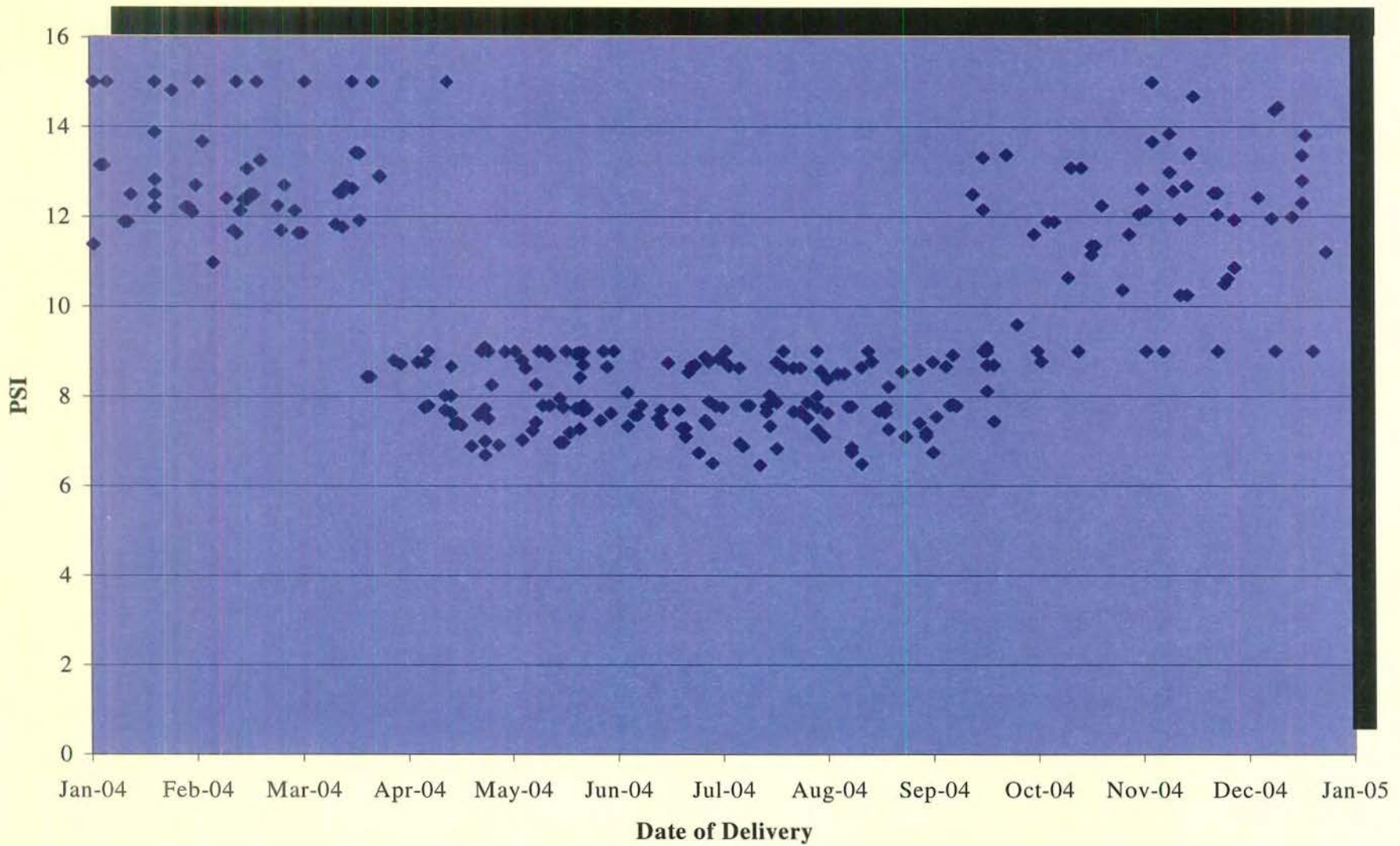
The average of all fuel sold during ozone season in Maine beginning in May through mid-September is shown below in Table 6. A summary of the RVP is sorted by the date of delivery by quarter (Appendix B) and by ozone season (Appendix C).

**Table 6: RVP Averages**

RVP Reported	RVP Average
Ozone Season, 7 counties	7.47 psi
Ozone Season, statewide	8.00 psi
Entire Year, Statewide	10.16 psi

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

**Figure 12**  
**RVP by Delivery Date**





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

### **Overview of Federal Action on RFG/MTBE**

Maine's relatively small market share of the northeast or national gasoline market makes it difficult to eliminate or create a gasoline product just for Maine. Supply issues, price disruptions and potential lack of competition are some the problems that face a state like Maine when analyzing Maine gasoline options. National or regional solutions help offset these issues and their impacts. Maine and other states in the Northeast have therefore sought a federal solution to eliminate MTBE from all gasoline. As a result, 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 four areas that will form the foundation for future federal action:

- 1.) Maine MTBE Ban
- 2.) Congressional actions
- 3.) New Hampshire opt-out of RFG and 211 (c) fuels waiver request
- 4.) Connecticut and New York MTBE Bans

### **Maine MTBE Ban**

As previously mentioned in this report, 38 M.R.S.A. §585-I, enacted in the second special session of the 121<sup>st</sup> Legislature in April 2004, bans the sale of gasoline containing more than 0.05 % MTBE. Specifically:

*“Beginning January 1, 2007, a person may not sell, offer for sale, distribute or blend in this State gasoline that contains more than ½ of 1% by volume MTBE that is intended for sale for ultimate consumers in this State.”*

### **Congressional Actions**

Congressional action on MTBE was a very contentious issue again in 2004 as it has been for the past few years. For the fourth year in a row, Congress was unable to pass a comprehensive energy bill that contained provisions to eliminate MTBE from gasoline. The major sticking point for the 2004 bill was the “safe harbor” provision included in the House version of the bill. This “safe harbor” provides freedom from defective product liability for the MTBE and Ethanol producers. The bill remains bogged down until Congress can reconcile the differences between the Senate and House versions. Now that the 2004 elections are over, Congressional leaders are making the Energy Bill a top priority for the upcoming 2005 session.

### **The Energy Bill History**

The Northeast States have played a significant role to advance 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.

In the fall of 1999 after EPA's Blue Ribbon Panel on MTBE was released, the New England Governors asked NESCAUM (Northeast States for Coordinated Air Use Management) to establish a Northeast Regional Fuels Task Force. The objective was to involve other states and officials from other environmental media (in addition to air), and find an alternative gasoline fuel that would eliminate MTBE.

On January 19, 2000, 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; and
- 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 106<sup>th</sup> 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 Regional Fuels Task Force 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, 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 107<sup>th</sup> 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).<sup>4</sup> 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

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<sup>4</sup> 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.

scheduled for early floor consideration. However, The Senate was unable to move S. 1766 forward and pass the Energy bill in 2002, 2003 or 2004.

## **Section V: Other Regional State Activities**

### **New Hampshire opt-out of RFG and 211 (c) Fuels Waiver Request**

Maine opted out of the RFG program in 1999 and New Hampshire (NH) filed a similar request in 2001. In 2001, at the direction of both the Governor and the General Court, the New Hampshire Department of Environmental Services (DES) submitted the necessary documentation to EPA to request that New Hampshire opt-out of the RFG program and requested a fuels waiver. NH proposed replacing the emissions reductions of RFG with a state level fuel rule (NH Code of Administrative Rules Env.-A 1611, "Oxygen Flexible Reformulated Gasoline, OFRFG") that achieves similar benefits. Simultaneously, DES requested that EPA revise their RFG rules at 40 CFR 80.72(b)(3)(V)<sup>5</sup> requiring the State to remain in the program until January 1, 2004 or provide other such relief as to allow New Hampshire to opt-out early. The EPA declined to address DES's request. After lengthy review and comment, and after January 1, 2004, EPA on January 22, 2004 proposed approval of New Hampshire's opt-out petition and OFRFG rule in the Federal Register. The proposed approval was subject to a 30-day comment period. If there were no significant adverse comments, particularly from the petroleum industry and MTBE suppliers, it was anticipated that EPA final approval would follow soon after the close of the comment period. However, during the comment period EPA received significant adverse comments from industry and MTBE suppliers, which prevented approval of the request. At this time the proposal is undergoing additional review by EPA.

In response to the likelihood the waiver would not be approved by EPA, the NH legislature has passed legislation requiring the NH DES to opt out of RFG and adopt the Ozone Transport Commission (OTC) suite of rules to replace the emission reductions previously provided by RFG. This path will not require a 211(C) fuels waiver and should make it easier for NH to opt out of the RFG program.

### **MTBE Bans in New York and Connecticut**

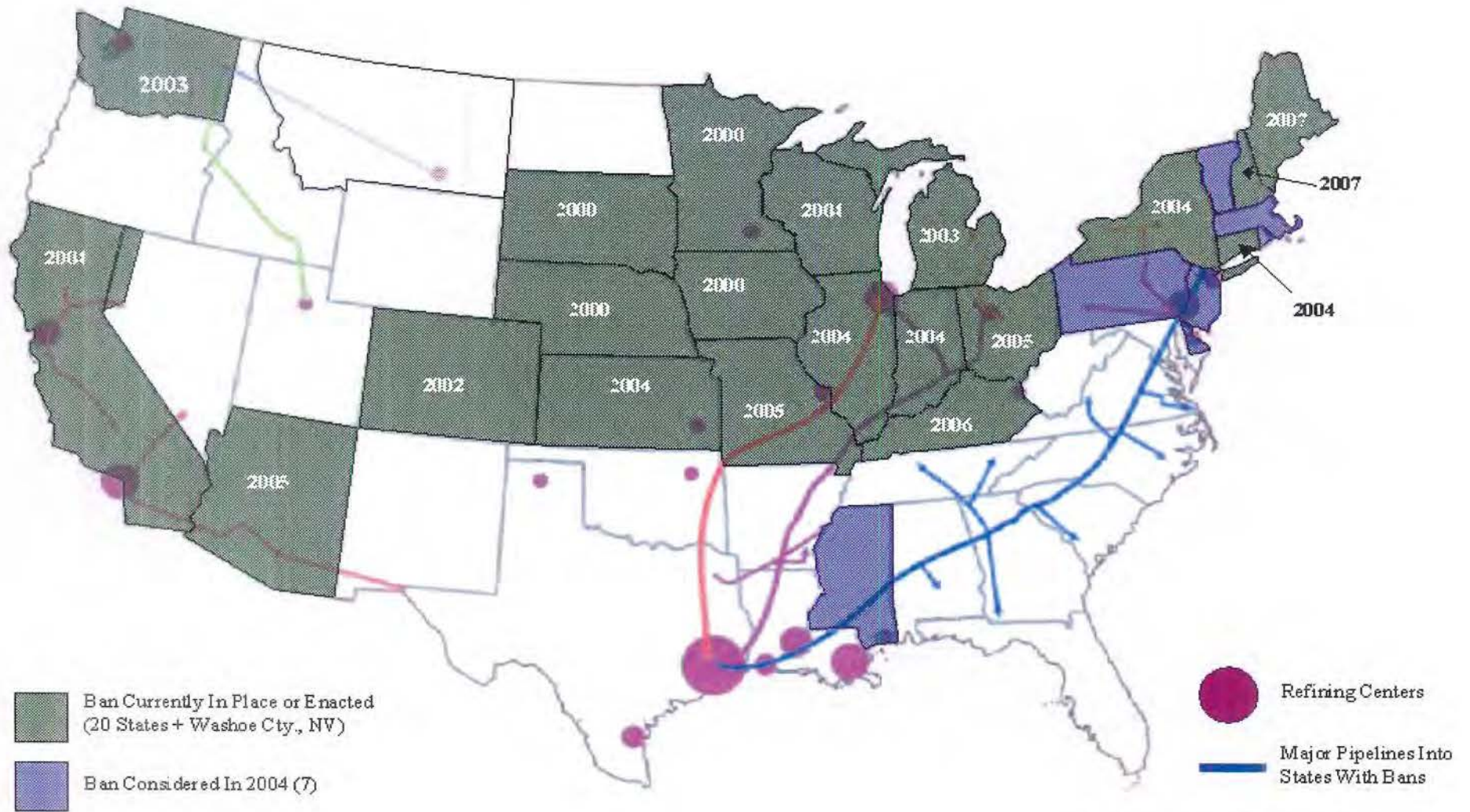
On January 1, 2004, the MTBE bans in both New York and Connecticut went into effect. Upon implementation consumers saw little impact from the change over. Any price changes were minimal and the reasons for the price changes were difficult to discern. According to sources in Connecticut (CT) and New York (NY) the changeover has been relatively seamless. One concern about the switch to ethanol was that the changeover from winter to summer fuel would cause price spikes. This is because the RVP of the base for summertime fuel using ethanol must be significantly lower than the base fuel (or RBOB) used when blending ethanol. The RBOB must be lower (somewhere around 6 psi) to accommodate the higher volatility of ethanol. For the winter the volatility must be higher to allow vehicles to start in the cold weather therefore a lower volatility base fuel

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<sup>5</sup> See [http://www.access.gpo.gov/nara/cfr/cfrhtml/00/Title\\_40/40cfr80\\_00.html](http://www.access.gpo.gov/nara/cfr/cfrhtml/00/Title_40/40cfr80_00.html)

is unnecessary. According to CT and NY there were no price spikes or other problems related to the changeover.

# STATE MTBE BANS



Updated: June 2004

Source for pipeline/refinery infrastructure:  
Turner, Mason & Company, Feb. 2000.



**APPENDIX A**  
**Quarterly Reporting Form**





<b>Date of transfer</b>	<b>Octane</b>	<b>RVP (psi)</b>	<b>Oxygen (% wt O<sub>2</sub>)</b>	<b>MTBE (% Vol)</b>	<b>Other Oxygenate(s) in Fuel (Other Oxy. Name)</b>	<b>( % Vol)</b>	<b>BENZ (% Vol)</b>	<b>ARO (% Vol)</b>	<b>SULF (ppm)</b>	<b>Barrels</b>	<b>Notes</b>



**APPENDIX B**  
**All Data by Quarter**



**1<sup>st</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Motiva	01/02/04	87	11.37	0.47	1.7	ETBE TBA	0.3 0.5	0.84	21.3	150	112,605.38
Irving	1/2/2004	87	15	0	0			0.62	31.2	82	11396
Irving	1/2/2004	93	15	2.02	10.94			0.33	19.6	80	15981
Exxon-Mobil	01/04/04	87	13.14	0	0			0.57	15	19	189733
Gulf	01/05/04	87	13.14	0	0			0.57	15	19	25160
Irving	1/6/2004	87	15	0	0			0.54	16	22	110314
Exxon-Mobil	01/11/04	87	11.88	1.32	7.01			0.94	13.9	73	218964
Gulf	01/12/04	87	11.88	1.32	7.01			0.94	13.9	73	108118
Exxon-Mobil	01/13/04	93	12.5	0.03	0.15			0.37	20.5	75	49995
Motiva	01/20/04	93	13.87	0.83	0	ETBE	5.3	0.19	12.3	19	20,410.70
Motiva	01/20/04	87	12.82	0.86	0	ETBE	5.5	0.83	12.2	241	60,234.03
Motiva	01/20/04	87	12.2	0.85	0	ETBE	5.4	0.5	12.3	93	37,726.41
Exxon-Mobil	01/20/04	87	12.5	1.82	9.99	TAME	0.27	0.66	10.5	91	190627
Irving	1/20/2004	87	15	1.64	8.68			0.84	29.9	105	110003
Gulf	01/25/04	87	14.81	1.94	10.41			0.83	25	16	72780
Exxon-Mobil	01/29/04	87	12.21	1.75	9.24			0.78	9.1	125	160117
Exxon-Mobil	01/30/04	93	12.2	2.36	12.82			0.49	23.8	108	59876
Motiva	01/31/04	87	12.1	0.64	0	ETBE DIPE	3.5 0.6	0.58	9.7	133	157,407.88
Webber	02/01/04	87.5	12.70	0.03	0.14			0.45	23.1	104	59980

**1<sup>st</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	02/06/04	87	10.97	0	0			0.67	33.4	267	240230
Exxon-Mobil	02/10/04	93	12.4	2.67	14.42			0.45	23.9	13	49771
Irving	2/2/2004	93	15	2.09	11.31			0.35	22.5	77	22591
Gulf	02/03/04	88	13.67	0	0			0.65	17.5	150	40793
Gulf	02/12/04	89	11.68	1.47	7.92			0.83	24.6	77	60346
Motiva	02/13/04	87	11.62	2.6	6	ETBE TAME TBA	0.7 7.6 0.7	0.63	13	87	119,101.39
Irving	2/13/2004	87	15	1.72	9.35			0.81	20.8	49	47923
Exxon-Mobil	02/14/04	87	12.13	0.02	0.1			1.26	24.6	36	79764
Exxon-Mobil	02/15/04	87	12.38	0	0			0.5	20.7	244	50028
Motiva	02/16/04	87	12.38	0	0			0.5	20.7	244	61,899.04
Motiva	02/16/04	93	13.06	0	0			0.16	26.4	14	29,944.95
Exxon-Mobil	02/17/04	87	12.5	0.85	4.5			0.84	13.4	149	143741
Gulf	02/18/04	87	12.5	0.85	4.5			0.84	13.4	149	24995
Motiva	02/18/04	87	12.5	0.85	4.5			0.84	13.4	149	50,683.54
Irving	2/19/2004	87	15	0.83	4.41			0.84	12.7	131	86684
Gulf	02/20/04	87	13.25	1.64	8.75			0.81	19.5	76	68077
Gulf	02/25/04	93	12.24	2.29	12.43			0.68	28.9	79	40019

**1<sup>st</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	02/26/04	87	11.68	0	0			0.74	22.9	46	274813
Exxon-Mobil	02/27/04	93	12.7	0.02	0.11			0.4	18.4	79	35735
Webber	03/01/04	88.7	12.13	1.91	10.32			1.29	24.6	113	59803
Exxon-Mobil	03/02/04	87	11.63	0	0			0.74	19.3	108	189285
Gulf	03/03/04	87	11.63	0	0			0.74	19.3	108	28580
Irving	3/4/2004	87	15	0	0			0.75	19.3	129	111086
Motiva	03/13/04	87	11.82	0.24	0	ETBE TBA	0.5 0.7	0.96	20.7	150	48,868.11
Exxon-Mobil	03/14/04	87	12.53	0.81	4.2	N Propanol	0.11	0.61	24.8	3	169807
Gulf	03/15/04	87	12.53	0.81	4.2			0.61	24.8	3	110712
Motiva	03/15/04	87	11.76	0.84	3.6	TBA	0.8	0.61	26.4	5	40,071.54
Exxon-Mobil	03/16/04	93	12.68	0.04	0.19			0.22	17.2	91	35888
Motiva	03/18/04	93	12.63	1.38	5.7	ETBE Ethanol TBA	0.7 0.2 0.7	0.43	25.3	55	24,237.74
Irving	3/18/2004	93	15	1.9	10.33			0.46	21.2	59	14791
Exxon-Mobil	03/19/04	87	13.42	2.43	13.12			0.86	23	21	119193
Motiva	03/20/04	87	13.4	2.52	13.57			0.9	23.1	14.9	40,438.14
Exxon-Mobil	03/20/04	87	11.91	1.77	9.58			1.11	23	82	43093



**1<sup>st</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	03/22/04	87	8.43	0.04	0.11	TAME	0.15	0.87	33.1	14	169997
Motiva	03/23/04	87	8.43	0.4	0.11	TAME	0.15	0.87	33.1	14	46,202.14
Irving	3/24/2004	87	15	0.02	0.11			0.88	36.5	15	110109
Gulf	03/26/04	87	12.88	0	0			0.93	28.1	88.4	145327
Motiva	03/26/04	87	12.9	0.8	0	DIPE	0.5	0.87	28.6	22	65,137.65
Exxon-Mobil	03/26/04	87	12.88	0	0			0.93	28.1	11	71270
Webber	03/26/04	87.1	12.88	0	0			0.93	28.1	11	39966
Exxon-Mobil	03/30/04	93	8.8	0.4	0.25	ETBE	1.75	0.43	33.8	84	40582
<b>Weighted Ave.</b>			<b>12.45</b>	<b>0.79</b>	<b>3.67</b>	<b>TAME</b>	<b>1.88</b>	<b>0.74</b>	<b>21.04</b>	<b>86.11</b>	
						<b>ETBE</b>	<b>2.67</b>				
						<b>Ethanol</b>	<b>0.2</b>				
						<b>TBA</b>	<b>0.65</b>				
						<b>DIPE</b>	<b>0.57</b>				
						<b>N Propanol</b>	<b>0.11</b>				

**2<sup>nd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	04/01/04	87	8.71	0.01	0.04			0.6	27.6	136	78989
Exxon-Mobil	04/06/04	87	8.76	0.48	2.51	TAME	0.15	3.85	26.3	71	192068
Gulf	04/08/04	91	8.76	0.48	2.51	TAME	0.15	3.85	26.3	71	21983
Motiva	4/8/2004	87	7.75	1.39	7.58			0.71	19.4	142	149,333.09
Gulf	04/09/04	87	7.79	1.39	7.58			0.71	19.4	142	84679
Motiva	4/9/2004	87	9.00	0.72	0	ETBE DIPE	4.3 0.3	0.03	12.6	75	59,995.37
Exxon-Mobil	04/14/04	87	8.01	0.91	4.99			0.54	20.1	81	93662
Exxon-Mobil	04/14/04	87	7.69	2.42	13.43			0.51	28.1	73	95827
Irving	04/15/04	87	15.00	2.86	15.77	n-Propanol	0.04	0.54	26.2	66	120000
Gulf	04/16/04	87	8.01	0.91	4.99			0.54	20.1	81	30099
Exxon-Mobil	04/16/04	87	7.62	0.03	0.15			1.67	17	56	53465
Exxon-Mobil	04/16/04	87	8.66	0.97	5.26			0.87	26.6	82	50770
Gulf	04/17/04	93	7.37	1.68	9.17			0.28	21	80	20029
Motiva	4/18/2004	93	7.41	0.00	0.00			0.11	33.8	14	40,348.00
Webber	04/19/04	93	7.35	1.7	9.2			0.28	21	8	25290.64
Motiva	4/22/2004	87	6.89	2.11	11.61			0.89	27.9	22.3	42,226.84
Exxon-Mobil	04/24/04	93	7.58	1.4	0.55	ETBE Ethanol	7.9 0.18	0.72	42.8	52	55377
Gulf	04/25/04	88	9.00	0.82	4.43			0.73	17.7	42	39346
Exxon-Mobil	04/26/04	87	7.72	0.53	2.46	Ethanol	0.23	0.88	25	86	14584

**2<sup>nd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	04/26/04	87	9.09	0.82	4.43			0.73	17.7	42	50439
Motiva	4/26/2004	87	7.00	0.69	0	ETBE DIPE	4 0.4	0.04	14.3	258	54,977.54
Motiva	4/26/2004	93	6.69	2.79	14.9	ETBE TBA	0.2 0.2	1.55	48.6	40	30,042.86
Gulf	04/27/04	93	7.50	2.5	13.73			0.34	21.5	11	39960
Irving	04/27/04	87	9.00	1.78	9.89			0.76	28.2	38	12000
Irving	04/27/04	93	9.00	2.31	12.82	TBA	0.02	0.4	25.3	27	20000
Webber	04/28/04	87	8.25	0.04	0.24			0.66	18.9	125	75492.16
Exxon-Mobil	04/30/04	87	6.91	1.76	9.78			0.8	29.3	48	59829
Gulf	05/02/04	87	8.99	0.23	1.65			2.5	36.7	32	59386
Gulf	05/05/04	87	9.00	1.62	8.89			0.82	23.6	105	34095
Irving	05/05/04	87	9.00	0.83	4.45			0.78	27.5	129	48000
Motiva	5/5/2004	87	9.00	0.71	0	ETBE DIPE	4.1 0.4	0.03	13.2	47	53,721.35
Exxon-Mobil	05/07/04	87	7.03	2.27	12.62			0.67	27	49	54979
Exxon-Mobil	05/07/04	87	8.80	1.62	8.89			0.82	23.6	105	90718
Exxon-Mobil	05/08/04	87	8.62	0.37	2			0.81	19.2	77	79819

**2<sup>nd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	05/10/04	87	7.23	1.52	8.41	TAME	0.05	1.22	27.5	95	108283
Gulf	05/11/04	87	8.26	0.5	2.63	Ethanol	0.04	1.03	21.9	169	60264
Exxon-Mobil	05/11/04	93	7.42	0.07	0.39			2.45	34.1	25	59714
Irving	05/12/04	87	9.00	1.92	10.68			0.8	27.4	97	40000
Gulf	05/13/04	88	7.79	0.72	3.84	n-Propanol	0.05	0.61	24.3	109	59210
Gulf	05/14/04	87	9.00	2.29	12.56	TAME	0.08	0.85	20.9	85	37661
Motiva	5/15/2004	87	7.79	0.72	3.84	n-Propanol	0.5	0.61	24.3	109	81,138.45
Motiva	5/15/2004	87	8.9	2.95	15.64	ETBE	0.02	0.38	12	78	16,899.18
Exxon-Mobil	05/18/04	87	6.97	2.49	13.5			0.77	17.4	153	99637
Exxon-Mobil	05/18/04	87	7.95	2.57	14.05			0.77	17.9	154	70035
Gulf	05/19/04	87	7.75	2.57	14.05			0.77	17.9	154	13113
Gulf	05/19/04	88	6.97	2.49	13.5			0.77	17.4	153	41021
Irving	05/20/04	87	9.00	2.54	13.89			0.76	18.2	172	107495
Motiva	5/21/2004	87	7.19	1.15	4.27	TAME	2.38	1.04	25.1	258	70,400.00
Exxon-Mobil	05/23/04	87	8.94	1.9	10.42			1.09	26.2	147	75000
Motiva	5/23/2004	93	7.73	1.77	10.13			1.06	33.5	50	54,699.00
Gulf	05/24/04	88	8.94	1.9	10.42			1.09	26.2	147	29591
Exxon-Mobil	05/24/04	93	8.42	0.04	0.23			0.69	31.3	56	21383

**2<sup>nd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	05/24/04	93	7.27	0.03	0.16			1.53	27.5	35	29906
Motiva	5/24/2004	87	8.97	1.9	10.42			1.09	26.2	147	65,120.46
Gulf	05/25/04	87	7.80	2.3	12.54	ETBE	0.13	0.86	21	94	39689
Webber	05/25/04	88	8.97	1.9	10.4			1.09	26.2	147	59987.25
Exxon-Mobil	05/25/04	87	7.71	2.59	14.25			0.89	28.5	15	79942
Exxon-Mobil	05/25/04	87	8.70	2.3	12.54	ETBE	0.13	0.86	21	94	45180
Exxon-Mobil	05/25/04	87	7.67	2.45	13.38	ETBE	0.15	0.86	20.3	182	20133
Gulf	05/26/04	87	7.71	2.59	14.25			0.89	28.5	15	29708
Motiva	5/30/2004	87	7.46	0.46	0	ETBE TBA	2.5 0.3	0.8	31.5	112	89,324.98
Irving	05/31/04	93	9.00	2.58	14.28			0.43	23	40	25000
Exxon-Mobil	06/01/04	87	8.65	1.33	7.29			1.25	30.5	270	74702
Exxon-Mobil	06/02/04	87	7.62	0.32	1.7	TAME	0.08	0.97	32.9	80	109790
Irving	06/03/04	87	9.00	1.31	7.16			1.29	26.9	269	96000
Motiva	6/7/2004	87	7.34	2.2	11.91	TAME	0.14	0.86	24	121	28,587.72
Motiva	6/7/2004	87	8.08	1.07	5.93			0.94	30.9	135	60,154.56
Exxon-Mobil	06/09/04	87	7.58	1.35	7.4			0.78	19.7	109	100373
Exxon-Mobil	06/09/04	87	7.58	1.35	7.4			0.78	19.7	109	90243
Gulf	06/10/04	87	7.58	1.35	7.4			0.78	19.7	109	74168
Gulf	06/11/04	87	7.80	0.05	0.25			0.75	28.5	333	80814

**2<sup>nd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	06/16/04	87	7.51	1.91	10.4			0.64	18.6	151	89474
Gulf	06/17/04	87	7.69	1.91	10.4			0.64	18.6	151	20170
Exxon-Mobil	06/17/04	93	7.37	1.76	9.62	TAME	0.23	0.86	29	40	25261
Exxon-Mobil	06/19/04	87	8.74	0.89	4.91			1.6	31.1	28	114599
Motiva	6/22/2004	87	7.7	1.03	0.29	TAME	6.03	1.41	24.6	222	133,216.40
Exxon-Mobil	06/23/04	87	7.29	0	0			0.99	24	54	120079
Gulf	06/24/04	87	7.29	0	0			0.99	24	54	49717
Motiva	6/24/2004	87	7.1	0.07	0	TAME	0.4	0.6	26.23	80	69,356.97
Exxon-Mobil	06/25/04	87	8.53	0	0			0.7	26.2	145	104750
Gulf	06/26/04	88	8.66	0.05	0.25			0.96	31.7	145	20145
Webber	06/27/04	88	8.69	0.05	0.25			0.96	31.7	145	59558.96
Gulf	06/28/04	93	6.74	2.29	12.63			0.5	21.7	182	39813
Exxon-Mobil	06/30/04	87	7.46	0.06	0.33			0.86	24.3	155	60454
Exxon-Mobil	06/30/04	87	8.87	0	0			0.75	23.4	233	39761
<b>Weighted Ave.</b>			<b>8.19</b>	<b>1.21</b>	<b>6.22</b>	<b>TAME</b>	<b>1.33</b>	<b>0.99</b>	<b>24.69</b>	<b>112.63</b>	
						<b>ETBE</b>	<b>3.03</b>				
						<b>Ethanol</b>	<b>0.37</b>				
						<b>TBA</b>	<b>0.47</b>				
						<b>DIPE</b>	<b>0.82</b>				
						<b>n-Propanol</b>	<b>0.31</b>				

3<sup>rd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	07/01/04	93	7.89	0.69	3.8			0.82	30	59	32835
Exxon-Mobil	07/01/04	93	7.37	1.76	9.62	TAME	0.22	0.86	29	40	15845
Exxon-Mobil	07/01/04	87	8.77	0	0			1.28	24.9	125	20006
Irving	07/02/04	93	6.51	2.38	13.11			0.44	25.3	52	21,947
Gulf	07/03/04	87	7.78	2.6	14.32			0.93	24.9	115	39791
Gulf	07/04/04	88	8.83	1.36	7.46			0.88	24.8	118	100566
Exxon-Mobil	07/05/04	87	8.81	1.25	6.85			0.9	26.7	169	105241
Exxon-Mobil	07/05/04	87	7.75	2.31	12.66			0.95	23.5	115	59212
Irving	07/06/04	87	9	1.34	7.37			0.84	29	149	93,300
Gulf	07/07/04	88	8.67	0.47	2.18			0.5	15.6	198	39769
Exxon-Mobil	07/10/04	87	8.63	0.47	2.18	TAME	0.18	0.5	15.6	198	100392
Exxon-Mobil	07/10/04	87	6.95	1.81	10.09			0.65	28.2	76	15028
Motiva	07/11/04	93	6.89	2.44	13.5	TBA	0.11	0.44	27.1	71	29,904.67
Exxon-Mobil	07/12/04	87	7.79	0.28	1.35	TAME	0.18	0.84	22.5	164	79888
Gulf	07/13/04	88	7.79	0.28	1.35	TAME	0.18	0.84	22.5	164	59458
Gulf	07/16/04	93	6.47	2.12	10.28			0.48	24.1	32	29825
Exxon-Mobil	07/18/04	87	7.78	1.07	5.89			0.85	24.1	94	100804
Motiva	07/18/04	87	7.65	0.81	0.16	TAME	4.82	0.92	26.3	69	240,118.40
Exxon-Mobil	07/19/04	93	8.02	0	0			0.4	17.1	69	24915

3<sup>rd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	07/19/04	93	7.34	0	0			0.48	16.8	53	25006
Webber	07/21/04	88	7.85	0.02	0.09			0.87	34.5	190	60,316.50
Exxon-Mobil	07/21/04	87	8.76	1.01	5.51			0.75	23.2	98	113567
Exxon-Mobil	07/21/04	87	6.84	1.81	10.09			0.65	30.1	94	70034
Irving	07/23/04	87	9	0.03	0.15			0.81	22.6	113	75,000
Exxon-Mobil	07/23/04	87	8.64	0.22	0.39	TAME	0.91	0.89	24.1	165	24859
Exxon-Mobil	07/26/04	87	7.65	0.64	3.57			1.21	37	129	49103
Exxon-Mobil	07/26/04	87	8.63	0.77	4.22			0.85	25.9	109	120167
Gulf	07/28/04	87	8.63	0.77	4.22			0.85	25.9	109	22970
Gulf	07/28/04	87	7.65	0.64	3.57			1.21	37	129	65965
Exxon-Mobil	07/30/04	87	7.86	0.47	0.68	TAME	2.16	0.76	22.3	35	48218
Exxon-Mobil	07/30/04	87	7.51	1.23	6.37			0.72	23.8	71	69273
Exxon-Mobil	08/02/04	93	7.25	0.02	0.1			0.62	16.4	50	24713
Irving	08/02/04	87	9	2.33	12.9			1.17	27.4	89	69,000
Exxon-Mobil	08/02/04	93	8	0.03	0.14			0.36	17.9	87	28576
Motiva	08/02/04	87	7.75	1.91	0	TAME	11.72	1.8	22.3	85	80,438.14
Exxon-Mobil	08/03/04	87	8.56	2.29	12.49			0.93	21.4	162	105299
Exxon-Mobil	08/04/04	87	7.1	1.2	6.67			0.86	26.4	83	101377
Gulf	08/05/04	87	7.62	0	0			1.67	35.8	102	60017
Gulf	08/05/04	88	8.38	1.49	7.79	TAME	0.88	0.34	4.9	105	6017



3<sup>rd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	08/08/04	87	8.5	0.07	0.14	TAME	0.25	0.74	26.2	55	115874
Gulf	08/10/04	87	8.5	0.07	0.14	TAME	0.25	0.74	26.2	55	49812
Gulf	08/11/04	87	7.77	0.65	3.15	ETBE	0.47	0.8	24.3	121	29930
Exxon-Mobil	08/12/04	87	6.86	1.96	10.84	TBA	0.11	0.6	26.7	96	44596
Exxon-Mobil	08/12/04	87	7.77	0.65	3.15			0.8	24.3	121	104024
Motiva	08/12/04	93	6.76	2.43	13.16	TBA	0.13	0.33	20	73.12	43,339.54
Exxon-Mobil	08/15/04	87	8.64	1.24	4.81	TAME	2.03	0.82	15.6	108	9963
Motiva	08/15/04	87	6.49	2.37	12.43	Methanol TBA TAME	0.04 0.06 0.51	0.35	24.8	32	54,194.60
Irving	08/17/04	87	9	0.19	1.02			0.99	19.6	147	79,000
Webber	08/18/04	88	8.77	0.49	2.73			1.26	28.8	291	59,408.93
Gulf	08/20/04	87	7.67	0	0			1.02	32.6	181	79957
Exxon-Mobil	08/22/04	87	7.76	1.85	10.14			0.62	21.5	90	95040
Motiva	08/22/04	87	7.64	0.82	0	TAME	5.06	1.49	26.1	135	99,232.11
Exxon-Mobil	08/23/04	93	8.21	0.02	0.14			0.38	14.9	113	31778
Exxon-Mobil	08/23/04	93	7.26	0	0			0.82	18.1	58	43836
Exxon-Mobil	08/27/04	87	8.55	0.34	0.13	TAME	1.94	0.94	23.3	153	104217
Exxon-Mobil	08/28/04	87	7.1	2.09	11.44			0.57	19.2	64	66846
Exxon-Mobil	09/01/04	87	7.4	1.44	7.61	ETBE	0.26	0.9	23.9	95	49990

3<sup>rd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	09/01/04	87	8.58	0.15	0.09	ETBE	0.86	1.25	34.3	124	57696
Gulf	09/03/04	87	7.19	1.12	6.17			0.78	26.1	72	78706
Motiva	09/03/04	87	7.11	1.31	6.1	ETBE TAME	0.4 0.8	0.78	25.3	72	50,756.85
Exxon-Mobil	09/05/04	87	8.76	0.03	0.014	TAME	0.18	0.74	25.5	47	130200
Motiva	09/05/04	87	6.75	1.91	10.55			0.39	19.9	105	98,900.40
Exxon-Mobil	09/06/04	87	7.54	2.25	12.4			0.85	24	97	100109
Webber	09/09/04	87	8.66	1.07	1.01	TAME	3.92	0.55	12.3	39	58,455.19
Motiva	09/10/04	87	7.8	2.57	14.19			1.01	30.2	7.8	69,425.53
Gulf	09/11/04	87	8.91	1.11	2.69	TAME	4.23	1.16	20	135	80244
Exxon-Mobil	09/11/04	87	7.82	2.49	13.76			1.04	30.4	22	59781
Exxon-Mobil	09/12/04	87	7.78	2.55	14.12			1.04	29.5	13	40583
Motiva	09/17/04	93	12.5	2.21	11.78			0.16	13.9	33	43,664.67
Irving	09/20/04	87	9	0	0			0.65	20.9	114	121120
Exxon-Mobil	09/20/04	87	12.15	0	0			0.61	21.9	116	180164
Motiva	09/20/04	87	13.31	1.27	6.74			0.97	19.8	156	125,440.05
Gulf	09/21/04	93	8.69	1.12	6.04			0.34	16.4	22	34707
Irving	09/21/04	93	9	2.2	11.67			0.2	12.5	35	21952
Exxon-Mobil	09/21/04	87	9.09	1.44	3.75	TAME	4.56	1	17.9	109	55281
Exxon-Mobil	09/21/04	93	8.11	0.04	0.21			0.28	26.2	85	50145

3<sup>rd</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Webber	09/23/04	87	7.44	1.69	9.31			0.87	21.8	68	31,717.98
Webber	09/23/04	93	8.69	1.12	6.04			0.34	16.4	22	11,513.38
Gulf	09/27/04	87	13.37	1.25	6.66			0.93	18.7	146	134869
Exxon-Mobil	09/27/04	87	13.37	1.25	6.66			0.93	18.7	146	144927
Exxon-Mobil	09/30/04	87	9.59	0	0			0.44	25.6	124	69914
<b>Weighted Ave.</b>			<b>8.62</b>	<b>1.02</b>	<b>4.86</b>	<b>TAME</b>	<b>2.70</b>	<b>0.83</b>	<b>23.93</b>	<b>107.07</b>	
						<b>ETBE</b>	<b>0.51</b>				
						<b>Methanol</b>	<b>0.04</b>				
						<b>TBA</b>	<b>0.1</b>				

4<sup>th</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Motiva	10/05/04	87	11.60	0.26	1.40			0.66	21.30	61	88,109.66
Exxon-Mobil	10/05/04	87	11.6	0.26	1.4			0.66	21.3	61	146567
Irving	10/06/04	87	9	0.17	0.92			0.64	22.3	52	86188
Exxon-Mobil	10/07/04	93	8.77	0.04	0.23			0.22	24.2	69	39874
Exxon-Mobil	10/09/04	87	11.88	0.48	2.58			0.72	17.8	140	169431
Gulf	10/11/04	87.1	11.88	0.48	2.58			0.72	17.8	140	155619
Motiva	10/15/04	87	10.64	0.50	0.14	TAME	2.84	1.14	22.20	77	150,160.55
Exxon-Mobil	10/16/04	87	13.08	0	0			0.44	11.8	22	185359
Irving	10/18/04	87	9	0	0			0.43	10.1	26	85491
Webber	10/19/04	87.1	13.08	0.00	0.00			0.44	11.8	22	53,387.66
Motiva	10/22/04	87	11.15	0.09	0.00	TBA	0.40	0.71	27.00	165	60,023.93
Exxon-Mobil	10/22/04	87	11.34	0.5	2.67			0.69	22.8	96	195017
Gulf	10/23/04	87.1	11.34	0.5	2.67			0.69	22.8	96	140195
Exxon-Mobil	10/25/04	93	12.24	0.03	0.14			0.21	21.4	58	39895
Exxon-Mobil	10/31/04	87	10.36	0.02	0.11			0.64	26.1	60	90232
Exxon-Mobil	11/02/04	93	11.6	0	0			0.31	22.8	53	20076
Gulf	11/05/04	93	12.05	1.7	9.27			0.61	27.8	35	33124
Exxon-Mobil	11/06/04	87	12.62	0	0			0.88	28.3	34	206963
Gulf	11/07/04	87.1	12.13	1.72	9.45			0.83	15.3	54	174582

4<sup>th</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Irving	11/07/04	87	9	0	0			0.88	29.2	30	124481
Motiva	11/09/04	87	13.66	1.63	8.79			0.71	20.20	42	75,171.59
Motiva	11/09/04	93	14.99	2.03	10.95			0.40	19.60	18	18,929.32
Irving	11/12/04	87	9	1.73	9.3			0.75	18.3	41	16141
Irving	11/12/04	93	9	2.07	11.03			0.34	15.5	17	16353
Motiva	11/14/04	87	13.84	1.75	9.42			0.79	18.90	41	45,335.10
Exxon-Mobil	11/14/04	87	12.99	0	0			0.49	12.2	29	159802
Motiva	11/15/04	87	12.56	0.00	0.00			0.42	9.40	22	51,773.42
Webber	11/17/04	93	11.94	1.70	9.27			0.61	27.8	35	25,995.03
Exxon-Mobil	11/17/04	87	10.25	1.58	8.48			0.92	17	137	179971
Gulf	11/19/04	88.9	10.25	1.7	8.48			0.92	17	137	30046
Webber	11/19/04	88.4	12.68	0.85	4.65			0.17	26.1	344	36,296.30
Motiva	11/19/04	87	10.25	1.58	8.48			0.92	17.00	137	123,611.13
Gulf	11/20/04	93.3	13.4	2.62	14.68	Methanol TBA	0.03 0.05	0.44	40.7	266	22169
Motiva	11/21/04	93	14.67	2.11	11.26			0.30	14.60	21	32,913.12
Exxon-Mobil	11/27/04	87	12.52	0.68	3.69			0.6	31.2	9	185000
Gulf	11/28/04	88	12.04	1.81	9.48			0.81	14.5	79	74723
Motiva	11/28/04	87	12.52	0.68	3.69			0.60	32.60	6	43,109.28
Irving	11/28/04	87	9	0.68	3.7			0.58	30.8	7	99936
Exxon-Mobil	11/30/04	93	10.5	0.02	0.1			0.4	22.3	135	40072
Webber	12/01/04	87	10.61	1.70	9.18			0.74	19.1	135	59,400.83
Motiva	12/03/04	87	10.86	0.42	2.30			0.54	28.80	73	130,893.34

4<sup>th</sup> 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	12/03/04	87	11.92	0.45	2.44			0.69	27.7	64	195106
Gulf	12/10/04	88.3	12.42	0.46	0.33	ETBE TAME	1.94 0.35	0.61	22.2	99.8	79875
Motiva	12/14/04	87	11.95	0.00	0.00			0.72	18.60	96	44,887.05
Exxon-Mobil	12/14/04	87	11.95	0	0			0.72	18.6	96	194944
Exxon-Mobil	12/15/04	87	14.36	1.87	10.09			0.66	19.2	44	41925
Irving	12/15/04	87	9	0	0			0.69	20.3	95	90788
Motiva	12/16/04	93	14.43	2.40	12.92			0.35	16.80	24	12,988.91
Exxon-Mobil	12/20/04	93	11.99	0.02	0.1			0.4	20.6	59	35105
Gulf	12/23/04	87.4	12.8	0.07	0.36			0.65	20.8	65	12611
Gulf	12/23/04	93.1	13.36	0.03	0.19			1.97	29.9	2	24987
Gulf	12/23/04	88.6	12.3	0.31	1.68			0.86	28.3	41	74910
Motiva	12/23/04	87	12.30	0.31	1.68			0.80	28.30	41	64,184.68
Exxon-Mobil	12/23/04	87	12.3	0.31	1.68			0.86	28.3	41	179400
Motiva	12/24/04	87	13.80	1.85	9.98			0.77	20.30	49	49,960.86
Irving	12/26/04	93	9	2.19	11.76			0.39	17	33	22281
Irving	12/26/04	87	9	1.71	9.21			0.9	20.7	49	77774
Exxon-Mobil	12/30/04	87	11.2	0.41	1.38	TAME	0.95	0.4	17.8	71	153821
<b>Weighted Ave.</b>			<b>11.56</b>	<b>0.60</b>	<b>3.12</b>	<b>TAME</b>	<b>1.56</b>	<b>0.69</b>	<b>21.56</b>	<b>70.20</b>	
						<b>ETBE</b>	<b>1.94</b>				
						<b>Methanol</b>	<b>0.03</b>				
						<b>TBA</b>	<b>0.31</b>				



**APPENDIX C**  
**Ozone Season Data**





### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Gulf	05/02/04	87	8.99	0.23	1.65			2.5	36.7	32	59386
Gulf	05/05/04	87	9.00	1.62	8.89			0.82	23.6	105	34095
Irving	05/05/04	87	9.00	0.83	4.45			0.78	27.5	129	48000
Motiva	05/05/04	87	9.00	0.71	0	ETBE DIPE	4.1 0.4	0.03	13.2	47	53,721.35
Exxon-Mobil	05/07/04	87	7.03	2.27	12.62			0.67	27	49	54979
Exxon-Mobil	05/07/04	87	8.80	1.62	8.89			0.82	23.6	105	90718
Exxon-Mobil	05/08/04	87	8.62	0.37	2			0.81	19.2	77	79819
Exxon-Mobil	05/10/04	87	7.23	1.52	8.41	TAME	0.05	1.22	27.5	95	108283
Gulf	05/11/04	87	8.26	0.5	2.63	Ethanol	0.04	1.03	21.9	169	60264
Exxon-Mobil	05/11/04	93	7.42	0.07	0.39			2.45	34.1	25	59714
Irving	05/12/04	87	9.00	1.92	10.68			0.8	27.4	97	40000
Gulf	05/13/04	88	7.79	0.72	3.84	n-Propanol	0.05	0.61	24.3	109	59210
Gulf	05/14/04	87	9.00	2.29	12.56	TAME	0.08	0.85	20.9	85	37661
Motiva	05/15/04	87	7.79	0.72	3.84	n-Propanol	0.5	0.61	24.3	109	81,138.45
Motiva	05/15/04	87	8.9	2.95	15.64	ETBE	0.02	0.38	12	78	16,899.18
Exxon-Mobil	05/18/04	87	6.97	2.49	13.5			0.77	17.4	153	99637
Exxon-Mobil	05/18/04	87	7.95	2.57	14.05			0.77	17.9	154	70035
Gulf	05/19/04	87	7.75	2.57	14.05			0.77	17.9	154	13113

### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Gulf	05/19/04	88	6.97	2.49	13.5			0.77	17.4	153	41021
Irving	05/20/04	87	9.00	2.54	13.89			0.76	18.2	172	107495
Motiva	05/21/04	87	7.19	1.15	4.27	TAME	2.38	1.04	25.1	258	70,400.00
Exxon-Mobil	05/23/04	87	8.94	1.9	10.42			1.09	26.2	147	75000
Motiva	05/23/04	93	7.73	1.77	10.13			1.06	33.5	50	54,699.00
Gulf	05/24/04	88	8.94	1.9	10.42			1.09	26.2	147	29591
Exxon-Mobil	05/24/04	93	8.42	0.04	0.23			0.69	31.3	56	21383
Exxon-Mobil	05/24/04	93	7.27	0.03	0.16			1.53	27.5	35	29906
Motiva	05/24/04	87	8.97	1.9	10.42			1.09	26.2	147	65,120.46
Gulf	05/25/04	87	7.80	2.3	12.54	ETBE	0.13	0.86	21	94	39689
Webber	05/25/04	88	8.97	1.9	10.4			1.09	26.2	147	59987.25
Exxon-Mobil	05/25/04	87	7.71	2.59	14.25			0.89	28.5	15	79942
Exxon-Mobil	05/25/04	87	8.70	2.3	12.54	ETBE	0.13	0.86	21	94	45180
Exxon-Mobil	05/25/04	87	7.67	2.45	13.38	ETBE	0.15	0.86	20.3	182	20133
Gulf	05/26/04	87	7.71	2.59	14.25			0.89	28.5	15	29708
Motiva	05/30/04	87	7.46	0.46	0	ETBE TBA	2.5 0.3	0.8	31.5	112	89,324.98
Irving	05/31/04	93	9.00	2.58	14.28			0.43	23	40	25000
Exxon-Mobil	06/01/04	87	8.65	1.33	7.29			1.25	30.5	270	74702
Exxon-Mobil	06/02/04	87	7.62	0.32	1.7	TAME	0.08	0.97	32.9	80	109790

### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	( % Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Irving	06/03/04	87	9.00	1.31	7.16			1.29	26.9	269	96000
Motiva	06/07/04	87	7.34	2.2	11.91	TAME	0.14	0.86	24	121	28,587.72
Motiva	06/07/04	87	8.08	1.07	5.93			0.94	30.9	135	60,154.56
Exxon-Mobil	06/09/04	87	7.58	1.35	7.4			0.78	19.7	109	100373
Exxon-Mobil	06/09/04	87	7.58	1.35	7.4			0.78	19.7	109	90243
Gulf	06/10/04	87	7.58	1.35	7.4			0.78	19.7	109	74168
Gulf	06/11/04	87	7.80	0.05	0.25			0.75	28.5	333	80814
Exxon-Mobil	06/16/04	87	7.51	1.91	10.4			0.64	18.6	151	89474
Gulf	06/17/04	87	7.69	1.91	10.4			0.64	18.6	151	20170
Exxon-Mobil	06/17/04	93	7.37	1.76	9.62	TAME	0.23	0.86	29	40	25261
Exxon-Mobil	06/19/04	87	8.74	0.89	4.91			1.6	31.1	28	114599
Motiva	06/22/04	87	7.7	1.03	0.29	TAME	6.03	1.41	24.6	222	133,216.40
Exxon-Mobil	06/23/04	87	7.29	0	0			0.99	24	54	120079
Gulf	06/24/04	87	7.29	0	0			0.99	24	54	49717
Motiva	06/24/04	87	7.1	0.07	0	TAME	0.4	0.6	26.23	80	69,356.97
Exxon-Mobil	06/25/04	87	8.53	0	0			0.7	26.2	145	104750
Gulf	06/26/04	88	8.66	0.05	0.25			0.96	31.7	145	20145
Webber	06/27/04	88	8.69	0.05	0.25			0.96	31.7	145	59558.96
Gulf	06/28/04	93	6.74	2.29	12.63			0.5	21.7	182	39813

### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	06/30/04	87	7.46	0.06	0.33			0.86	24.3	155	60454
Exxon-Mobil	06/30/04	87	8.87	0	0			0.75	23.4	233	39761
Exxon-Mobil	07/01/04	93	7.89	0.69	3.8			0.82	30	59	32835
Exxon-Mobil	07/01/04	93	7.37	1.76	9.62	TAME	0.22	0.86	29	40	15845
Exxon-Mobil	07/01/04	87	8.77	0	0			1.28	24.9	125	20006
Irving	07/02/04	93	6.51	2.38	13.11			0.44	25.3	52	21,947
Gulf	07/03/04	87	7.78	2.6	14.32			0.93	24.9	115	39791
Gulf	07/04/04	88	8.83	1.36	7.46			0.88	24.8	118	100566
Exxon-Mobil	07/05/04	87	8.81	1.25	6.85			0.9	26.7	169	105241
Exxon-Mobil	07/05/04	87	7.75	2.31	12.66			0.95	23.5	115	59212
Irving	07/06/04	87	9	1.34	7.37			0.84	29	149	93,300
Gulf	07/07/04	88	8.67	0.47	2.18			0.5	15.6	198	39769
Exxon-Mobil	07/10/04	87	8.63	0.47	2.18	TAME	0.18	0.5	15.6	198	100392
Exxon-Mobil	07/10/04	87	6.95	1.81	10.09			0.65	28.2	76	15028
Motiva	07/11/04	93	6.89	2.44	13.5	TBA	0.11	0.44	27.1	71	29,904.67
Exxon-Mobil	07/12/04	87	7.79	0.28	1.35	TAME	0.18	0.84	22.5	164	79888
Gulf	07/13/04	88	7.79	0.28	1.35	TAME	0.18	0.84	22.5	164	59458
Gulf	07/16/04	93	6.47	2.12	10.28			0.48	24.1	32	29825
Exxon-Mobil	07/18/04	87	7.78	1.07	5.89			0.85	24.1	94	100804

### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Motiva	07/18/04	87	7.65	0.81	0.16	TAME	4.82	0.92	26.3	69	240,118.40
Exxon-Mobil	07/19/04	93	8.02	0	0			0.4	17.1	69	24915
Exxon-Mobil	07/19/04	93	7.34	0	0			0.48	16.8	53	25006
Webber	07/21/04	88	7.85	0.02	0.09			0.87	34.5	190	60,316.50
Exxon-Mobil	07/21/04	87	8.76	1.01	5.51			0.75	23.2	98	113567
Exxon-Mobil	07/21/04	87	6.84	1.81	10.09			0.65	30.1	94	70034
Irving	07/23/04	87	9	0.03	0.15			0.81	22.6	113	75,000
Exxon-Mobil	07/23/04	87	8.64	0.22	0.39	TAME	0.91	0.89	24.1	165	24859
Exxon-Mobil	07/26/04	87	7.65	0.64	3.57			1.21	37	129	49103
Exxon-Mobil	07/26/04	87	8.63	0.77	4.22			0.85	25.9	109	120167
Gulf	07/28/04	87	8.63	0.77	4.22			0.85	25.9	109	22970
Gulf	07/28/04	87	7.65	0.64	3.57			1.21	37	129	65965
Exxon-Mobil	07/30/04	87	7.86	0.47	0.68	TAME	2.16	0.76	22.3	35	48218
Exxon-Mobil	07/30/04	87	7.51	1.23	6.37			0.72	23.8	71	69273
Exxon-Mobil	08/02/04	93	7.25	0.02	0.1			0.62	16.4	50	24713
Irving	08/02/04	87	9	2.33	12.9			1.17	27.4	89	69,000
Exxon-Mobil	08/02/04	93	8	0.03	0.14			0.36	17.9	87	28576
Motiva	08/02/04	87	7.75	1.91	0	TAME	11.72	1.8	22.3	85	80,438.14
Exxon-Mobil	08/03/04	87	8.56	2.29	12.49			0.93	21.4	162	105299
Exxon-Mobil	08/04/04	87	7.1	1.2	6.67			0.86	26.4	83	101377

### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Gulf	08/05/04	87	7.62	0	0			1.67	35.8	102	60017
Gulf	08/05/04	88	8.38	1.49	7.79	TAME	0.88	0.34	4.9	105	6017
Exxon-Mobil	08/08/04	87	8.5	0.07	0.14	TAME	0.25	0.74	26.2	55	115874
Gulf	08/10/04	87	8.5	0.07	0.14	TAME	0.25	0.74	26.2	55	49812
Gulf	08/11/04	87	7.77	0.65	3.15	ETBE	0.47	0.8	24.3	121	29930
Exxon-Mobil	08/12/04	87	6.86	1.96	10.84	TBA	0.11	0.6	26.7	96	44596
Exxon-Mobil	08/12/04	87	7.77	0.65	3.15			0.8	24.3	121	104024
Motiva	08/12/04	93	6.76	2.43	13.16	TBA	0.13	0.33	20	73.12	43,339.54
Exxon-Mobil	08/15/04	87	8.64	1.24	4.81	TAME	2.03	0.82	15.6	108	9963
Motiva	08/15/04	87	6.49	2.37	12.43	Methanol TBA TAME	0.04 0.06 0.51	0.35	24.8	32	54,194.60
Irving	08/17/04	87	9	0.19	1.02			0.99	19.6	147	79,000
Webber	08/18/04	88	8.77	0.49	2.73			1.26	28.8	291	59,408.93
Gulf	08/20/04	87	7.67	0	0			1.02	32.6	181	79957
Exxon-Mobil	08/22/04	87	7.76	1.85	10.14			0.62	21.5	90	95040
Motiva	08/22/04	87	7.64	0.82	0	TAME	5.06	1.49	26.1	135	99,232.11
Exxon-Mobil	08/23/04	93	8.21	0.02	0.14			0.38	14.9	113	31778
Exxon-Mobil	08/23/04	93	7.26	0	0			0.82	18.1	58	43836
Exxon-Mobil	08/27/04	87	8.55	0.34	0.13	TAME	1.94	0.94	23.3	153	104217
Exxon-Mobil	08/28/04	87	7.1	2.09	11.44			0.57	19.2	64	66846

### 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 <sub>2</sub> )	(% Vol)	(Other Oxy. Name)	(% Vol)	(% Vol)	(% Vol)	(ppm)	Barrels
Exxon-Mobil	09/01/04	87	7.4	1.44	7.61	ETBE	0.26	0.9	23.9	95	49990
Exxon-Mobil	09/01/04	87	8.58	0.15	0.09	ETBE	0.86	1.25	34.3	124	57696
Gulf	09/03/04	87	7.19	1.12	6.17			0.78	26.1	72	78706
Motiva	09/03/04	87	7.11	1.31	6.1	ETBE TAME	0.4 0.8	0.78	25.3	72	50,756.85
Exxon-Mobil	09/05/04	87	8.76	0.03	0.014	TAME	0.18	0.74	25.5	47	130200
Motiva	09/05/04	87	6.75	1.91	10.55			0.39	19.9	105	98,900.40
Exxon-Mobil	09/06/04	87	7.54	2.25	12.4			0.85	24	97	100109
Webber	09/09/04	87	8.66	1.07	1.01	TAME	3.92	0.55	12.3	39	58,455.19
Motiva	09/10/04	87	7.8	2.57	14.19			1.01	30.2	7.8	69,425.53
Gulf	09/11/04	87	8.91	1.11	2.69	TAME	4.23	1.16	20	135	80244
Exxon-Mobil	09/11/04	87	7.82	2.49	13.76			1.04	30.4	22	59781
Exxon-Mobil	09/12/04	87	7.78	2.55	14.12			1.04	29.5	13	40583
<b>Weighted Ave.</b>			<b>8.00</b>	<b>1.13</b>	<b>5.60</b>	<b>TAME</b>	<b>2.38</b>	<b>0.90</b>	<b>24.90</b>	<b>114.01</b>	
						<b>ETBE</b>	<b>1.22</b>				
						<b>Ethanol</b>	<b>0.04</b>				
						<b>Methanol</b>	<b>0.04</b>				
						<b>TBA</b>	<b>1.17</b>				
						<b>DIPE</b>	<b>0.4</b>				
						<b>n-Propanol</b>	<b>0.31</b>				