WESTERN STATES EQUIPMENT CO

400 E. OVERLAND RD., MERIDIAN ID 83642 208-947-4501

CATERPILLAR PERFORMANCE ANALYSIS REPORT

Customer and Vehicle Information

Customer:	**FRANK FREEMAN**	City / State:	**CALDWELL, ID**
Vehicle Year & Make:	**2005 PETERBILT**	Vehicle Model:	**379**
Vehicle S/N:	**5N852921**	Unit Number:	**00**
Odometer Reading:	**1057864.0**	Work Order Number:	**GY63540**

Vehicle Configuration

Trans. Type:	**MANUAL**	Trans. Make & Model:	**FULLER - RTLO-18918B**
Drive Axle(s):	**2**	Axle Ratio:	**3.08**
Weight on Axles:	**8000**	Tire Type:	**LOW PROFILE**
Tread Type:	**DEEP LUG**	Tire Size:	**285/75R x 24.50**
No. of Accessories:	**10**		

Engine Information

Model:	**C15**	Serial Number:	**MXS10397**
Perf. Spec. Number:	**0K5926**	Governor Type:	**ELECTRONIC**
Aspiration System:	**AIR TO AIR AFTERCOOLED**	Combustion System:	**DIRECT INJECTION**

Performance Data

	Gov. Speed	1st Lug	2nd Lug	3rd Lug	4th Lug
Engine Speed (RPM)	1800	1700	1600	1400	1200
Engine Horsepower *	549	549	549	493	422
Fuel Rate (GPH)	27.9	27.1	26.3	23.1	20.1
Manifold Pressure ("Hg)	93.0	92.3	91.7	82.4	69.6

* At Standard Test Conditions

Gov. Speed = Governed Speed

Performance Data Supplied by CATERPILLAR

Test Conducted By: **BEN KIPPER**

Tolerance Ranges for Engine / Vehicle Performance Parameters

Flash File Number/Change Level: **3298549** FLS/FLT: **59 / -49**

	Gov. Speed	1st Lug	2nd Lug	3rd Lug	4th Lug
Engine Speed (RPM)	1800	1700	1600	1400	1200
Vehicle Speed (MPH)	70	66	62	55	47
Fuel Rate (GPH) Max.	29.3	28.5	27.6	24.2	21.1
Min.	26.5	25.7	25.0	21.9	19.1
Manifold Pressure ("Hg) Max.	102.3	101.6	100.9	90.7	76.6
Min.	79.0	78.5	78.0	70.1	59.2
Engine HP Max.*	565	570	574	519	447
Min.*	533	527	522	463	392
Estimated Wheel HP Max.*	461	473	484	445	388
Min.*	427	430	432	390	334
Inlet Air Restriction ("H2O) - Max:	-25.0		Exhaust Back Pressure ("H2O) - Max:		40.0

* At Standard Test Conditions

Measured Engine & Vehicle Performance Parameters

	Gov. Speed	1st Lug	2nd Lug	3rd Lug	4th Lug
Engine Speed (RPM)	1798	1695	1597	1398	1197
Vehicle Speed (MPH)	70	66	62	54	46
Fuel Rate (GPH)	28.9	27.9	27.8	24.8	21.6
Manifold Pressure ("Hg)	103.7	105.0	105.8	98.4	83.4
Fuel Pressure (PSI)	99.4	98.5	97.7	96.0	94.6
Fuel Temperature (°F)	82	80	80	79	78
Air Temperature (°F)	124	123	121	104	90
Engine HP**	551	549	562	515	439
Corrected Engine HP*	562	559	572	524	446
Wheel HP - Measured	443	452	462	438	388
- Corrected*	465	474	483	453	397
Inlet Air Restriction ("H2O)	-3.4	-3.1	-2.8	-2.0	-1.1
Exhaust Back Press ("H2O)	N/A	N/A	N/A	N/A	N/A
Fuel API (°API):	40.4			Barometer:	27.50

* At Standard Test Conditions
N/A - Not Available. See Test Notes for more information.

** See Performance Analysis on Page 3
*** Default Value Used

Gov. Speed = Governed Speed

Standard Test Conditions

Fuel API: **35 °API at 60 °F**

Fuel Temperature: **85 °F at the secondary fuel filter.**

Air Temperature: **ATAAC engines: 110 °F in the inlet manifold.**

JWAC engines: 77 °F after the air cleaner.

Barometric Pressure: **30.5 "Hg.**

Performance Analysis

Engine horsepower has been calculated from the measured fuel rate. The actual fuel API and fuel temperatures are used to determine the fuel density required for this calculation.

Any deviation from the Standard Test Conditions will INCREASE or DECREASE the engine horsepower and the available wheel horsepower. The calculated engine horsepower and the measured wheel horsepower shown on page 2 have been adjusted to standard conditions and shown as corrected engine horsepower and corrected wheel horsepower to provide an accurate evaluation of engine and vehicle performance and to demonstrate the effect of any deviation from these conditions on the engine horsepower and the available wheel horsepower.

If there are no problems with the engine support systems, such as low fuel pressure, high inlet air restriction and / or exhaust back pressure; the engine timing is correct and the engine fuel rate and manifold pressure are within specifications, then the engine is performing properly during this full load test.

Engine & Drive Train Losses

	Gov. Speed	1st Lug	2nd Lug	3rd Lug	4th Lug
Engine Speed (RPM)	1800	1700	1600	1400	1200
Engine Parasitic Losses					
Fan Horsepower	24.7	20.8	17.4	11.6	7.3
Accessory Loading	15.0	14.2	13.3	11.7	10.0
Drive Train Losses					
Drive Train Horsepower	46.9	45.0	43.1	36.5	29.5
Tire Rolling Resistance	16.6	15.7	14.8	12.9	11.1

The engine and drive train losses shown above are estimates only. These values are used to calculate the estimated minimum and maximum wheel horsepower shown on page 2. If the performance analysis indicates that the engine is performing to specifications, but the corrected wheel horsepower is greater than or less than the estimated maximum or minimum wheel horsepower, then the vehicle is either more or less efficient than the estimated losses or there is a problem with the vehicle. Wheel Horsepower is significantly affected by tire inflation pressure, as well as tire type and tread type.

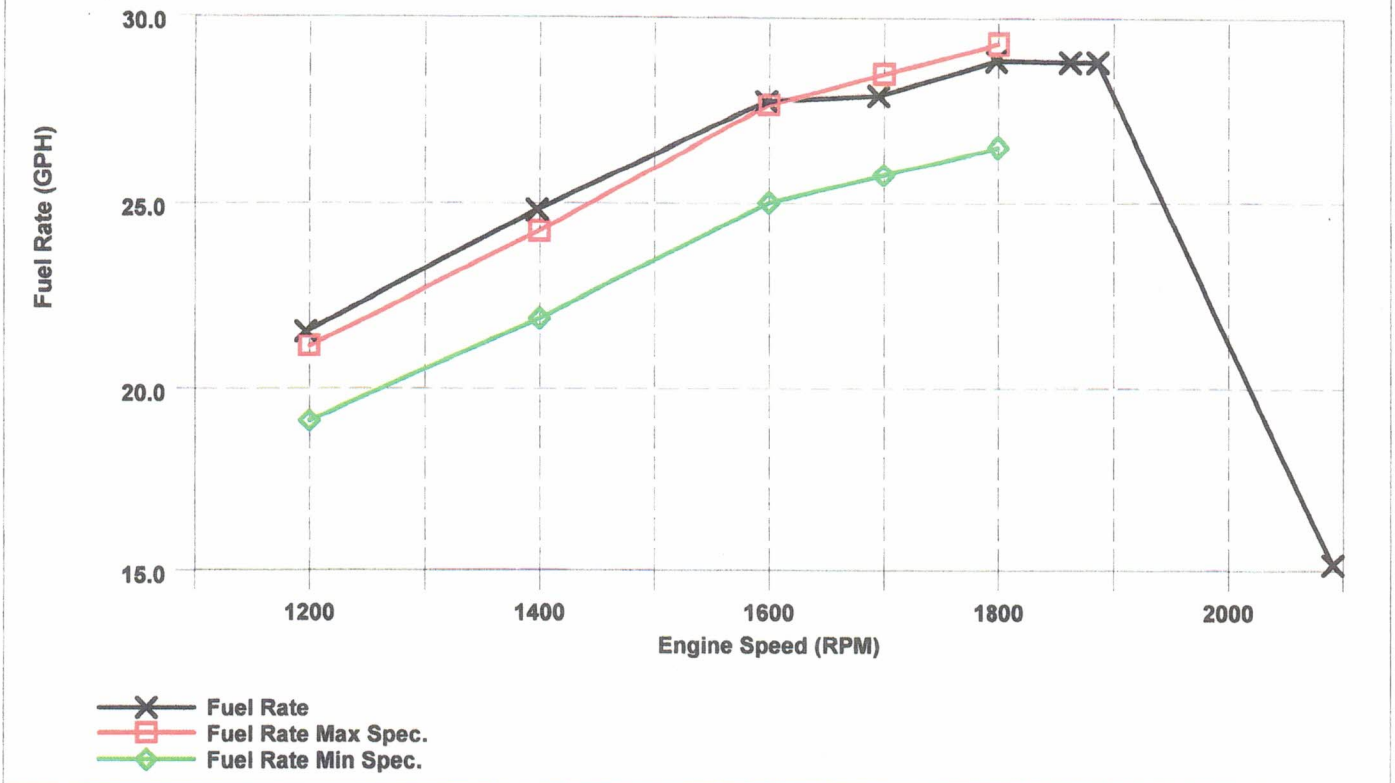
Test Notes

Exhaust Back Pressure not recorded. Engine Performance may be affected if back pressure is too high.

Fuel Rate

Frank Freeman
C15 MXS10397 0K5926

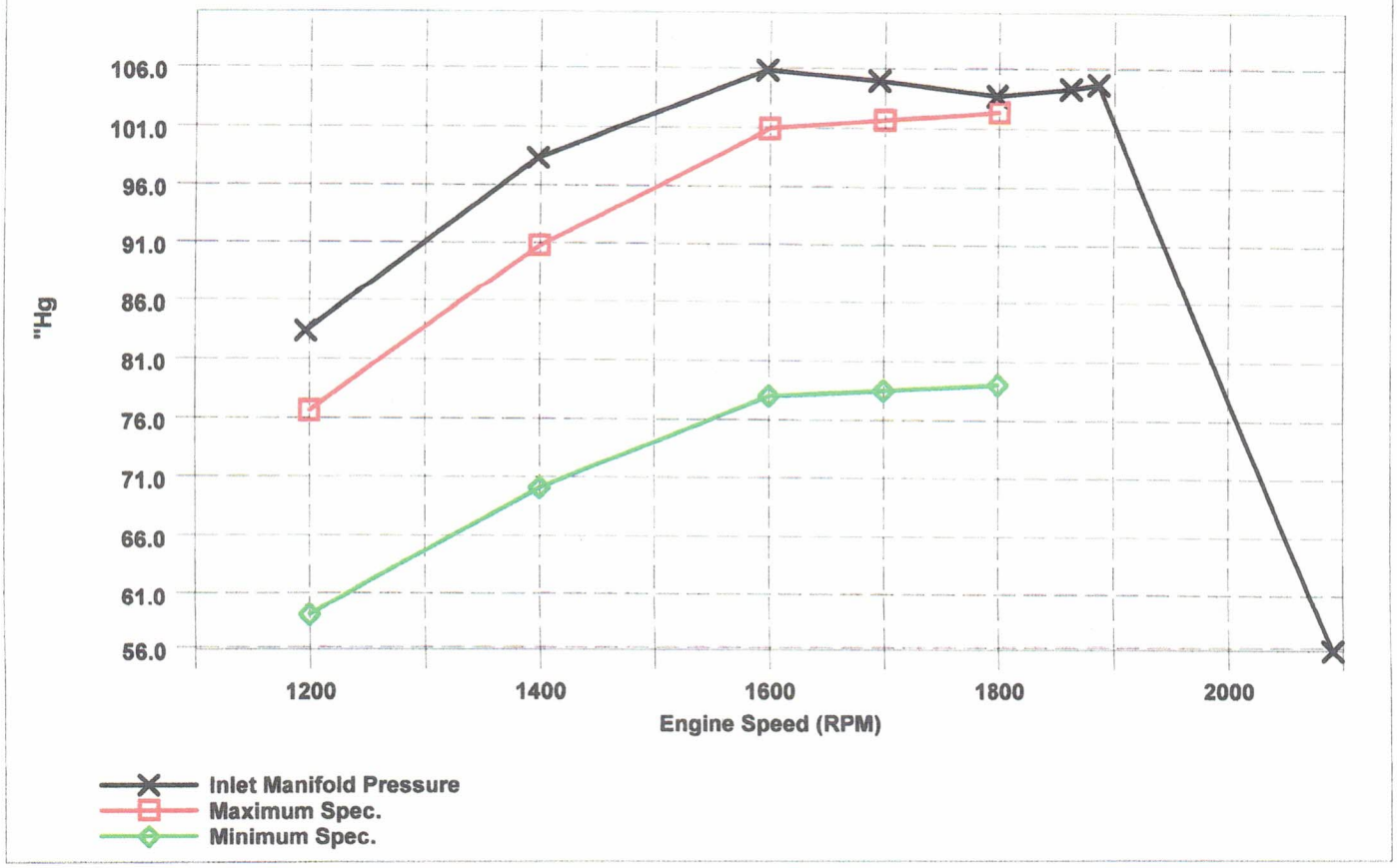
Vehicle SN:5N852921
Odometer: 1057864



Inlet Manifold Pressure

Frank Freeman
C15 MXS10397 0K5926

Vehicle SN:5N852921
Odometer: 1057864



Engine Horsepower

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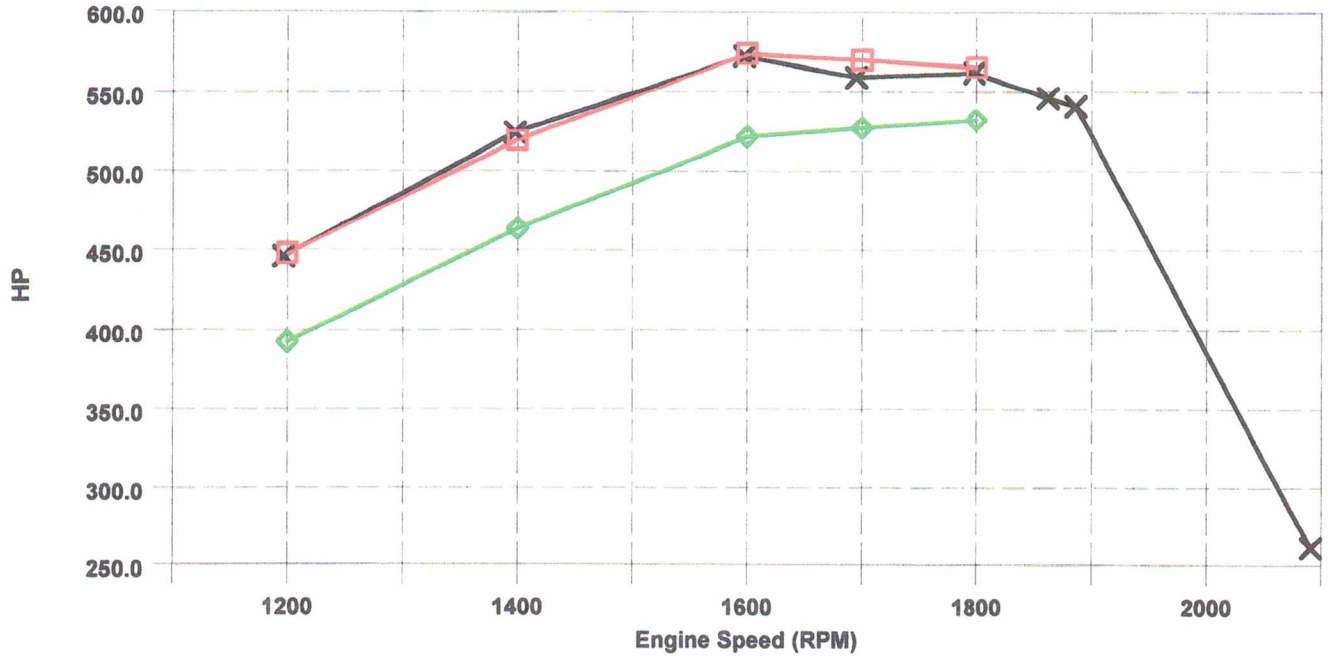
C15 MXS10397 0K5926

Vehicle SN:5N852921
Odometer: 1057864

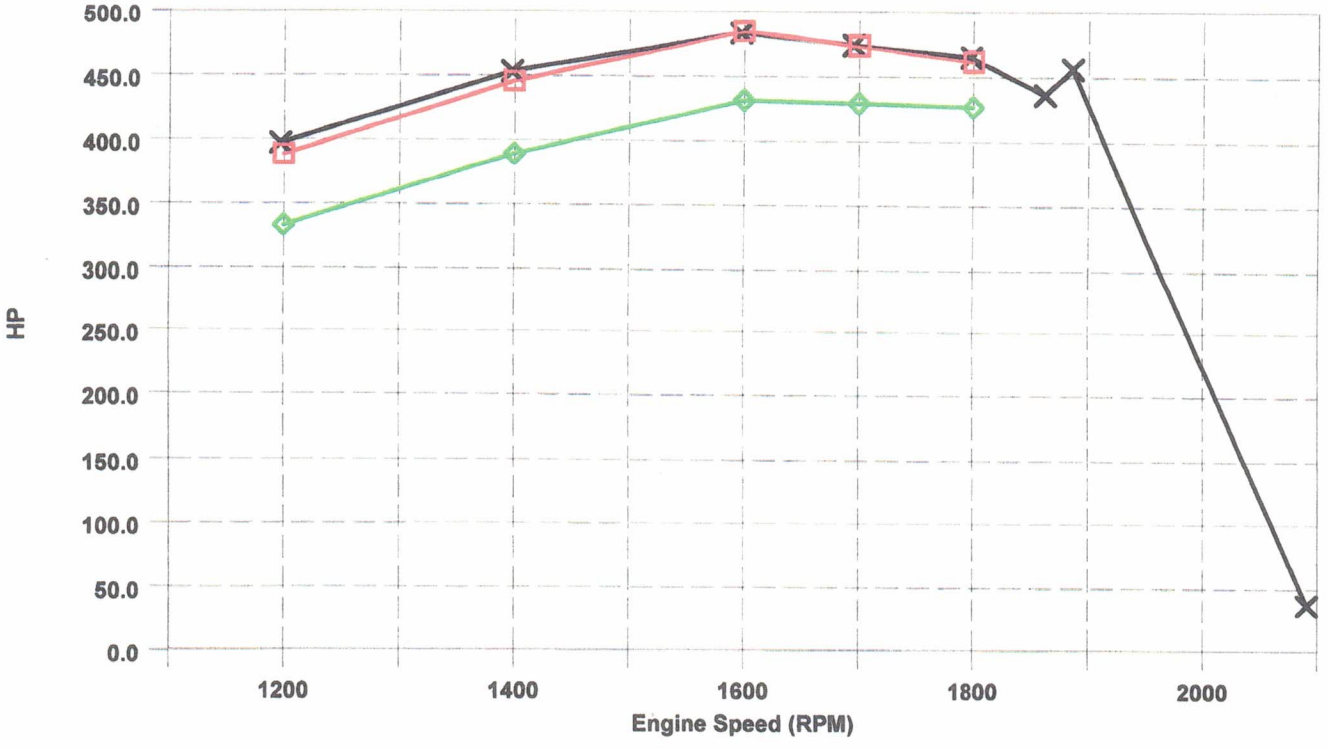


Corrected Engine HP based upon Measured Fuel Rate
Maximum Engine HP Spec.
Minimum Engine HP Spec.

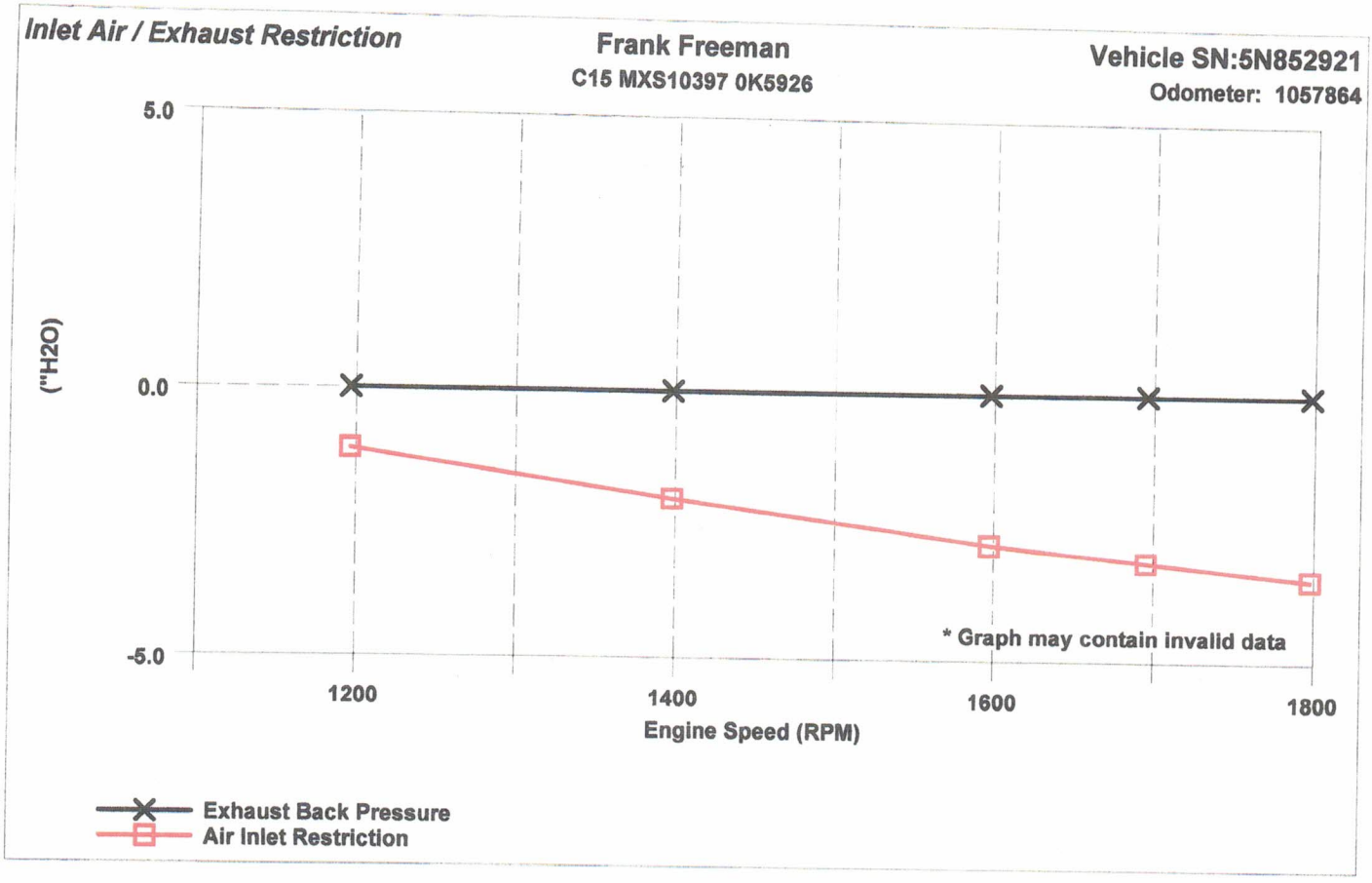
Wheel Horsepower

Frank Freeman
C15 MXS10397 0K5926

Vehicle SN:5N852921
Odometer: 1057864



Corrected Wheel HP
Estimated Maximum Spec.
Estimated Minimum Spec.


Inlet Air / Exhaust Restriction
Frank Freeman
C15 MXS10397 0K5926
Vehicle SN:5N852921
Odometer: 1057864
5.0
0.0
-5.0
("H2O)
1200
1400
1600
1800
Engine Speed (RPM)
* Graph may contain invalid data
Exhaust Back Pressure
Air Inlet Restriction

CAT Truck Engines

Western States Equipment
400 E. Overland RD.
Meridian
USA
208/947/4501

Customer Name:	Desert Sage Wall Systems	Engine ID No:	MXS10397	Vehicle Serial Number:	5N852921
Customer Address:	3403 Arthor Street	Engine Make	Caterpillar	Vehicle Make:	Peterbilt
Customer City /State/Zip:	Caldwell Id 83605	Engine Model	C15	Vehicle Model:	379
Customer Phone:	208-880-5502	Other Engine info:	550 @ 2100	Vehicle Plate Number:	
Customer Mobile Phone		W.O. No.:	GY63540	Mileage:	1057864
Customer Contact:	Frank Freeman	Dyno Operator	Ben Kipper	Color:	Blue
				Other Vehicle Info	

Pre Test Comments:

Post Test Comments:

Abs		[abs]	[abs]	[abs]							
Scale	(x 1)	(x 1)	(x 1)	(x 1)	(x 1)						
Average		1513	288	77.4							
Units	(seconds)	(rpm)	(HP)	(inHG)	(cfh)						
Channel Name	Timestamp	Engine_Speed	C_VPwr	Boost	blow_by_cfh						
1	0	1549	21	14.5	348.3						
2	465	1203	344	82.7	764.5						
3	514	1398	377	101.3	917.6						
4	576	1605	369	92.1	891.4						
5	627	1809	329	96.5	986.7						