FFX Fuel Treatment Evaluation
For
Fuel Efficiency and Emissions Reductions
With
Kinsley Ready mix
Utilizing
The Carbon Mass Balance Procedure

Final Report
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WHAT IS THE CARBON BALANCE TEST PROCEDURE?

PREFACE

Fuel consumption measurements by reliable and accredited methods have been under constant review for many years. The weight of engineering evidence and scientific theory favors the carbon balance method by which carbon measured in the engine exhaust gas is related to the carbon content of the fuel consumed. This method has certainly proven to be the most suitable for field-testing where minimizing equipment down time is a factor.

The inquiries of accuracy and reliability to which we refer include discussions from international commonwealth and government agencies responsible for the test procedure discussed herein. This procedure enumerates the data required for fuel consumption measurements by the "carbon balance" or "exhaust gas analysis" method. The studies conducted show that the carbon balance has been found to be a more precise fuel consumption test method than the alternative volumetric-gravimetric methods.

The carbon balance test is a fundamental part of the Australian Standards **AS2077-1982**. Further, the carbon balance test procedure has proven to be an intricate part of the United States EPA, FTP and HFET Fuel Economy Tests. Also, Ford Motor Company characterized the carbon balance test procedure as being "at least as accurate as any other method of volumetric-gravimetric testing." (**SAE Paper No. 750002 Bruce Simpson, Ford Motor Company**) Finally, the Carbon Balance procedure is incorporated in the Federal Register Voluntary Fuel Economy Labeling Program, Volume 39.

The following photographic report captures a few of the applicable steps necessary for conducting a reliable and accurate carbon balance test. As will be documented, every effort is made to insure that each test is consistent, repeatable, and precise. More importantly, it will be even clearer as to why the Carbon Balance Test has such a high degree of acceptance and reliability.

EXECUTIVE SUMMARY

The FFX Fuel Treatment manufactured and marketed by MyDailyChoice, Inc., has proven, in laboratory and field-testing, to reduce fuel consumption in the range 3% to 10% under comparable load conditions. It also has proven to significantly reduce carbon emissions.

Following discussions with Chris Robinson (FFX Representative) and Kinsley Ready mix, it was determined that a fuel consumption analysis should be conducted utilizing a 2006 Freightliner dump truck with 3406 Caterpillar engine and a 1999 International mixer truck with an N 18 Cummins engine. Differing engine types with somewhat dissimilar accumulated operating hours were evaluated in an attempt to determine the affects of FFX fuel combustion catalyst in dissimilar engine types and emissions configurations.

Integral to their business, Kinsley Ready mix delivers concrete to Kinsley, Kansas and surrounding areas. Unfortunately, there has been a significant amount of precipitation throughout the Midwest thus far, which has scaled back concrete operations and minimized accumulated equipment engine hours. Accumulated engine hours were below the suggested recommendations for optimum catalyst benefit. However, the data collected during the treated segment of the evaluation for emissions and fuel consumption shows typical improvements with the organo-metallic fuel catalyst FFX.

Further, and as important, the FFX Fuel Treatment was dosed at twice the rate as normal (.5 ounces/20 gallons) to help improve and accelerate the rate of catalytic oxidation, due to the shortened working season.

A baseline test (untreated) was conducted on May 19, 2009 using the Carbon Mass Balance Test Procedure. After which, the pre-selected test equipment were treated by adding the FFX Fuel Treatment to the on-site diesel fuel storage tank located at the corporate offices in Kinsley, Kansas. On July 21, 2009, the test was then repeated (FFX treated) following the same parameters. The results are contained within this report.

The data showed that the average improvement in fuel consumption, for both pieces of equipment tested, was 7.7% during steady state testing, using the Carbon Mass Balance test procedure.

The treated engines also demonstrated a large percentage reduction in soot particulates, in the range 36% and reductions in harmful exhaust related carbon fractions. Carbon dioxide reductions, based upon the measured reduction in fuel consumption, are also substantial.

INTRODUCTION

Baseline (untreated) fuel efficiency tests were conducted on both pieces of equipment on May 19, 2009, employing the Carbon Mass Balance (CMB) test procedure. FFX supplied sufficient product to correctly treat the on-site fuel storage tank located at the corporate office. Both owner and operator were then instructed as to the required dosing regimen for fuelling the bulk storage tank with the FFX Fuel Treatment. The test equipment was then operated on FFX catalyst treated fuel for as many hours as could be accumulated considering the saturated weather conditions of the region (at least 300 - 400 hrs of engine operation are recommended). At the end of the engine-conditioning period (July 21, 2009), the engine tests were repeated, reproducing all engine parameters. The final results, along with the data sheets, are contained within this report.

TEST METHOD

Carbon Mass Balance (CMB) is a procedure whereby the mass of carbon in the exhaust is calculated as a measure of the fuel being burned. The elements measured in this test include the exhaust gas composition, its temperature, and the gas flow rate calculated from the differential pressure and exhaust stack cross sectional area. The CMB is central to the both US-EPA (FTP and HFET) and Australian engineering standard tests (AS2077-1982), although in field-testing we are unable to employ a chassis dynamometer. However, in the case of a stationary equipment test, the engine can be loaded sufficiently to demonstrate fuel consumption trends and potential.

The Carbon Mass Balance formula and equations employed in calculating the carbon flow are a supplied, in part, by doctors' of Combustion Engineering at the university and scientific research facility level.

The Carbon Mass Balance test procedure follows a prescribed regimen, wherein every possible detail of engine operation is monitored to insure the accuracy of the test procedure. Cursory to performing the test, it is imperative to understand the quality of fuel utilized in the evaluation. As important, the quality of fuel must be consistent throughout the entirety of the process.

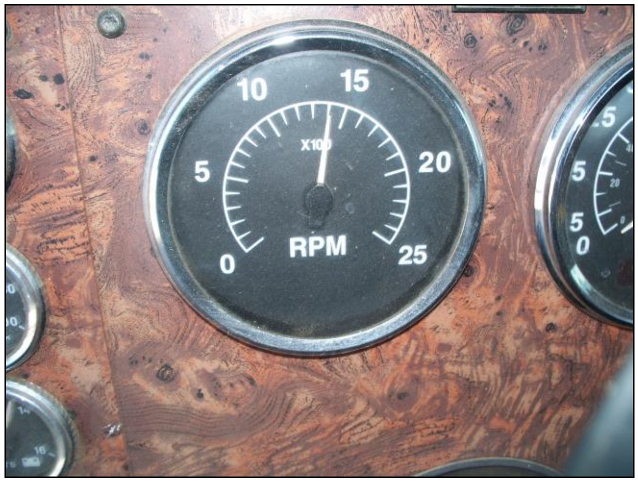
Fuel density and temperature tests are performed for both the baseline and treated segments of the evaluation to determine the energy content of the fuel. A .800 to .910 Precision Hydrometer, columnar flask and Raytek Minitemp are utilized to determine the fuel density for each prescribed segment of the evaluation.

Next, and essential to the Carbon Balance procedure, is test equipment that is mechanically sound and free from defect. Careful consideration and equipment screening is utilized to verify the mechanical stability of each piece of test equipment. Preliminary data is scrutinized to disqualify all equipment that may be mechanically suspect. Once the equipment selected process is complete, the Carbon Balance test takes only 10 to 20 minutes, per unit, to perform.

When the selection process is complete, engine RPM is increased and locked in position. This allows the engine fluids, block temperature, and exhaust stream gasses to stabilize. Data cannot be collected when there is irregular fluctuation in engine RPM and exhaust constituent levels. Therefore, all engine operating conditions must be stable and consistent.

An aftermarket throttle lock is utilized, as one method, to secure engine RPM. This provides a steady state condition in which consistent data can be collected. Should the engine RPM fluctuate erratically and uncontrollably, the test unit would be disqualified from further consideration.

Next**,** engine RPM and fluid temperatures are monitored throughout the Carbon Balance evaluation. As important, exhaust manifold temperatures are monitored to ensure that engine combustion is consistent in all cylinders. It is imperative that the engine achieve normal operating conditions before any testing begins.



Once engine fluid levels have reached normal operating conditions the Carbon Balance study may begin. The above photograph shows that the engine RPM is locked in place at 1400 r.p.m., which in this case is the approved operating rpm with the mixer drum at full speed. It should be noted that any deviation in r.p.m., temperature, either fluid or exhaust, would cause this unit to be eliminated from the evaluation due to mechanical inconsistencies.

Once all of the mechanical criteria are met, data acquisition can commence; it is necessary to monitor the temperature and pressure of the exhaust stream. Carbon Balance data cannot be collected until the engine exhaust temperature has peaked. Exhaust temperature is monitored carefully for this reason.

Once the exhaust temperature has stabilized, the test unit has reached its peak operating temperature. Exhaust temperature is critical to the completion of a successful evaluation, since temperature changes identify changes in load and rpm. As previously discussed, rpm and load must remain constant throughout the entirety of the Carbon Balance study.

When all temperatures are stabilized, and the desired operating parameters are achieved; it is time to insert the emissions sampling probe into the exhaust tip of each piece of equipment utilized in the study group. The probe has a non-dispersive head, which allows for random exhaust sampling throughout the cross section of the exhaust.

While the emission-sampling probe is in place, and data is being collected, exhaust temperature and pressure are monitored throughout the entirety of the Carbon Balance procedure. This photograph shows the typical location of the exhaust emissions sampling probe.

While data is being collected, exhaust pressure is monitored, once again, as a tool to control load and RPM fluctuations. Exhaust pressure is proportional to load. Therefore, as one increases, or decreases, so in turn does the other. The Carbon Balance test is unique in that all parameters that have a dramatic affect on fuel consumption, in a volumetric test, are controlled and monitored throughout the entire evaluation. This ensures the accuracy of the data being collected. Exhaust pressure is nothing more than an accumulation of combustion events that are distributed through the exhaust matrix.

The above photograph shows one method in which exhaust pressure can be monitored during the Carbon Balance test procedure. In this case, exhaust pressure is ascertained through the use of a Magnahelic gauge. This type of stringent regime further documents the inherent accuracy of the Carbon Balance test.

At the conclusion of the Carbon Balance test, a soot particulate test is performed to determine the engine exhaust particulate level. This valuable procedure helps to determine the soot particulate content in the exhaust stream. Soot particulates are the most obvious and compelling sign of pollution. Any attempt to reduce soot particulates places all industry in a favorable position with environmental policy and the general public.

The above photograph demonstrates a typical method in which soot particulate volume is monitored during the Carbon Balance test. This method is the Bacharach Smoke Spot test. It is extremely accurate, portable, and repeatable. It is a valuable tool in smoke spot testing when comparing baseline (untreated) exhaust to catalyst treated exhaust.

Finally, the data being recorded is collected through a non-dispersive, infrared analyzer. Equipment such as this is EPA approved and CFR 40 rated. This analyzer has a high degree of accuracy, and repeatability. It is central to the Carbon Balance procedure in that it identifies baseline carbon and oxygen levels, relative to their change with catalyst treated fuel, in the exhaust stream. The data accumulated is extremely accurate, as long as the criteria leading up to the accumulation of data meets the same stringent standards. For this reason, the Carbon Balance test is superior to any other test method utilized. It eliminates a multitude of variables that can adversely affect the outcome and reliability of any fuel consumption evaluation.

Identified above is one type of analyzer used to perform the Carbon Balance test. The analyzer is calibrated with known reference gases before the baseline and treated test segments begin. The data collected from this analyzer is then computed and compared to the exhaust matrix carbon content of the baseline and treated segment of the evaluation. Also, the data recognizes the carbon contained within the raw diesel fuel. A fuel consumption performance factor is then calculated from the data. The baseline performance factor is compared with the catalyst treated performance factor. The difference between the two performance factors identifies the change in fuel consumption during the Carbon Balance test procedure

Essential to performing the aforementioned test procedure is the method in which the task for dosing fuel is performed. It is critical to the success of the Carbon Mass Balance procedure to insure that the equipment evaluated be given meticulous care and consideration to advance the process of testing.

INSTRUMENTATION

Precision state of the art instrumentation was used to measure the concentrations of carbon containing gases in the exhaust stream, and other factors related to fuel consumption and engine performance. The instruments and their purpose are listed below:

Measurement of exhaust gas constituents HC, CO, CO_2 and $O_{2,}$ by Horiba Mexa Series, four gas infrared analyser.

Note: The Horiba MEXA emissions analyser is calibrated with the same reference gas for both the baseline and treated segments of the evaluation. In this case, a Scott specialty mother gas no. CYL#ALM018709 was utilized for calibration purposes.

Temperature measurement; by Fluke Model 52K/J digital thermometer.

Exhaust differential pressure by Dwyer Magnahelic.

Ambient pressure determination by use of Brunton ADC altimeter/barometer.

The exhaust soot particulates are also measured during this test program.

Exhaust gas sample evaluation of particulate by use of a Bacharach True Spot smoke meter.

The Horiba infrared gas analyser was serviced and calibrated prior to each series of engine efficiency tests.

TEST RESULTS

Fuel Efficiency

A summary of the CMB fuel efficiency results achieved, in this test program, are provided in the following tables and appendices. **See Table I, and Individual Carbon Mass Balance results, in Appendix II.**

Table I: provides the average test results for both pieces of equipment before and after FFX Fuel Treatment treatment **(see Graph II, Appendix I)**.

TABLE I

Test Segment	Miles	Fuel Change
1999 Mixer Truck		
Treated	1169	**- 7.9%**
2006 Dump Truck		
Treated	1361	**- 7.5%**
Average (Absolute)		**- 7.7%**

The computer printouts of the calculated CMB test results are located in **Appendix II.** The raw engine data sheets used to calculate the CMB are contained in **Appendix III**. The raw data sheets, and carbon balance sheets show and account for the environmental and ambient conditions during the evaluation.

Soot Particulate Tests

Concurrent with CMB data extraction, soot particulate measurements were conducted. The results of these tests are summarized in **Table II**. Reductions in soot particulates are the most apparent and immediate. Laboratory testing indicates that carbon and solid particulate reductions occur before observed fuel reductions. Studies show that a minimum 300 to 400 hours, FFX Fuel Treatment treated engine operation, are necessary before the conditioning period is complete. Then, and only then, will fuel consumption improvements be maximized.

Table II

Fuel Type Density .835 Diesel	Soot Particulates
1999 Mixer truck	
Untreated	4.41 mg/m^3
Treated	2.96 mg/m^3
	- 33%
2006 Dump Truck	
Untreated	.44 mg/m^3
Treated	. 27 mg/m^3
	- 39%
Average	**- 36%**

The reduction in soot particulate density (the mass of the smoke particles) was reduced by an average 36**%** after fuel treatment and engine conditioning with FFX Fuel Treatment **(See Graph 1, Appendix I).** Concentration levels were provided by Bacharach.

Conclusion

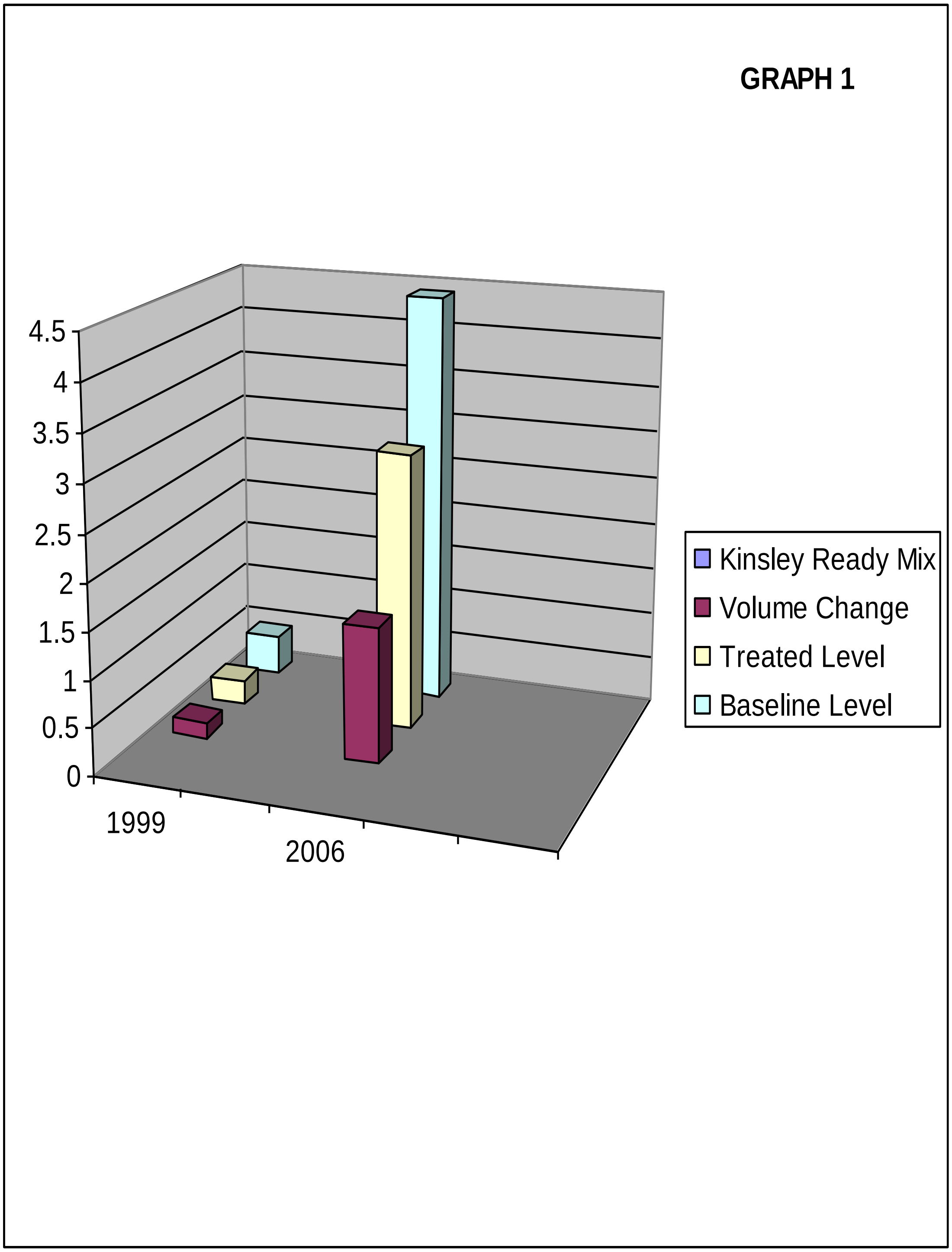
These carefully controlled engineering standard test procedures conducted on both pieces of test equipment; provide clear evidence of reduced fuel consumption in the range of 7.7%. In general, improvements utilizing the Carbon Mass Balance test, under static test conditions, generate results 2% - 3% less than those results generated with an applied load.

FFX Fuel Treatment's effect on improved combustion is also evidenced by the substantial reduction in soot particulates (smoke) in the range of 36% **(see Appendix I)**. The similar reduction in other harmful carbon emissions likewise substantiates the improved combustion created by the use of FFX fuel combustion catalyst **(see raw data sheets, Appendix III)**.

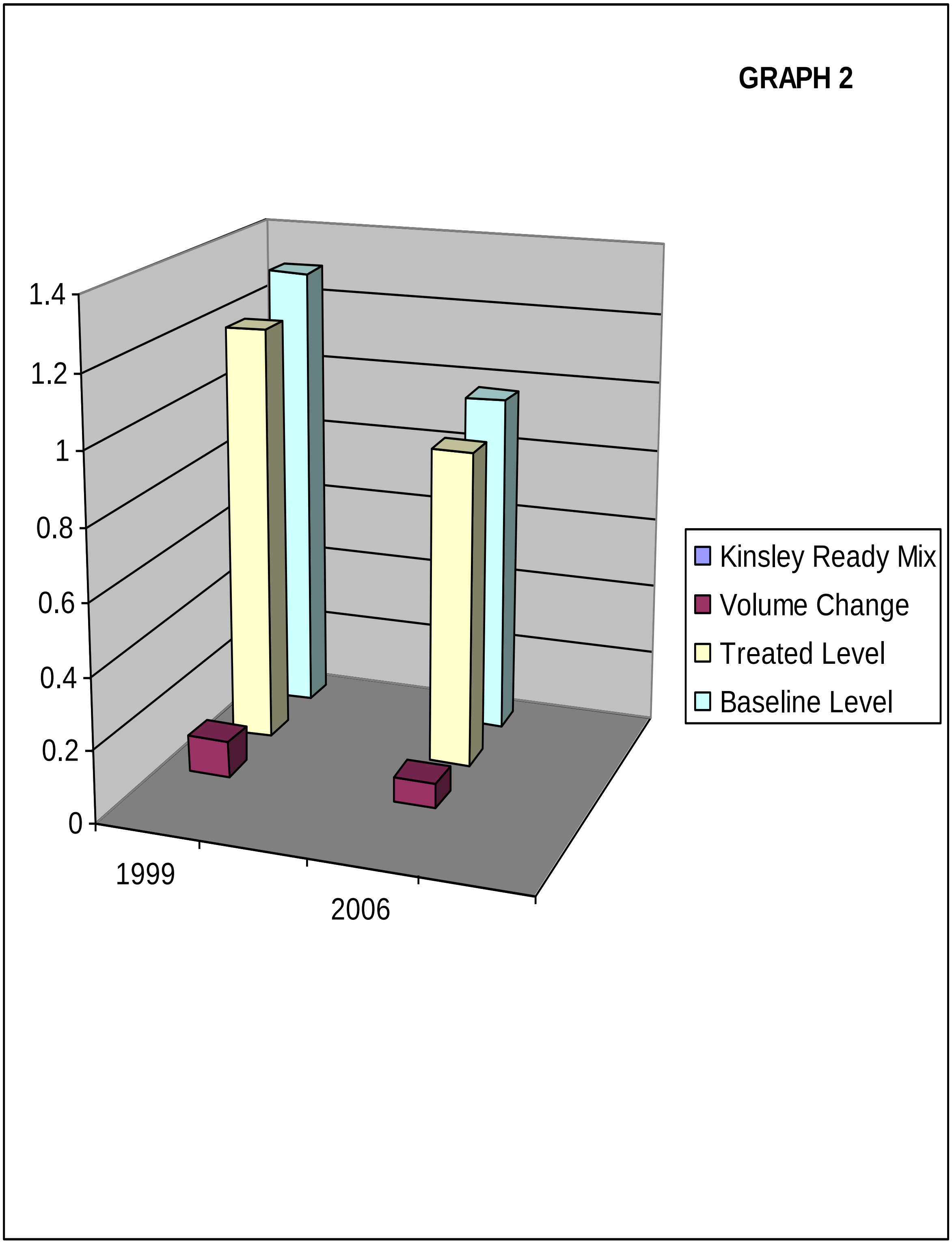
Additional to the fuel economy benefits measured and a reduction in soot particulates, a significant reduction, over time, in engine maintenance costs will be realized following treatment with FFX. These savings are achieved through lower soot levels in the engine lubricating oil, which is a result of more complete combustion of the fuel. Engine wear rates are reduced resulting in less carbon build-up in the combustion area. FFX also acts as an effective biocide should you experience water bottoms in fuel storage tanks; and, an excellent fuel system lubricant, which improves fuel system lubrication with today's low sulphur diesel fuels.

Appendix I

Exhaust Particulate and Fuel Graphs



Soot Particulate Graph



Fuel Consumption Graph

Appendix II

Carbon Mass Balance Compilation Sheets

CARBON BALANCE RESULTS

COMPANY :	Kinsley Ready Mix	LOCATION :	Kinsley, Kansas
EQUIPMENT :	2006 Freightliner	UNIT NR. :	n.a.
ENG. TYPE :	3406 Cat.	MODEL :	Dump Truck
RATING :		FUEL :	Diesel

BASELINE TEST **DATE : 20/5/09**

ENGINE MILES	104,933	ENG. RPM:	1500
AMB. TEMP (C) :	21.4	STACK(mm):	124
BAROMETRIC (mb)	1021	LOAD:	High Idle

	TEST 1	*TEST 2*	*TEST 3*	*TEST 4*	*TEST 5*	AVERAGE	% ST.DEV
PRES DIFF (Pa):	75	75	75	75	75	75	0.00
EXHST TEMP (C):	135.9	135.7	135.6	135.7	135.8	136	0.08
HC (ppm) :	7	8	8	8	7	7.6	7.21
CO (%) :	0.01	0.01	0.01	0.01	0.01	0.010	0.00
CO2 (%) :	2.04	2.06	2.04	2.06	2.05	2.05	0.49
O2 (%) :	9.38	9.41	9.37	9.38	9.37	9.38	0.18
CARB FLOW(g/s):	0.959	0.969	0.960	0.969	0.964	0.964	0.49
REYNOLDS NR. :	3.88E+04						

TREATED TEST **DATE : 22/7/09**

ENGINE MILES	106,102	ENG. RPM:	1500
AMB. TEMP (C) :	21.1	STACK(mm):	124
BAROMETRIC(mb):	1018	LOAD:	High Idle

	TEST 1	*TEST 2*	*TEST 3*	*TEST 4*	*TEST 5*	AVERAGE	% ST.DEV
PRES DIFF (Pa):	75	75	75	75	75	75	0.00
EXHST TEMP (C):	135.6	135.7	135.7	135.9	135.9	136	0.22
HC (ppm) :	5	4	4	4	4	4.2	10.65
CO (%) :	0.01	0.01	0.00	0.01	0.01	0.008	3.89
CO2 (%) :	1.91	1.90	1.89	1.91	1.90	1.90	0.46
O2 (%) :	9.25	9.27	9.24	9.25	9.24	9.25	0.13
CARB FLOW(g/s):	0.897	0.892	0.883	0.896	0.892	0.892	0.64

REYNOLDS NR. : 3.87E+04 TOTAL HOURS ON TREATED FUEL : 1169

PERCENTAGE CHANGE IN FUEL CONSUMPTION ((TREATED-BASE)/BASE*100) : **-7.5 %**

REMARKS:

CARBON BALANCE RESULTS

COMPANY :	Kinsley Ready Mix	LOCATION :	Kinsley, Kansas
EQUIPMENT :	1999 International	UNIT NR. :	n.a.
ENG. TYPE :	N 18 Cummins	MODEL :	Mixer Truck
RATING :		FUEL :	Diesel

BASELINE TEST **DATE : 20/5/09**

ENGINE MILES	17,497	ENG. RPM:	1400
AMB. TEMP (C) :	21.9	STACK(mm):	99
BAROMETRIC (mb)	1020	LOAD:	High Idle

	TEST 1	*TEST 2*	*TEST 3*	*TEST 4*	*TEST 5*	AVERAGE	% ST.DEV
PRES DIFF (Pa):	224	224	224	224	224	224	0.00
EXHST TEMP (C):	141.8	141.6	141.4	141.5	141.6	142	0.10
HC (ppm) :	8	7	8	8	7	7.6	7.21
CO (%) :	0.02	0.02	0.02	0.02	0.02	0.020	0.00
CO2 (%) :	2.48	2.50	2.49	2.51	2.50	2.50	0.46
O2 (%) :	9.31	9.29	9.31	9.30	9.31	9.30	0.10
CARB FLOW(g/s):	1.278	1.288	1.284	1.294	1.288	1.286	0.46

REYNOLDS NR. : 6.65E+04

TREATED TEST **DATE : 22/7/09**

ENGINE MILES	18,858	ENG. RPM:	1400
AMB. TEMP (C) :	21.6	STACK(mm):	99
BAROMETRIC(mb):	1019	LOAD:	High Idle

	TEST 1	*TEST 2*	*TEST 3*	*TEST 4*	*TEST 5*	AVERAGE	% ST.DEV
PRES DIFF (Pa):	224	224	224	224	224	224	0.00
EXHST TEMP (C):	141.7	141.8	141.9	141.7	141.6	142	0.22
HC (ppm) :	6	7	7	7	6	6.6	8.30
CO (%) :	0.02	0.02	0.01	0.02	0.01	0.016	5.50
CO2 (%) :	2.31	2.30	2.29	2.30	2.31	2.30	0.38
O2 (%) :	9.20	9.19	9.21	9.21	9.20	9.20	0.09
CARB FLOW(g/s):	1.191	1.186	1.175	1.186	1.186	1.185	0.47

REYNOLDS NR. : 6.64E+04 TOTAL HOURS ON TREATED FUEL : 1361

PERCENTAGE CHANGE IN FUEL CONSUMPTION ((TREATED-BASE)/BASE*100) : **-7.9 %**

REMARKS:

Appendix III

Raw Data Sheets

Carbon Mass Balance Field Data Form

Company: Kinsley Ready Mix **Location:** Kinsley, Kansas **Date:** 5-20-09

Water Temp: ø **Oil Pres:** ø **Fan Clutch:** ON **Smoke No:** 4.41 mg/m³ **Exhaust Diameter:** 124 ~~Inches~~ mm

Test Portion: Baseline: X **Treated:** ____ **Engine Make/Model:** 2006 Cat. 3406 **Air Inlet Velocity:** ø

Exhaust Manifold Temp: ø **Miles/Hours:** 104933 **ID#:** N.A **Fuel Specific Gravity:** .835@ 20.4°C

Type of Equipment: Freightliner Dump Truck **Exhaust Side:** Right **Barometric Pressure:** 1021

RPM: 1500 **Load:** Static - Lights off - A.C off **Oil Pressure Temp.** ø

Fuel Type	Exhaust Temp °C	P Inches Of H_2O	CO	HC PPM	CO_2	02	Ambient Temp. C.	Instrument Calibration	Observer	Time Begin To Time End
Diesel	135.9°C	75	.01	7	2.04	9.38	21.4°C	Yes		9:56 A-m
	135.7°C	75	.01	8	2.06	9.41				
	135.6°C	75	.01	8	2.04	9.37				
	135.7°C	75	.01	8	2.06	9.38				
	135.8°C	75	.01	7	2.05	9.37	21.4°C			10:06 A.m.

Carbon Mass Balance Field Data Form

Company: Kinsley Ready Mix Location: Kinsley, Kansas Date: 7-22-09

Water Temp: ø Oil Pres: ø Fan Clutch: on Smoke No: 2.96 mg/m3 Exhaust Diameter: 12.7 ~~Inches~~

Test Portion: Baseline: ____ Treated: X Engine Make/Model: 2006 Cat. 3406 Air Inlet Velocity: ø

Exhaust Manifold Temp: ø Miles/Hours: 106102 ID#: N.A. Fuel Specific Gravity: .835@20.4°c

Type of Equipment: Freightliner Dump Truck Exhaust Side: Right Barometric Pressure: 1018

RPM: 1500 Load: static – lights off – A.C. off Oil Pressure Temp. ø

Fuel Type	Exhaust Temp °C	P Inches Of H_2O	CO	HC PPM	CO_2	02	Ambient Temp. C.	Instrument Calibration	Observer	Time Begin To Time End
Diesel	135.6°c	75	.01	5	1.91	9.25	21.1°c	Yes		8:50 A-m
	135.7°c	75	.01	4	1.90	9.27				
	135.7°c	75	.00	4	1.89	9.24				
	135.9°c	75	.01	4	1.91	9.25				
	135.9°c	75	.01	4	1.90	9.24	21.1°c			9:00 A-m

Carbon Mass Balance Field Data Form

Company: Kinsley Ready Mix **Location:** Kinsley, Kansas **Date:** 5-20-09

Water Temp: Ø **Oil Pres:** Ø **Fan Clutch:** ON **Smoke No:** .44 mg/m³ **Exhaust Diameter:** 124 ~~Inches~~ mm

Test Portion: Baseline: X **Treated:** ____ **Engine Make/Model:** 1999 Cummins N 18 **Air Inlet Velocity:** Ø

Exhaust Manifold Temp: Ø **(Miles)/Hours:** 17497 **ID#:** N.A. **Fuel Specific Gravity:** .835@ 20.4°C

Type of Equipment: International Conc Mixer **Exhaust Side:** Right **Barometric Pressure:** 1020

RPM: 1400 **Load:** Lights off - A.C. off - Drum empty, Fan Speed **Oil Pressure Temp.** Ø

Fuel Type	Exhaust Temp °C	P Inches Of H_2O	CO	HC PPM	CO_2	02	Ambient Temp. C.	Instrument Calibration	Observer	Time Begin To Time End
Diesel	141.8°C	224	.02	8	2.48	9.31	21.9°C	Yes		10:25 A.m
	141.6°C	224	.02	7	2.50	9.29				
	141.4°C	224	.02	8	2.49	9.31				
	141.5°C	224	.02	8	2.51	9.30				
	141.6°C	224	.02	7	2.50	9.31	21.9°C			10:35 A.m.

Carbon Mass Balance Field Data Form

Company: Kinsley Ready Mix Location: Kinsley, Kansas Date: 7-22-09

Water Temp: ø Oil Pres: ø Fan Clutch: ON Smoke No: .22 mg/m³ Exhaust Diameter: 124 ~~Inches~~ mm

Test Portion: Baseline: ____ Treated: X Engine Make/Model: 1999 Cummins N18 Air Inlet Velocity: ø

Exhaust Manifold Temp: ø Miles/Hours: 18858 ID#: N.A. Fuel Specific Gravity: .835 @ 20.4°C

Type of Equipment: International Concrete Mixer Exhaust Side: Right Barometric Pressure: ~~[illegible]~~ 1019

RPM: 1400 Load: Lights off - A.C. off - Drum Empty, Full Speed Oil Pressure Temp. ø

Fuel Type	Exhaust Temp °C	P Inches Of H_2O	CO	HC PPM	CO_2	02	Ambient Temp. C.	Instrument Calibration	Observer	Time Begin To Time End
Diesel	141.7°C	224	.02	6	2.31	9.20	21.6°C	Yes		9:10 A.m
	141.8°C	224	.02	7	2.30	9.19				
	141.9°C	224	.01	7	2.29	9.21				
	141.7°C	224	.02	7	2.30	9.21				
	141.6°C	224	.01	6	2.31	9.20	21.6°C			9:20 A.m

Appendix IV

Estimated Fuel Savings

Monthly and Annual
Fuel Savings
With the FFX Fuel Treatment

Estimated: CMB

	Carbon Balance Savings
Monthly Fuel Consumption:	2,500 gals.
Monthly Fuel Costs ($2.00/gal.):	$5,000.00
Improvement in Fuel Efficiency:	.077%
Monthly Gross Fuel Savings:	$385.00

Gross Annual Savings Based On 30,000 Gallons of Diesel Fuel Consumed:	**$4,620.00**

Using the fuel savings data produced from the Carbon Balance test procedure, understanding the minimal hours accrued with the use of the FFX Fuel Treatment, the results show that Kinsley Ready Mix will reduce annual fuel consumption costs by a minimum of $4,620.00. Other cost reducing factors that will enhance the use of the FFX Fuel Treatment include reduced repairs due to carbon related failures; extended oil change intervals as experienced by other FFX Fuel Treatment customers; reduced fuel system repairs with the additional fuel system lubricant contained in the catalyst; and, increased engine life. These factors and many more are the reason that so many companies are opting to implement FFX Fuel Treatment as part of their preventive maintenance program.

Other benefits in using FFX Fuel Treatment are as follows:

Demulsifier: Removes water from fuel.
Biocide: Helps control bacterial growth in fuel.
Polymerization Retardant: Helps prevent the formation of solids in fuel.
Dispersant: Helps to eliminate existing solids in fuel.
Lubricant: Lubricates the fuel system (fuel pump and injectors).
Detergent: Cleans the fuel pump and injectors.
Corrosion Inhibitor: Protects against fuel tank corrosion.
Metal Deactivator: Prevents catalytic oxidation.