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Interim Report
FMC, Skull Point Field Trial of FPC-1 Fuel Performance Catalyst

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Provo, Utah

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I. Introduction

FPC-1 Fuel Performance Catalyst is a burn rate modifier proven to reduce fuel consumption and increase engine horsepower in several recognized, independent laboratory tests, and dozens of independent field trials. The catalyst also has a positive impact upon the products of incomplete combustion, primarily soot (smoke) and carbon monoxide.

The intent of the current field evaluation at FMC, Skull Point is to determine the degree of fuel consumption, smoke and carbon monoxide reduction resulting from the addition of the FPC-1 catalyst to the # 2 diesel fuelling a select fleet of haul trucks, front end loaders, crawlers, etc. The test methodology for determining fuel consumption is the carbon mass balance (CMB). The CMB method measures the carbon containing products of the combustion process (CO2, CO, HC) found in the exhaust, rather than directly measuring fuel flow into the engine.

This report summarizes the baseline fuel emissions data and computes the engine performance factors (mass flow rates) for the same.

II. Discussion of Carbon Mass Balance Method

The data collected during the baseline fuel carbon balance test are summarized on the attached computer printouts. This data provides the volume fraction (VF) of each gas and is used to determine the average molecular weight (Mwt) of the exhaust gases computed. Next, the engine performance factor (pf) based upon the carbon mass in the exhaust is computed. The pf is finally corrected for intake air temperature and pressure, and total exhaust mass yielding a corrected engine performance factor (PF). The baseline PFs are tabulated on Table 1 below. The baseline PFs will be compared to FPC-1 treated fuel PFs and a percent change in mass carbon flow rate (fuel consumption) computed. This percent change equates to the fuel consumption change created by the addition of FPC-1.

Also, the treated fuel PF must be corrected for any change in fuel density (measured as specific gravity), and therefore, energy content. The baseline fuel density is used as the reference. No correction factor is shown in the attached printouts. These will be tabulated and shown in the final report.

The CMB procedure is conducted while the engine is operated under steady-state conditions at a high idle. No load is placed on the engine. Consequently, the engine is tested while operating under conditions conducive to high efficiency and low emissions of the products of incomplete combustion. The CMB results, therefore, represent minimum improvements, and FPC-1 created engine efficiency should be higher under high load/transient operation.

Table 1. Comparison of Baseline PFs

Unit No.	Engine Type	Baseline PF
246	KTA19C Cummins	215,824
436	38C Cummins	105,859
123	350 Cummins	526,895
Pit Crawler (D10N)	3412 Caterpillar	107,056
804	3512 Caterpillar	107,248
802	3512 Caterpillar	89,950
805	3512 Caterpillar	101,375
461	3408 Caterpillar	101,283

III. Discussion of Bacharach Smoke Spot Method

Smoke density was determined using the Bacharach Smoke Spot method. The Bacharach method draws a constant volume of exhaust gas through a filter medium. The particulate in the exhaust gas sample collects on the surface of the filter medium. The surface is darkened by the particulate according to the density of the particulate in the exhaust sample. The greater the particulate density, the darker the color. The Bacharach smoke scale ranges from 0 to 9, with 0 being a white, particulate free filter, and 9 being a completely black filter.

The smoke spot (density) numbers for each engine tested are shown on Table 2 below. The FPC-1 treated smoke spot numbers will be compared to the baseline smoke numbers.

Table 2: Smoke Numbers

Unit No.	Smoke No.
246	9
436	5.75
123	9
Pit Crawler (D10N Cat.)	9
804	7
802	7
805	7
461	9
Fleet Average:	**7.84**

IV. Summary

The baseline CMB and Bacharach Smoke Spot procedures have been completed at the FMC, Skull Point mine. The Bacharach Smoke Spot test has also been done. Carbon monoxide emissions are part of the CMB, and therefore, are also available for comparison to the treated fuel concentrations.

The FMC, Skull Point fuel system is treated with FPC-1. The engine preconditioning period will be completed after approximately 500 hours of engine operation.

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs*	4010		
Equipment Type:	Dresser 210M	*ID #:*	246	*Baro*	30.35
Fuel Sp. Gravity(SG	.824	*Temp:*	99.6		
				Time:	1240

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1800	517.4	0.45	0.02	10	3.97	14.4	
1800	520	0.45	0.02	9	3.95	14.4	
1800	525.8	0.45	0.02	10	3.93	14.1	
1800	531.2	0.45	0.02	9	3.95	14.3	
1800	528.8	0.45	0.02	9	3.9	14.4	
1800	528.4	0.45	0.02	10	3.94	14.3	
1800	527.8	0.45	0.02	10	3.93	14.3	
1800	529.8	0.45	0.02	10	3.97	14.2	
1800	**526.150**	**.450**	**.020**	**9.625**	**3.943**	**14.300**	Mean
0	**4.901**	**.000**	**.000**	**.518**	**.023**	**.107**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
9.63E-06	0.0002	.039	.143	29.203	156,403	215,824

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs:*			
Equipment Type	Dresser 210M	*ID #:*	246	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= ##### %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	Cummins 38C	*Mile/Hrs*	11317		
Equipment Type:	L-1000 Loader	*ID #:*	436	*Baro*	30.38
Fuel Sp. Gravity(SG	.830	*Temp:*	87.6		
				Time:	905

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
2002	543	1.95	0.01	5	3.95	14.1	
2002	543.2	1.95	0.01	5	3.92	14.2	
2002	542.6	1.95	0.01	5	3.9	14.2	
2002	542.2	1.95	0.01	5	3.92	14.2	
2002	543.4	1.95	0.01	3	3.91	14.1	
2002	544.4	1.95	0.01	3	3.89	14.1	
2002	544.4	1.95	0.01	3	3.9	14.1	
2002	544.8	1.95	0.01	3	3.88	14.2	
2002.000	**543.500**	**1.950**	**.010**	**4.000**	**3.909**	**14.150**	Mean
0	**.938**	**.000**	**.000**	**1.069**	**.022**	**.053**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
4.00E-06	0.0001	.039	.142	29.192	158,229	105,859

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	Cummins 38C	*Mile/Hrs:*			
Equipment Type	L-1000 Loader	*ID #:*	436	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance f. ctor adjusted for fuel density: #DIV/0!

****% Change PF= #####** **%**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs*	7189		
Equipment Type:	Fuel Truck	*ID #:*	123	*Baro*	30.33
Fuel Sp. Gravity(SG	.830	*Temp:*	90		
				Time:	1305

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1760	350.2	0.35	0.05	13.3	1.6	17.8	
1760	351.4	0.35	0.05	13.3	1.6	17.8	
1760	353	0.35	0.05	13.3	1.6	17.8	
1740	356.6	0.35	0.05	13.3	1.6	17.9	
1740	357.4	0.35	0.05	13.2	1.61	17.9	
1752.000	**353.720**	**.350**	**.050**	**13.280**	**1.602**	**17.840**	Mean
10.95445115	**3.167**	**.000**	**.000**	**.045**	**.004**	**.055**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
1.33E-05	0.0005	.016	.178	28.971	370,831	526,895

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs:*			
Equipment Type	Fuel Truck	*ID #:*	123	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= ##### %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY		*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6	Inches		
Engine Type:	CAT	*Mile/Hrs*	2069			
Equipment Type:	CAT DION	*ID #:*			*Baro*	30.31
Fuel Sp. Gravity(SG	.820	*Temp:*	119.2			
					Time:	1437

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1055	516.6	2.6	0.03	9	3.3	13.6	
1055	517	2.6	0.02	5	3.29	13.8	
1055	516.8	2.6	0.02	8	3.27	13.8	
1055	517.4	2.6	0.02	8	3.27	13.5	
1055	517.8	2.6	0.02	9	3.28	13.5	
1055	517.8	2.6	0.02	9	3.27	13.5	
1055	517.6	2.6	0.02	9	3.24	13.6	
1055	518	2.6	0.02	9	3.27	13.5	
1055	518	2.6	0.02	9	3.25	13.7	
1055	518	2.6	0.02	9	3.26	13.6	
1055.000	**517.500**	**2.600**	**.021**	**8.400**	**3.270**	**13.610**	Mean
0	**.527**	**.000**	**.003**	**1.265**	**.018**	**.120**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
8.40E-06	0.00021	.033	.136	29.068	187,429	107,056

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY		*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	6	Inches		
Engine Type:	CAT	*Mile/Hrs:*				
Equipment Type	CAT DION	*ID #:*			*Baro:*	
Fuel Sp. Gravity:		*Temp:*				
SG Corr Factor:	#VALUE!				*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= #####** %

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	10 Inches		
Engine Type:	CAT	*Mile/Hrs*	23518		
Equipment Type:	CAT 785	*ID #:*	804	*Baro*	30.36
Fuel Sp. Gravity(SG	.822	*Temp:*	104.2		
				Time:	1125

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	465.2	0.6	0.03	17	2.37	16.6	
1500	457.8	0.6	0.03	17	2.36	16.8	
1500	460	0.6	0.03	19	2.3	16.7	
1500	454.2	0.6	0.03	19	2.24	16.7	
1500	449.2	0.6	0.03	19	2.36	16.6	
1500	450.6	0.6	0.03	17	2.37	16.4	
1500	451.4	0.6	0.03	19	2.36	16.5	
1500	451.6	0.6	0.03	19	2.42	16.4	
1500	453	0.6	0.03	19	2.31	16.6	
1500.000	**454.778**	**.600**	**.030**	**18.333**	**2.343**	**16.589**	Mean
0	**5.227**	**.000**	**.000**	**1.000**	**.052**	**.136**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
1.83E-05	0.0003	.023	.166	29.040	258,789	107,248

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	10 Inches		
Engine Type:	CAT	*Mile/Hrs:*			
Equipment Type	CAT 785	*ID #:*	804	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= ##### %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	10 Inches		
Engine Type:	CAT 3512	*Mile/Hrs*	18565		
Equipment Type:	CAT 785	*ID #:*	802	*Baro*	30.36
Fuel Sp. Gravity(SG	.822	*Temp:*	98.6		
				Time:	1050

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	352.2	0.6	0.04	17	2.6	16.1	
1500	344.8	0.6	0.04	17	2.62	16	
1500	345.6	0.6	0.04	18	2.6	16.2	
1500	341.8	0.6	0.04	17	2.58	16.3	
1500	353.2	0.6	0.04	17	2.65	16	
1500	345	0.6	0.04	17	2.67	16	
1500	350	0.6	0.04	18	2.64	16	
1500	348.8	0.6	0.04	18	2.58	15.9	
1500	357.2	0.6	0.04	19	2.63	16.1	
1500	350.6	0.6	0.04	19	2.68	16	
1500.000	**348.920**	**.600**	**.040**	**17.700**	**2.625**	**16.060**	Mean
0	**4.663**	**.000**	**.000**	**.823**	**.035**	**.117**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
1.77E-05	0.0004	.026	.161	29.063	230,815	89,950

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	10 Inches		
Engine Type:	CAT 3512	*Mile/Hrs:*			
Equipment Type	CAT 785	*ID #:*	802	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= #####** %

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	10 Inches		
Engine Type:	CAT	*Mile/Hrs*	21190		
Equipment Type:	CAT 785	*ID #:*	805	*Baro*	30.37
Fuel Sp. Gravity(SG	.820	*Temp:*	107.6		
				Time:	1015

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	419.4	0.65	0.03	23	2.3	16.6	
1500	416.2	0.65	0.03	24	2.32	16.5	
1500	415	0.65	0.03	24	2.33	16.5	
1500	413	0.65	0.03	25	2.3	16.7	
1500	414.8	0.65	0.03	25	2.33	16.6	
1500	414.8	0.65	0.03	25	2.33	16.7	
1500	412.4	0.65	0.03	27	2.32	16.6	
1500	411.8	0.65	0.03	27	2.33	16.5	
1500	413	0.65	0.03	27	2.34	16.5	
1500	412.4	0.65	0.03	25	2.34	16.6	
1500.000	**414.280**	**.650**	**.030**	**25.200**	**2.324**	**16.580**	Mean
0	**2.296**	**.000**	**.000**	**1.398**	**.014**	**.079**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
2.52E-05	0.0003	.023	.166	29.037	260,392	101,375

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	10 Inches		
Engine Type:	CAT	*Mile/Hrs:*			
Equipment Type	CAT 785	*ID #:*	805	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= ##### %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	CAT	*Mile/Hrs*	13581		
Equipment Type:	CAT 834	*ID #:*	461	*Baro*	30.33
Fuel Sp. Gravity(SG	.830	*Temp:*	89.8		
				Time:	1325

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
Full Throttle	592.4	1.9	0.04	28	4.21	13.4	
Full Throttle	597.4	1.9	0.04	28	4.23	13.6	
Full Throttle	597.4	1.9	0.04	26	4.21	13.6	
Full Throttle	597.6	1.9	0.04	27	4.2	13.6	
Full Throttle	604.2	1.9	0.04	24	4.19	13.5	
Full Throttle	602.2	1.9	0.04	24	4.21	13.5	
Full Throttle	601	1.9	0.04	24	4.21	13.5	
#DIV/0!	**598.886**	**1.900**	**.040**	**25.857**	**4.209**	**13.529**	Mean
#DIV/0!	**3.912**	**.000**	**.000**	**1.864**	**.012**	**.076**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
2.59E-05	0.0004	.042	.135	29.216	145,595	101,283

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	CAT	*Mile/Hrs:*			
Equipment Type	CAT 834	*ID #:*	461	*Baro:*	
Fuel Sp. Gravity:		*Temp:*			
SG Corr Factor:	#VALUE!			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Mean
#DIV/0!	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Performance factor adjusted for fuel density: #DIV/0!

****% Change PF= ##### %**

*** A positive change in PF equates to a reduction in fuel consumption.*

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Item: 2 Code: CWY

8AM Thu 21 July — WYOMING this hour — TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	52	S 5G8	50		55%		54	46	
Tower Falls	no report	46	NE 2G2	46		68%		46	35	
Old Faithful	no report	46	NW 1G2	46		68%		46	34	
Yellowstne Lk	no report	48	N 0G2	48		74%		49	37	
Jackson	no report	54	CALM	54	10	47%	30.38s	56	42	
Big Piney	dry	54	E 1G3	54		42%		55	45	
East Painter	.....									
Evanston	.....									
Rock Springs	no report	58	SE 5	56	10	33%	30.38s	58	48	
Cody	no report	63	CALM	63	10	45%	30.28s	63	53	
Worland	clear	61	CALM	61	60	48%	30.27s		49	
Riverton	clear	63	N 6	60	60		30.33s			
Lander	clear	63	CALM	63	70	35%	30.34s	63	55	
Sheridan	clear	63	SE 3	63	60	50%	30.25s	63	52	
Gillette	dry	68	W 10	63	20	38%		68	55	0.01
Casper	clear	63	W 5	62	50	52%	30.33s	63	51	
Douglas	clear	55	N 2	57	35	77%	30.31s			
Rawlins	clear	57	CALM	57	60	47%	30.39s		44	
Laramie	.....									
Cheyenne	clear	59	W 8	54	60	54%	30.37r	59	47	

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Item: 2 Code: CWY

9AM Thu 21 July — WYOMING this hour — TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	59	SE 6G10	56		46%		59	46	
Tower Falls	no report	54	NW 1G3	54		57%		54	35	
Old Faithful	no report	56	N 2G2	56		57%		56	34	
Yellowstne Lk	no report	52	SE 1G2	52		66%		52	37	
Jackson	no report	58	CALM	58	10	39%	30.38s	58	42	
Big Piney	dry	57	E 2G5	57		39%		57	45	
East Painter	.....									
Evanston	.....									
Rock Springs	no report	61	E 3	61	10	31%	30.38s	61	48	
Cody	no report	66	CALM	66	10	40%	30.27f	66	53	
Worland	clear	66	CALM	67	60	51%	30.27s	66	49	
Riverton	clear	66	N 5	65	60	45%	30.28f		54	
Lander	clear	66	N 5	65	70	34%	30.34s	66	55	
Sheridan	clear	63	SE 3	63	60	50%	30.25s	63	52	
Gillette	dry	71	W 9	67	20	35%		71	55	0.01
Casper	clear	69	SW 7	66	50	41%	30.33s	69	51	
Douglas	clear	63	N 2	65	35	58%	30.31s			
Rawlins	clear	63	NE 5	62	60	34%	30.40r	63	44	
Laramie	clear	57	S 6	54	60	51%	30.43r	57	41	
Cheyenne	clear	66	SW 5	65	60	40%	30.38r	66	47	

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Item: 2 Code: CWY

10AM Thu 21 July — WYOMING this hour — TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	59	SE 6G10	56		46%		59	46	
Tower Falls	no report	54	NW 1G3	54		57%		54	35	
Old Faithful	no report	56	N 2G2	56		57%		56	34	
Yellowstne Lk	no report	57	S 1G2	57		60%		57	37	
Jackson	no report	62	CALM	62	10	35%	30.37f	62	42	
Big Piney	dry	61	N 3G6	61		34%		61	45	
East Painter	.....									
Evanston	.....									
Rock Springs	no report	67	E 5	66	10	25%	30.37f	67	48	
Cody	no report	71	S 8	68	10	31%	30.27s	71	53	
Worland	clear	72	CALM	72	60	34%	30.25f	72	49	
Riverton	clear	68	E 5	67	60	42%	30.28s		54	
Lander	clear	70	NW 5	69	70	30%	30.33f	70	55	
Sheridan	clear	75	SE 6	73	60	27%	30.24f	75	52	
Gillette	dry	73	W 15	67	20	30%		73	55	0.01
Casper	clear	73	W 8	70	50	33%	30.32f	73	51	
Douglas	clear	63	N 2	65	35	58%	30.31s			
Rawlins	clear	67	E 5	66	60	31%	30.40s	67	44	
Laramie	clear	57	S 6	54	60	51%	30.43r	57	41	
Cheyenne	clear	70	NW 7	67	60	36%	30.38s	70	47	

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Item: 2 Code: CWY

11AM Thu 21 July	WYOMING this hour							TODAY'S DATA		
TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	71	E 2G6	71		30%		71	46	
Tower Falls	no report	68	SE 2G5	68		33%		68	35	
Old Faithful	no report	70	SE 3G6	70		30%		70	34	
Yellowstne Lk	no report	63	SE 2G3	64		54%		63	37	
Jackson	no report	67	S 8	63	10	32%	30.35f	67	42	
Big Piney	dry	67	E 5G9	66		27%		67	45	
East Painter	.....									
Evanston	.....									
Rock Springs	no report	73	E 7	71	10	18%	30.36f	73	48	
Cody	no report	73	SE 6	71	10	29%	30.25f	73	53	
Worland	clear	76	N 7	74	60	30%	30.24f	76	49	
Riverton	clear	72	S 5	71	60	35%	30.27f	72	54	
Lander	clear	73	CALM	73	70	28%	30.32f	73	55	
Sheridan	clear	79	NE 9	77	60	24%	30.22f	79	52	
Gillette	dry	75	N 14	70	20	28%		75	55	0.01
Casper	clear	77	NW 7	75	50	27%	30.31f	77	51	
Douglas	clear	73	NW 7	74	35	40%	30.30s	73	51	
Rawlins	clear	71	NE 5	70	60	25%	30.38f	71	44	
Laramie	clear	66	NW 7	63	60	27%	30.42f	66	41	
Cheyenne	clear	71	SW 6	69	60	31%	30.37f	71	47	

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Item: 2 Code: CWY

12PM Thu 21 July — WYOMING this hour — TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	77	NE 2G6	77		16%		77	46	
Tower Falls	no report	75	NE 3G5	75		23%		75	35	
Old Faithful	no report	74	E 2G6	74		20%		74	34	
Yellowstne Lk	no report	67	SE 2G5	69		51%		67	37	
Jackson	no report	72	CALM	72	10	27%	30.33f	72	42	
Big Piney	dry	71	S 5G15	70		22%		71	45	
East Painter	.....									
Evanston	.....									
Rock Springs	no report	75	SW 5	74	10	16%	30.35s	75	48	
Cody	no report	77	NE 6	76	10	26%	30.23f	77	53	
Worland	clear	80	N 6	79	60	22%	30.22f	80	49	
Riverton	clear	72	S 5	71	60	35%	30.27f	72	54	
Lander	clear	77	N 5	76	70	26%	30.29f	77	53	
Sheridan	clear	82	N 7	81	60	23%	30.20f	82	52	
Gillette	dry	77	NW 1	77	20	29%		77	55	0.01
Casper	clear	79	N 7	77	50	26%	30.30f	79	51	
Douglas	clear	75	NW 9	72	35	33%	30.27f	75	44	
Rawlins	clear	75	NW 7	73	60	22%	30.37f	75	44	
Laramie	clear	66	NW 7	63	60	27%	30.42f	66	41	
Cheyenne	clear	74	N 10	70	60	22%	30.35f	74	47	

Item: 2 Code: CWY

2PM Thu 21 July — WYOMING this hour — TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	85	NE 5G8	85		13%		85	46	
Tower Falls	no report	83	N 5G11	83		11%		83	35	
Old Faithful	no report	78	S 2G9	78		19%		78	34	
Yellowstne Lk	no report	69	SE 1G5	71		49%		69	37	
Jackson	no report	79	NW 6	78	7	20%	30.28f	79	42	
Big Piney	dry	78	W 7G13	76		17%		78	45	
East Painter	.....									
Evanston	.....									
Rock Springs	no report	80	NE 3	80	10	14%	30.31f	80	48	
Cody	no report	83	E 7	82	10	17%	30.19f	83	53	
Worland	clear	83	CALM	83	60	18%	30.17f	83	49	
Riverton	clear	81	E 11	87	60	44%	30.21f	81	54	
Lander	clear	85	NE 8	84	70	17%	30.23f	85	53	
Sheridan	clear	83	SE 3	83	60	24%	30.17f	84	52	
Gillette	dry	81	N 9	79	20	21%		81	55	0.01
Casper	clear	83	E 5	83	50	22%	30.25f	83	51	
Douglas	clear	76	NW 3	76	35	32%	30.26f	76	44	
Rawlins	clear	78	NE 11	75	60	18%	30.33f	78	44	
Laramie	clear	74	NW 7	72	60	18%	30.37f	74	41	
Cheyenne	clear	78	NW 5	77	60	18%	30.31f	78	47	

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Item: 2 Code: CWY

8AM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	41	W 3G5	41		76%		48	41	
Tower Falls	no report	36	S 1G3	36		82%		48	36	
Old Faithful	no report	34				89%		54	34	
Yellowstne Lk	no report	38	N 0G2	38		79%		49	38	
Jackson	mstly cldy	39	N 6	34	10	79%	30.05r	48	36	
Big Piney	dry	44	NW 5G8	42		71%		51	42	
East Painter	.....									
Evanston	.....									
Rock Springs	ptly cldy	59	S 15G21	48	60	46%	30.09r	59	55	Trace
Cody	no report	49	SE 6	45	10	71%	30.03r	58	48	
Worland	cloudy	54	S 7	49	40	53%	30.00r		48	
Riverton	cloudy	59	CALM	59	50	56%	30.01s			
Lander	mstly cldy	57	SE 5	55	50	49%	30.05r	70	57	
Sheridan	ptly cldy	55	W 6	52	40	69%	30.00r	58	55	
Gillette	dry	57	NW 3	57	20	57%		68	55	
Casper	ptly cldy	66			50	8%		68	59	
Douglas	.....									
Rawlins	ptly cldy	58	S 11	49	30	51%	30.14r		55	
Laramie	cloudy	60	S 6	60	50	70%	30.20r	60	46	
Cheyenne	mstly cldy	60	CALM	60	30	56%	30.13r	61	53	

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Item: 2 Code: CWY

9AM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	49	E 2G3	49		61%		49	41	
Tower Falls	no report	44	SW 1	44		71%		48	36	
Old Faithful	no report	45	SE 1G2	45		71%		54	34	
Yellowstne Lk	no report	48	N 0G3	48		74%		49	38	
Jackson	mstly cldy	43	N 3	43	10	68%	30.06r	48	36	
Big Piney	dry	52	E 1G6	52		59%		52	42	
East Painter	.....									
Evanston	.....									
Rock Springs	ptly cldy	59	S 15G21	48	60	46%	30.09r	59	55	Trace
Cody	no report	50	CALM	50	10	71%	30.04r	58	48	
Worland	cloudy	54	S 7	49	40	53%	30.00r		48	
Riverton	cloudy	59	CALM	59	50	56%	30.01s			
Lander	mstly cldy	62	E 6	59	70	43%	30.05s	70	57	
Sheridan	cloudy	58	N 6	56	40	65%	30.00s	58	55	
Gillette	dry	59	NW 6	56	20	60%		68	55	
Casper	ptly cldy	71	W 6	69	50	37%	30.06r	71	59	
Douglas	.....									
Rawlins	ptly cldy	58	S 11	49	30	51%	30.14r		55	
Laramie	cloudy	60	S 6	60	50	70%	30.20r	60	46	
Cheyenne	mstly cldy	69	CALM	69	30	39%	30.14r	69	53	

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Item: 2 Code: CWY

10AM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	51	NE 3G5	51		57%		51	41	
Tower Falls	no report	50	NE 2G5	50		57%		50	36	
Old Faithful	no report	52	N 1G3	52		64%		54	34	
Yellowstne Lk	no report	57	SW 6G9	54		57%		57	38	
Jackson	ptly cldy	52	CALM	52	10	50%	30.06s	52	36	
Big Piney	dry	57	SE 5G8	55		53%		57	42	
East Painter	.....									
Evanston	.....									
Rock Springs	ptly cldy	66	S 25G32	54	60	39%	30.10f	66	55	Trace
Cody	no report	55	NE 9	48	10	62%	30.04r	58	48	
Worland	cloudy	61	N 7	57	40	52%	30.02r	61	48	
Riverton	cloudy	64	CALM	64	50	43%	30.00f	64	55	
Lander	cloudy	66	N 6	64	70	39%	30.05s	70	57	
Sheridan	cloudy	62	N 6	61	3	60%	30.02r	62	55	
Gillette	dry	65	N 3	67	20	54%	30.01s	68	55	
Casper	ptly cldy	76	W 11G22	72	50	32%	30.06s	76	59	
Douglas	.....									
Rawlins	ptly cldy	70	SW 17G29	62	60	36%	30.16r		55	
Laramie	cloudy	63	S 17	52	50	41%	30.20s	63	46	
Cheyenne	mstly cldy	74	SE 5	73	50	33%	30.14s	74	53	

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Item: 2 Code: CWY

11AM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	57	NE 6G8	54		49%		57	41	
Tower Falls	no report	57	SE 2G5	57		46%		57	36	
Old Faithful	no report		S 13G21					54	34	
Yellowstne Lk	no report	63	S 3G10	63		45%		63	38	
Jackson	ptly cldy	58	S 6	55	10	42%	30.06s	58	36	
Big Piney	dry	56	S 8G10	50		64%		58	42	
East Painter	.....									
Evanston	.....									
Rock Springs	ptly cldy	69	S 28G33	58	60	32%	30.11r	69	55	Trace
Cody	no report	59	NE 5	57	10	56%	30.04s	59	48	
Worland	cloudy	66	N 8	62	40	47%	30.01f	66	48	
Riverton	cloudy	72	CALM	72	50	35%	30.02r	72	55	
Lander	cloudy	70	N 6	68	70	34%	30.05s	70	57	
Sheridan	cloudy	65	NE 6	65	30	56%	30.03r	65	55	
Gillette	dry	67	N 5	68	20	53%		68	55	
Casper	ptly cldy	79	SW 18	74	50	29%	30.05f	79	59	
Douglas	.....									
Rawlins	ptly cldy	70	SW 17G29	62	60	36%	30.16r		55	
Laramie	cloudy	69	S 18	60	50	8%	30.20s	69	46	
Cheyenne	mstly cldy	82	W 11	80	50	24%	30.14s	82	53	

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Item: 2 Code: CWY

12PM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	57	NE 6G8	54		49%		57	41	
Tower Falls	no report	64	NW 3G5	64		37%		64	36	
Old Faithful	no report	66	SW 11G23	60		15%		66	34	
Yellowstne Lk	no report	63	S 3G10	63		45%		63	38	
Jackson	ptly cldy	63	W 5	62	10	37%	30.05f	63	36	
Big Piney	lgt rain	62	SE 6G30	60		56%		62	42	0.01
East Painter	.....									
Evanston	.....									
Rock Springs	ptly cldy	72	S 28G34	62	60	29%	30.08f	72	55	Trace
Cody	no report	62	NE 6	59	10	48%	30.02f	62	48	
Worland	cloudy	66	N 8	62	40	47%	30.01f	66	48	
Riverton	cloudy	74	CALM	74	60	31%	29.98f	74	55	
Lander	cloudy	72	NW 7	69	70	33%	30.03f	72	57	
Sheridan	cloudy	65	NE 6	65	30	56%	30.03r	65	55	
Gillette	dry	71	N 5	73	20	46%		71	55	
Casper	ptly cldy	81	SW 20G29	77	50	27%	30.04f	81	58	
Douglas	.....									
Rawlins	ptly cldy	74	SW 20G34	67	60	31%	30.14f	74	55	
Laramie	cloudy	70	SW 17	62	50	34%	30.19f	70	46	
Cheyenne	mstly cldy	80	NW 13	77	50	25%	30.13f	82	53	

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Item: 2 Code: CWY

1PM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	66	NE 6G10	64		34%		66	41	
Tower Falls	no report	73	S 14G18	67		19%		73	36	
Old Faithful	no report	67	W 9G22	62		15%		67	34	
Yellowstne Lk	no report	66	SW 9G24	61		29%		66	38	
Jackson	no report	67	SW 10	61	10	30%	30.01f	67	36	
Big Piney	dry	65	SW 13G24	57		40%		65	42	0.02
East Painter	.....									
Evanston	.....									
Rock Springs	ptly cldy	73	S 25G32	64	60	29%	30.07f	73	55	Trace
Cody	no report	63	N 5	62	10	46%	30.00f	64	48	
Worland	cloudy	72	N 6	70	40	38%	29.97f	72	48	
Riverton	cloudy	75	N 11	71	50	34%	29.96f	75	55	
Lander	cloudy	72	NW 5	71	50	34%	30.01f	72	57	
Sheridan	cloudy	69	W 5	70	30	49%	30.00f	69	55	
Gillette	dry	76	N 6	78	20	37%		76	55	
Casper	mstly cldy	81	W 18G25	77	50	23%	30.01f	81	58	
Douglas	.....									
Rawlins	cloudy	70	S 23G34	60	60	31%	30.14s	74	55	
Laramie	cloudy	70	SW 17	62	50	32%	30.18f	70	46	
Cheyenne	mstly cldy	81	CALM	81	50	23%	30.12f	82	53	

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Item: 2 Code: CWY

3PM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	74	S 10G17	70		11%		74	41	
Tower Falls	.....									
Old Faithful	no report	67	SW 6G14	65		18%		67	34	
Yellowstne Lk	.....									
Jackson	no report	65	W 10G17	59	10	36%	30.02f	67	36	
Big Piney	dry	52	N 2G18	53		83%		65	42	0.11
East Painter	.....									
Evanston	.....									
Rock Springs	cloudy	72	S 26G44	63	20	25%	30.03s	75	55	Trace
Cody	ptly cldy	66	SW 6	64	10	45%	30.00r	68	48	
Worland	.....									
Riverton	cloudy	63	NW 29	55	40	81%	29.96f	75	55	
Lander	dry	70	N 9	67	50	44%	29.99f	72	57	
Sheridan	cloudy	78	N 5	80	30	36%	29.95f	78	55	
Gillette	dry	78	N 7	80		35%		79	55	
Casper	dry	76	SW 14G46	71	30	31%	30.03r	83	58	
Douglas	.....									
Rawlins	ptly cldy	74	S 25	66	60	28%	30.10f	74	55	
Laramie	.....									
Cheyenne	cloudy	80	N 6	79	40	24%	30.10f	82	53	

Item: 2 Code: CWY

4PM Mon 12 September WYOMING this hour TODAY'S DATA

TOWN	WEATHER	TEMP	WIND	FLSLK	VIS	HUM	BRMTR	HI	LOW	PCPN
W Yellowstone	.....									
Mammoth	no report	73	SW 7G17	71		10%		74	41	
Tower Falls	no report	73	W 5G8	72		10%		75	36	
Old Faithful	no report	67	W 1G14	67		20%		67	34	
Yellowstne Lk	no report	61	S 2G16	61		50%		66	38	
Jackson	no report	65	SW 9	60	10	34%	30.01f	67	36	
Big Piney	dry	52	NW 5G18	51		83%		65	42	0.11
East Painter	.....									
Evanston	.....									
Rock Springs	cloudy	69	SW 20G46	60	20	32%	30.06s	75	55	Trace
Cody	cloudy	59	S 10	52	7	60%	30.01r	68	48	
Worland	lgt t-shwr	77	S 22G32	71	20	30%	29.96r	77	48	
Riverton	cloudy	63	NW 29	55	40	81%	29.96f	75	55	
Lander	lgt t-shwr	61	NE 13G22	55	40	70%	29.99s	72	57	
Sheridan	cloudy	78	N 8	80	30	36%	29.93f	78	55	
Gillette	dry	79	N 6	81	20	34%		79	55	
Casper	ptly cldy	78	W 8	76	30	30%	29.99f	83	58	
Douglas	.....									
Rawlins	ptly cldy	76	S 17	70	60	25%	30.07f	76	55	
Laramie	mstly cldy	73	SW 21	65	50	27%	30.14f	73	46	
Cheyenne	mstly cldy	82	NW 13	79	65	23%	30.08f	82	53	

EVALUATION OF FPC-1® FUEL PERFORMANCE CATALYST

at

FMC CORPORATION'S SKULL POINT MINE

Report Prepared by

UHI CORPORATION
PROVO, UTAH,
and
FPC TECHNOLOGY
BOISE, IDAHO

SEPTEMBER 20, 1994

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs*	4010		
Equipment Type:	Dresser 210M	*ID #:*	246	*Baro*	30.35
Fuel Sp. Gravity(SG	.824	*Temp:*	99.6		
				Time:	1240

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1800	517.4	0.45	0.02	10	3.97	14.4	
1800	520	0.45	0.02	9	3.95	14.4	
1800	525.8	0.45	0.02	10	3.93	14.1	
1800	531.2	0.45	0.02	9	3.95	14.3	
1800	528.8	0.45	0.02	9	3.9	14.4	
1800	528.4	0.45	0.02	10	3.94	14.3	
1800	527.8	0.45	0.02	10	3.93	14.3	
1800	529.8	0.45	0.02	10	3.97	14.2	
1800	**526.150**	**.450**	**.020**	**9.625**	**3.943**	**14.300**	Mean
0	**4.901**	**.000**	**.000**	**.518**	**.023**	**.107**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
9.63E-06	0.0002	.039	.143	29.203	156,403	215,824

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	9/12/94
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs:*	4272		
Equipment Type	Dresser 210M	*ID #:*	246	*Baro:*	30.09
Fuel Sp. Gravity:	.826	*Temp:*	63		
SG Corr Factor:	.998			*Time:*	913

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1800	481.6	0.5	0.02	10	3.4	15	
	479	0.5	0.02	9	3.38	15	
	478	0.45	0.02	9	3.41	14.9	
1800	477.4	0.45	0.02	9	3.33	14.8	
	476.4		0.02	9	3.33	14.8	
	475.6		0.02	9	3.36	15	
	476.2	0.45	0.02	9	3.36	15	
	479.2		0.02	9	3.36	14.9	
	477.6		0.02	9	3.37	14.9	
	481.6	0.5	0.02	9	3.38	14.9	
1800.000	**478.260**	**.475**	**.020**	**9.100**	**3.368**	**14.920**	Mean
0	**2.102**	**.027**	**.000**	**.316**	**.026**	**.079**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
9.10E-06	0.0002	.034	.149	29.136	182,474	238,032

Performance factor adjusted for fuel density: 237,454

****% Change PF= 10.02 %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs*	7189		
Equipment Type:	Fuel Truck	*ID #:*	123	*Baro*	30.33
Fuel Sp. Gravity(SG	.830	*Temp:*	90		
				Time:	1305

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1760	350.2	0.35	0.05	13.3	1.6	17.8	
1760	351.4	0.35	0.05	13.3	1.6	17.8	
1760	353	0.35	0.05	13.3	1.6	17.8	
1740	356.6	0.35	0.05	13.3	1.6	17.9	
1740	357.4	0.35	0.05	13.2	1.61	17.9	
1752.000	**353.720**	**.350**	**.050**	**13.280**	**1.602**	**17.840**	Mean
10.95445115	**3.167**	**.000**	**.000**	**.045**	**.004**	**.055**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
1.33E-05	0.0005	.016	.178	28.971	370,831	526,895

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	9/12/94
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	Cummins	*Mile/Hrs:*	9421		
Equipment Type	Fuel Truck	*ID #:*	123	*Baro:*	30.09
Fuel Sp. Gravity:	.830	*Temp:*	67		
SG Corr Factor:	1.000			*Time:*	930

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1750	334.8		0.02	47	1.64	17.4	
1750	333.4	0.27	0.02	45	1.63	17.5	
1750	335.2		0.02	44	1.63	17.5	
1750	336.6		0.02	44	1.63	17.5	
1750	337.8	0.27	0.02	42	1.63	17.6	
1750	340.4		0.02	44	1.62	17.6	
1750	341.2	0.27	0.02	45	1.62	17.6	
1750	341.8		0.02	44	1.62	17.6	
1750	342.4	0.27	0.02	45	1.62	17.6	
1750	342.8		0.02	45	1.61	17.6	
1750.000	**338.640**	**.270**	**.020**	**44.500**	**1.625**	**17.550**	Mean
0	**3.496**	**.000**	**.000**	**1.269**	**.008**	**.071**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
4.45E-05	0.0002	.016	.176	28.965	367,872	587,232

Performance factor adjusted for fuel density: 587,232

****% Change PF = 11.45 %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	CAT	*Mile/Hrs*	2069		
Equipment Type:	CAT DION	*ID #:*		*Baro*	30.31
Fuel Sp. Gravity(SG	.820	*Temp:*	119.2		
				Time:	1437

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1055	516.6	2.6	0.03	9	3.3	13.6	
1055	517	2.6	0.02	5	3.29	13.8	
1055	516.8	2.6	0.02	8	3.27	13.8	
1055	517.4	2.6	0.02	8	3.27	13.5	
1055	517.8	2.6	0.02	9	3.28	13.5	
1055	517.8	2.6	0.02	9	3.27	13.5	
1055	517.6	2.6	0.02	9	3.24	13.6	
1055	518	2.6	0.02	9	3.27	13.5	
1055	518	2.6	0.02	9	3.25	13.7	
1055	518	2.6	0.02	9	3.26	13.6	
1055.000	**517.500**	**2.600**	**.021**	**8.400**	**3.270**	**13.610**	Mean
0	**.527**	**.000**	**.003**	**1.265**	**.018**	**.120**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
8.40E-06	0.00021	.033	.136	29.068	187,429	107,056

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	9/12/94
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	CAT	*Mile/Hrs:*	2713		
Equipment Type	CAT DION	*ID #:*		*Baro:*	30.10
Fuel Sp. Gravity:	.823	*Temp:*	81		
SG Corr Factor:	.996			*Time:*	

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1052	526.6	2.5	0.02	5	3.08	15.2	
	528.2	2.5	0.02	4	3.11	15.2	
1050	527.2		0.02	4	3.14	15.2	
	526		0.02	5	3.09	15.1	
	527		0.02	5	3.13	15.1	
	527.8	2.5	0.02	5	3.07	15.1	
1049	526		0.02	5	3.09	15	
	524.4	2.5	0.02	5	3.11	14.9	
	525.2		0.02	5	3.09	14.8	
	524.8	2.4	0.02	5	3.08	14.5	
1050.333	**526.320**	**2.480**	**.020**	**4.800**	**3.099**	**15.010**	Mean
1.527525232	**1.269**	**.045**	**.000**	**.422**	**.023**	**.223**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
4.80E-06	0.0002	.031	.150	29.097	198,087	115,966

Performance factor adjusted for fuel density: 115,542

****% Change PF= 7.93 %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	10 Inches		
Engine Type:	CAT	*Mile/Hrs*	23518		
Equipment Type:	CAT 785	*ID #:*	804	*Baro*	30.36
Fuel Sp. Gravity(SG	.822	*Temp:*	104.2		
				Time:	1125

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	465.2	0.6	0.03	17	2.37	16.6	
1500	457.8	0.6	0.03	17	2.36	16.8	
1500	460	0.6	0.03	19	2.3	16.7	
1500	454.2	0.6	0.03	19	2.24	16.7	
1500	449.2	0.6	0.03	19	2.36	16.6	
1500	450.6	0.6	0.03	17	2.37	16.4	
1500	451.4	0.6	0.03	19	2.36	16.5	
1500	451.6	0.6	0.03	19	2.42	16.4	
1500	453	0.6	0.03	19	2.31	16.6	
1500.000	**454.778**	**.600**	**.030**	**18.333**	**2.343**	**16.589**	Mean
0	**5.227**	**.000**	**.000**	**1.000**	**.052**	**.136**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
1.83E-05	0.0003	.023	.166	29.040	258,789	107,248

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	9/12/94
Test Portion:	Treated	*Stack Diam:*	10 Inches		
Engine Type:	CAT	*Mile/Hrs:*	24084		
Equipment Type	CAT 785	*ID #:*	804	*Baro:*	30.10
Fuel Sp. Gravity:	.821	*Temp:*	67.8		
SG Corr Factor:	1.001			*Time:*	1002

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	492.8	0.5	0.03	15	2.57	16.1	
1500	492.8		0.03	15	2.56	16.1	
1500	492.8	0.5	0.03	15	2.57	16.2	
1500	491.8		0.03	17	2.57	16	
1500	479.8	0.45	0.03	16	2.46	16.1	
1500	479.6		0.03	17	2.5	16	
1500	481.2	0.45	0.03	17	2.53	16	
1500	483.6	0.45	0.03	17	2.55	16.3	
1500	475.8		0.03	17	2.52	16	
1500	476.6	0.45	0.03	17	2.57	16	
1500.000	**484.680**	**.467**	**.030**	**16.300**	**2.540**	**16.080**	Mean
0	**7.114**	**.026**	**.000**	**.949**	**.037**	**.103**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
1.63E-05	0.0003	.025	.161	29.051	239,286	113,776

Performance factor adjusted for fuel density: 113,915

****% Change PF= 6.22 %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	10 Inches		
Engine Type:	CAT	*Mile/Hrs*	21190		
Equipment Type:	CAT 785	*ID #:*	805	*Baro*	30.37
Fuel Sp. Gravity(SG	.820	*Temp:*	107.6		
				Time:	1015

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	419.4	0.65	0.03	23	2.3	16.6	
1500	416.2	0.65	0.03	24	2.32	16.5	
1500	415	0.65	0.03	24	2.33	16.5	
1500	413	0.65	0.03	25	2.3	16.7	
1500	414.8	0.65	0.03	25	2.33	16.6	
1500	414.8	0.65	0.03	25	2.33	16.7	
1500	412.4	0.65	0.03	27	2.32	16.6	
1500	411.8	0.65	0.03	27	2.33	16.5	
1500	413	0.65	0.03	27	2.34	16.5	
1500	412.4	0.65	0.03	25	2.34	16.6	
1500.000	**414.280**	**.650**	**.030**	**25.200**	**2.324**	**16.580**	Mean
0	**2.296**	**.000**	**.000**	**1.398**	**.014**	**.079**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
2.52E-05	0.0003	.023	.166	29.037	260,392	101,375

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	9/12/94
Test Portion:	Treated	*Stack Diam:*	10 Inches		
Engine Type:	CAT	*Mile/Hrs:*	21822		
Equipment Type	CAT 785	*ID #:*	805	*Baro:*	30.10
Fuel Sp. Gravity:	.814	*Temp:*	74.5		
SG Corr Factor:	1.007			*Time:*	1020

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
1500	462	0.45	0.02	17	2.31	16.5	
1500	461.4		0.02	17	2.28	16.5	
1500	460.8		0.02	17	2.3	16.4	
1500	460.2	0.5	0.02	17	2.3	16.5	
1500	459.4		0.02	17	2.31	16.5	
1500	458.8	0.5	0.02	17	2.3	16.5	
1500	458.2	0.5	0.02	17	2.28	16.5	
1500	457.8		0.02	17	2.28	16.5	
1500	457.6		0.02	17	2.29	16.5	
1500	457.6	0.5	0.02	17	2.3	16.5	
1500.000	**459.380**	**.490**	**.020**	**17.000**	**2.295**	**16.490**	Mean
0	**1.640**	**.022**	**.000**	**.000**	**.012**	**.032**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
1.70E-05	0.0002	.023	.165	29.028	265,267	121,430

Performance factor adjusted for fuel density: 122,319

****% Change PF= 20.66 %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Company Name:	FMC Skull Point	*Location*	Kemmerer, WY	*Date:*	7/21/94
Test Portion:	Baseline	*Stack Diam.*	6 Inches		
Engine Type:	CAT	*Mile/Hrs*	13581		
Equipment Type:	CAT 834	*ID #:*	461	*Baro*	30.33
Fuel Sp. Gravity(SG	.830	*Temp:*	89.8		
				Time:	1325

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
Full Throttle	592.4	1.9	0.04	28	4.21	13.4	
Full Throttle	597.4	1.9	0.04	28	4.23	13.6	
Full Throttle	597.4	1.9	0.04	26	4.21	13.6	
Full Throttle	597.6	1.9	0.04	27	4.2	13.6	
Full Throttle	604.2	1.9	0.04	24	4.19	13.5	
Full Throttle	602.2	1.9	0.04	24	4.21	13.5	
Full Throttle	601	1.9	0.04	24	4.21	13.5	
#DIV/0!	**598.886**	**1.900**	**.040**	**25.857**	**4.209**	**13.529**	Mean
#DIV/0!	**3.912**	**.000**	**.000**	**1.864**	**.012**	**.076**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw1	pf1	PF1
2.59E-05	0.0004	.042	.135	29.216	145,595	101,283

Company Name:	FMC Skull Point	*Location:*	Kemmerer, WY	*Test Date:*	9/12/94
Test Portion:	Treated	*Stack Diam:*	6 Inches		
Engine Type:	CAT	*Mile/Hrs:*	14198		
Equipment Type	CAT 834	*ID #:*	461	*Baro:*	30.11
Fuel Sp. Gravity:	.827	*Temp:*	71.2		
SG Corr Factor:	1.004			*Time:*	1100

RPM	Exh Temp	Pv Inch	CO	HC	CO2	O2	
Full Throttle	598.6	1.9	0.04	10	3.98	13.5	
Full Throttle	592		0.04	10	3.97	13.4	
Full Throttle	592.2		0.04	10	3.95	13.4	
Full Throttle	602.2		0.04	9	3.95	13.6	
Full Throttle	602.8		0.04	9	3.95	13.6	
Full Throttle	601.6	1.85	0.04	9	3.95	13.4	
Full Throttle	601.6	1.85	0.04	9	3.93	13.8	
Full Throttle	601.8		0.04	9	3.93	13.8	
Full Throttle	600.8		0.04	9	3.95	13.8	
Full Throttle	602.6	1.85	0.04	9	3.97	13.9	
#DIV/0!	**599.620**	**1.863**	**.040**	**9.300**	**3.953**	**13.620**	Mean
#DIV/0!	**4.134**	**.025**	**.000**	**.483**	**.016**	**.193**	Std Dev

VFHC	VFCO	VFCO2	VFO2	Mtw2	pf2	PF2
9.30E-06	0.0004	.040	.136	29.178	155,083	108,606

Performance factor adjusted for fuel density: 108,999

****% Change PF = 7.62 %**

*** A positive change in PF equates to a reduction in fuel consumption.*

Baro 9:00 30.09
10:00 30.10
11:00 30.11
12:00 30.08

FHC Skull Point

Unit#	Baseline PF	Treated PF	Base S.G.	Treat. S.G.	% Change	Base Smoke	Treat Smoke	
246	215,824	238,474 (10.49)	.824	.826 .99%	10.46% (10.92%)	9.0	3.0	67%
*123	526,895	588,960 (11.78)	.830	.830	11.78% (11.45%)	9.0	5.0	44%
804	107,248	112,732 (5.11)	.822	.821	5.12% (6.22%)	7.0	7.0	–
805	101,375	121,389 (19.74)	.820	.814	19.89% (20.66%)	7.0	7.0	–
461	101,283	108,393 (7.02)	.830	.827	7.05% (7.62%)	9.0	9.0	–
DION	107,056	115,407 (7.80)	.820	.823	7.77% (7.93%)	9.0	7.0	22%

w/o 805 Ave. 8.44% (8.65%)

w/o 805 & 123 Ave. 7.60% (7.95%)

* New Injectors

Judy Gray
(313) 668-4231
(313) 741-7816 Fax
① Fax + Mail Receipts

Also Jim Caldwell

Diminimus Rule

3

246

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 3 2. _____

Company: FMC SKULL POINT Test Date: 9-12-94

Test Portion: Baseline ☐ Water Temp. 180

Treated ☑ Oil Pressure _____

Air Restriction _____

Equipment Tested:

Make Dresser 210 M Miles _____ I.D.# 246

Engine Type Cummins Hours 4272 I.D. KTA 19C

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 6 Inches Straight ☐ Curved ☑

BP: 30.09 Inches Hg @ _____ °F Ambient Temp: 63 °F

Fuel: 0.826 SG @ ~~182~~ 78.6 °F Start Time: 0913

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1800	481.6	0.50	.02	10	3.40	15.0	
2		479.0	0.50	0.02	9	3.38	15.0	
3		478.0	0.45	0.02	9	3.41	14.9	
4	1800	477.4	0.45	0.02	9	3.33	14.8	
5		476.4		0.02	9	3.33	14.8	
6		475.6		0.02	~~8~~ 9	3.36	15.0	
7		476.2	0.45	0.02	9	3.36	15.0	
8		479.2		0.02	9	3.36	14.9	
9		~~3~~ 477.6		0.02	9	3.37	14.9	
10		481.6	0.50	0.02	9	3.38	14.9	
	Average							

Signature of Technicians: ASR Finish Time: 0920

123

5

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 5 2. _____

Company: FMC SKULL POINT Test Date: 9-12-94

Test Portion: Baseline ☐ Water Temp. _____
Treated ☑ Oil Pressure _____
Air Restriction _____

Equipment Tested:
Make Fuel Truck Miles _____ I.D.# 123

Engine Type Cummins Hours ~~1957~~ 9421 I.D. 350

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☐

Exhaust Stack Diam 6 Inches Straight ☐ Curved ☑

BP: _____ Inches Hg @ _____ °F Ambient Temp: ~~79~~ 69 °F

Fuel: 0.830 SG @ 72 °F Start Time: 0930

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1950	334.8		0.02	47	1.64	17.4	
2		333.4	0.27	0.02	45	1.63	17.5	
3		335.2		0.02	44	1.63	17.5	
4		336.6		0.02	44	1.63	17.5	
5		337.8	0.27	0.02	42	1.63	17.6	
6		340.4		0.02	44	1.62	17.6	
7		341.2	0.27	0.02	45	1.62	17.6	
8		341.8		0.02	44	1.62	17.6	
9		342.4	0.27	0.02	45	1.62	17.6	
10		342.8		0.02	45	1.61	17.6	
	Average							

Signature of Technicians: _____ Finish Time: 0942

DION

7

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 7 2. _____

Company: FMC SKULL POINT Test Date: 9-12-94

Test Portion: Baseline ☐ Water Temp._____

Treated ☑ Oil Pressure_____

Air Restriction_____

Equipment Tested:

Make Cat 10DN Miles_____ I.D.#_____

Engine Type Cat Hours 2713 I.D. 3412

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 6 Inches Straight ☑ Curved ☐

BP:_____Inches Hg @ _____ °F Ambient Temp: 81 °F

Fuel: 0.923 SG @ 46.2 °F Start Time:_____

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1052	~~53~~ 526.6	2.50	0.02	5	3.08	15.2	
2		528.2	2.50	0.02	4	3.11	15.2	
3	1050	527.2		0.02	4	3.14	15.2	
4		526.0		0.02	5	3.09	15.1	
5		527.0		0.02	5	3.13	15.1	
6		527.8	2.50	0.02	5	3.07	15.1	
7	1049	526.0		0.02	5	3.09	15.0	
8		524.4	2.50	0.02	5	3.11	14.9	
9		525.2		0.02	5	3.09	14.8	
10		524.8	2.40	0.02	5	3.08	14.5	
	Average							

Signature of Technicians: [illegible] Finish Time: 1217

804

7

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 7 2. _____

Company: FMC SKULL POINT Test Date: 9-12-94

Test Portion: Baseline ☐ Water Temp. _____

Treated ☑ Oil Pressure _____

Air Restriction _____

Equipment Tested:

Make Cat 785 Miles _____ I.D.# 804

Engine Type Cat Hours 24084 I.D. 3512

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 10 Inches Straight ☑ Curved ☐

BP: _____ Inches Hg @ _____ °F Ambient Temp: 67.8 °F

Fuel: 0.821 SG @ 89.8 °F Start Time: 1002

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1500	492.8	0.50	0.03	15	2.57	16.1	
2		492.8		0.03	15	2.56	16.1	
3		492.8	0.50	0.03	15	2.57	16.2	
4		491.8		0.03	17	2.57	16.0	
5		~~491.8~~ 479.8	0.45	~~0.03~~ 0.03	16	2.46	16.1	
6		479.6		0.03	17	2.50	16.0	
7		481.2	0.45	0.03	17	2.53	16.0	
8		483.6	0.45	0.03	17	2.55	16.3	
9		~~479.2~~ 475.8		0.03	17	2.52	16.0	
10		476.6	0.45	0.03	17	2.57	16.0	
	Average							

Signature of Technicians: _____ Finish Time: 1012

805 7

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 7 2. ____

Company: FMC SKULL POINT Test Date: 9-12-94

Test Portion: Baseline ☒ Water Temp. ____

Treated ☑ Oil Pressure ____

Air Restriction ____

Equipment Tested:

Make Cat 785 Miles ____ I.D.# 805

Engine Type Cat Hours 21822 I.D. 3512

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 10 Inches Straight ☑ Curved ☐

BP: ____ Inches Hg @ ____ °F Ambient Temp: 75-73 °F

Fuel: 0.814 SG @ 109.4 °F Start Time: 1020

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1500	462.0	0.45	0.02	17	2.31	16.5	
2		461.4		0.02	17	2.28	16.5	
3		460.8		0.02	17	2.30	16.4	
4		460.2	0.50	0.02	17	2.30	16.5	
5		459.4		0.02	17	2.31	16.5	
6		458.8	0.50	0.02	17	2.30	16.5	
7		458.2	0.50	0.02	17	2.28	16.5	
8		457.8		0.02	17	2.28	16.5	
9		457.6		0.02	17	2.29	16.5	
10		457.6	0.50	0.02	17	2.30	16.5	
	Average							

Signature of Technicians: [signature] Finish Time: 1040

9

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 9 2. _____

Company: FMC SKULL POINT Test Date: 9-12-94

Test Portion: Baseline ☒ Water Temp. _____

Treated ☑ Oil Pressure _____

Air Restriction _____

Equipment Tested:

Make Cat 834 Miles _____ I.D.# 461

Engine Type Cat Hours 14198 I.D. 3408

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 6 Inches Straight ☐ Curved ☑

BP: _____ Inches Hg @ _____ °F Ambient Temp: ~~73~~ 71.2 °F

Fuel: 0.827 SG @ 76.2 °F Start Time: 1100

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	full	598.6	1.90	0.04	10	3.98	13.5	
2		592.0		0.04	10	3.97	13.4	
3	throttle	592.2		0.04	10	3.95	13.4	
4		602.2		0.04	9	3.95	13.6	
5		602.8		0.04	9	3.95	13.6	
6		601.6	1.85	0.04	9	3.95	13.4	
7		601.6	1.85	0.04	9	3.93	13.8	
8		601.8		0.04	9	3.93	13.8	
9		600.8		0.03	9	3.95	13.8	
10		602.6	1.65	0.03	9	3.97	13.9	
	Average							

Signature of Technicians: [signature] Finish Time: 1110

246 9

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 9 2. _____

Company: FMC Skull Point Test Date: 7-21-94

Test Portion: Baseline ☐ Water Temp. 180

Treated ☐ Oil Pressure OK

Air Restriction OK

Equipment Tested:

Make Dresser 210M Miles _____ I.D.# 246

Engine Type Cummins Hours 4010 I.D. KTA 19C

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 6 Inches Straight ☐ Curved ☑

BP: 30.35 Inches Hg @ _____ °F Ambient Temp: 86 °F

Fuel: 0.824 SG @ 99.6 °F Start Time: 1240

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1800	517.4	0.45	0.02	10	3.97	14.4	
2		520.0	0.45	0.02	9	3.95	14.4	
3		525.8	0.45	0.02	10	3.93	14.1	
4		531.2	0.45	0.02	9	3.95	14.3	
5		528.8	0.45	0.02	9	3.90	14.4	
6		528.4	0.45	0.02	10	3.94	14.3	
7		527.8	0.45	0.02	10	3.93	14.3	
8		529.8	0.45	0.02	10	3.97	14.2	
9		~~530.0~~	~~0.45~~	~~0.02~~	~~10~~	~~3.83~~	~~14.5~~	
10								
	Average							

Signature of Technicians: GBC Finish Time: 1257

6.0 8.15 3.5

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 5.5   2. 6

Company: FMC Skull Point   Test Date: 7-21-94

Test Portion: Baseline [X]   Treated [ ]

Water Temp. 180 - 185
Oil Pressure 35 - 40
Air Restriction [illegible] (7-18)

Equipment Tested:
Make L-1000 Loader   Miles ______   I.D.# 436

Engine Type Cummins 38C   Hours 11317 [illegible]   I.D. ______

Fuel Injection [✓]   Naturally Aspirated [ ]

Mechanical [ ]   Turbocharged [✓]

Exhaust Stack Diam 6 Inches   Straight [ ]   Curved [✓]

BP: 30.34 Inches Hg @ ______ °F   Ambient Temp: ~~73~~ 72.4 °F

Fuel: 0.830 SG @ 87.6 °F   Start Time: 0905

Left Exhaust Drivers side AC off

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	~~2002~~	~~538.6~~	~~1.95~~	~~0.01~~	~~6~~	~~3.98~~	~~14.0~~	out
2		~~541.6~~	~~1.95~~	~~0.01~~	~~6~~	~~3.97~~	~~14.0~~	out
3	2002	543.0	1.95	0.01	5	3.95	14.1	
4		543.2	1.95	0.01	5	3.92	14.2	
5		542.6	1.95	0.01	5	3.90	14.2	
6		542.2	1.95	0.01	5	3.92	14.2	
7		543.4	1.95	0.01	3	3.91	14.1	
8		544.4	1.95	0.01	3	3.89	14.1	
9		544.4	1.95	0.01	3	3.90	14.1	
10		544.8		0.01	3	3.88	14.2	
	Average							

4

Signature of Technicians: [illegible]   Finish Time: 0918

9

123

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 9 2. _____

Fan Switch ~~on~~ off

Company: FMC Skull Point Test Date: 7-21-94

Test Portion: Baseline ☑ Water Temp. 180

Treated ☐ Oil Pressure OK

Air Restriction OK

Equipment Tested:

Make Fuel Truck Miles _____ I.D.# 123

Engine Type Cummins Hours 7189 I.D. 350

Fuel Injection ☐ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☐

Exhaust Stack Diam 6 Inches Straight ☐ Curved ☑

BP: 30.33 Inches Hg @ _____ °F Ambient Temp: 86 °F

Fuel: 0.830 SG @ 90.0 °F Start Time: 1305

Right stack (from driver)

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	~~1760~~ 1800	350.2	0.35	0.05	13.3	1.60	17.8	
2		~~347.8~~ 351.4	0.35	0.05	13.3	1.60	17.8	
3		353.0	0.35	0.05	13.3	1.60	17.8	
4	1740	356.6	0.35	0.05	13.3	1.60	17.9	
5		357.4	0.35	0.05	13.2	1.61	17.9	
6								
7								
8								
9								
10								
	Average							

Signature of Technicians: GJR Finish Time: 1320

DION 9

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

UHI-SGA-9000

Smoke Spot Numbers

1. 9 2. _____

Company: FMC Skull Point Test Date: 7-21-94

Test Portion: Baseline ☑ Water Temp. 180

Treated ☐ Oil Pressure 55

Air Restriction OK

Equipment Tested:

Make Cat DION Miles _____ I.D.# _____

Engine Type Cat Hours 32069 I.D. _____

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 6 Inches Straight ☑ Curved ☐

BP: 29.31 Inches Hg @ _____ °F Ambient Temp: 93.4 °F

Fuel: 0.82 SG @ 119.2 °F Start Time: 1437

Full throttle on idler pulley AC off

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1055	516.6	2.60	0.03	9	3.30	13.6	
2		517.0	2.60	0.02	5	3.29	13.8	
3		516.8	2.60	0.02	8	3.27	13.8	
4		517.4	2.60	0.02	8	3.27	13.5	
5		517.8	2.60	0.02	9	3.28	13.5	
6		517.8	2.60	0.02	9	3.27	13.5	
7		517.6	2.60	0.02	9	3.24	13.6	
8		518.0	2.60	0.02	9	3.27	13.5	
9		518.0	2.60	0.02	9	3.25	13.7	
10		518.0	2.60	0.02	9	3.26	13.6	
	Average							

Signature of Technicians: [signature] Finish Time: 1445

804

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1._____ 2. _____

Company: FMC Skull Point Test Date: 7-21-94

Test Portion: Baseline ☑ Water Temp. 180

Treated ☐ Oil Pressure 45

Air Restriction OK

Equipment Tested:

Make Cat 785 Miles _____ I.D.# 804

9568 since last rebuild

Engine Type Cat Hours 23518 total I.D. 3512

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 10 Inches Straight ☑ Curved ☐

BP: 30.36 Inches Hg @ _____ °F Ambient Temp: 78. °F

Fuel: 0.822 SG @ 104.2 °F Start Time: 1125

Right exhaust (Drivers right)

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1500	465.2	0.60	0.03	17	2.37	16.6	
2		~~465.2~~		~~0.03~~	~~17~~	~~2.18~~	~~16.9~~	
3		457.8	0.60	0.03	17	2.36	16.8	
4		460.0	0.60	0.03	19	2.30	16.7	
5		454.2	0.60	0.03	19	2.24	16.7	
6		449.2	0.60	0.03	19	2.36	16.6	
7		450.6	0.60	0.03	17	2.37	16.4	
8		451.4	0.60	0.03	19	2.36	16.5	
9		451.6	0.60	0.03	19	2.42	16.4	
10		453.0	0.60	0.3	19	2.31	16.6	
	Average							

Signature of Technicians: AR Finish Time: 1145

#802 7.0

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 7 2. _____

Company: FMC SKULL Point Mine Test Date: 7-21-92

Test Portion: Baseline ☑ Water Temp. OK 180
Treated ☐ Oil Pressure OK 45
Air Restriction OK

Equipment Tested:
Make Cat 785 Miles _____ I.D.# 802
4848 since last rebuild
Engine Type Cat 3512 Hours 18565 total I.D. 3512

Fuel Injection ☑ Naturally Aspirated ☐
Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 10 Inches Straight ☑ Curved ☐

BP: ~~30.25~~ 30.15 Inches Hg @ _____ °F Ambient Temp: ~~82~~ 77.6 °F

Fuel: 0.822 SG @ 98.6 °F Start Time: 1050

Probe exhaust (from driver's door) AC off

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	1500	352.2	0.60	0.04	17	2.60	16.1	Varying
2		344.8	0.60	0.04	17	2.62	16.0	RPM
3		345.6	0.60	0.04	18	2.60	16.2	
4		341.8	0.60	0.04	17	2.58	16.3	
5	1500	353.2	0.60	0.04	17	2.65	16.0	
6		345.0	0.60	0.04	17	2.67	16.0	
7		350.0	0.60	0.04	18	2.64	16.0	
8		348.8	0.60	0.04	18	2.58	15.9	
9		357.2	0.60	0.04	19	2.63	16.1	
10		350.6	0.60	0.04	19	2.68	16.0	
	Average							

Signature of Technicians: _____ Finish Time: 1108

#805

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 7 2. _____

Company: FMC Skull Point Test Date: 7-21-94

Test Portion: Baseline ☑ Water Temp. 180 °F.

Treated ☐ Oil Pressure 45 PSI

Air Restriction SAT.

Equipment Tested:

Make Cat 785 Miles 6575 since rebuilt I.D.# 805

Engine Type Cat Hours 21190 total I.D. 3512

Fuel Injection ☑ Naturally Aspirated ☐

Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 10 Inches Straight ☑ Curved ☐

BP: 30.37 Inches Hg @ _____ °F Ambient Temp: 73 °F

Fuel: 0.820 SG @ 70/60 °F Start Time: 1015 or so

Right exhaust (Driver's right) (lower) air conditioning off

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	~~1600~~ 1500	419.4	0.65	~~0.03~~ 0.03	23	2.30	16.6	
2		416.2	0.65	0.03	24	2.32	16.5	
3		415.0	0.65	0.03	24	2.33	16.5	
4		413.0	0.65	0.03	25	2.30	16.7	
5		414.8	0.65	0.03	25	2.33	16.6	
6		414.8	0.65	0.03	25	2.33	16.7	
7		412.4	0.65	0.03	27	2.32	16.6	
8		411.8	0.65	0.03	27	2.33	16.5	
9		413.0	0.65	0.03	27	2.34	16.5	
10		412.4	0.65	0.03	25	2.34	16.6	
	Average							

Signature of Technicians: _____ Finish Time: 1037

FPC® TECHNOLOGY, INC.
CARBON MASS BALANCE FIELD DATA FORM

Smoke Spot Numbers

1. 9 2. _____

Company: FMC Squill Point Test Date: 7-21-94

Test Portion: Baseline ☑ Water Temp._____
Treated ☐ Oil Pressure_____
Air Restriction_____

Equipment Tested:
Make Cat 834 Miles _____ I.D.# 461
2112 since last rebuild
Engine Type Cat Hours 13581 total I.D. 3408

Fuel Injection ☑ Naturally Aspirated ☐
Mechanical ☐ Turbocharged ☑

Exhaust Stack Diam 6 Inches Straight ☐ Curved ☑

BP: 30.33 Inches Hg @ _____ °F Ambient Temp: 86 °F

Fuel: 0.830 SG @ 89.8 °F Start Time: 1325

	RPM	Exh. Temp °F	P_v Inch H_2O	CO	HC	CO_2	O_2	Remarks
1	Full Throttle	592.4	1.90	0.04	28	4.21	13.4	
2		597.4	1.90	0.04	28	4.23	13.6	
3		597.4	1.90	0.04	26	4.21	13.6	
4		597.6	1.90	0.04	27	4.20	13.6	
5		604.2	1.90	0.04	24	4.19	13.5	
6		602.2	1.90	0.04	24	4.21	13.5	
7		601.0	1.90	0.04	24	4.21	13.5	
8								
9								
10								
	Average							

Signature of Technicians: [signature] Finish Time: 1345